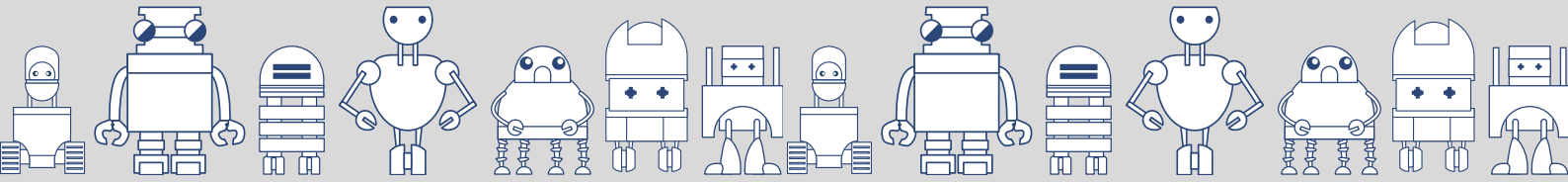
WORLD OF DRONES & ROBOTICS® CONGRESS 2020

TEACHER PACK



Inspiring AUSTRALIA Queensland

Australian National University

ANU College of ENGINEERING & COMPUTER SCIENCE

WORLD OF DRONES & ROBOTICS® CONGRESS 2020

CONTENTS

WORLD OF DRONES & ROBOTICS® CONGRESS 2020

WELCOME

Welcome to our
World of Drones and Robotics Teacher Pack!

This pack is filled with drones and robotics instructions, links to preferred suppliers and catered content that fits the curriculum AND they are only available through World of Drones and Robotics!

Check out our YouTube Channel

Subscribe to keep up to date with all things science, STEM, robotics, AI and more - for FREE!

WORLD OF DRONES & ROBOTICS CONGRESS 2020

FRIENDS OF WODARC

With so many companies and choices out there, we've made a short list of the ones we think are the best! Whether it's for equipment or curriculum based learning, here are the ones we recommend.

Click their logo to go straight to their website.

Australian National University
ANU College of ENGINEERING & COMPUTER SCIENCE

C.R.Kennedy CONSUMER DIVISION | 2020 The year of Working Smarter

DRONEBLOCKS

DRONE LEGENDS

flythefarm

Inspiring AUSTRALIA Queensland

Indigital

IT'S ROCKET SCIENCE

SHELDON LINQ ACADEMY
LEARNING AND INNOVATION FOR A NEW QUEENSLAND

ROBOT FARM

SCHMIDT OCEAN INSTITUTE

THE UNIVERSITY of ADELAIDE

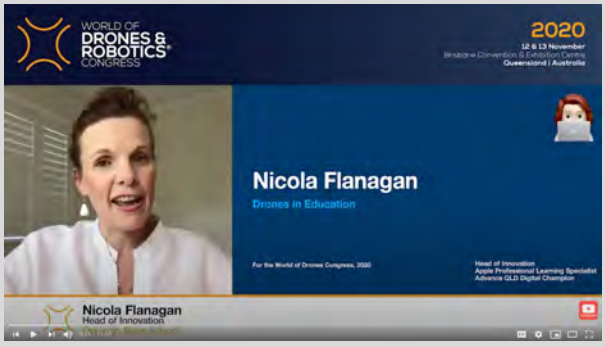
Zephyr drone simulator

EDUCATION WORKSHOP AT WORLD OF DRONES AND ROBOTICS CONGRESS 2020

Making Drones Accessible In Primary Schools by Owen Brasier of The Australian Computing Academy

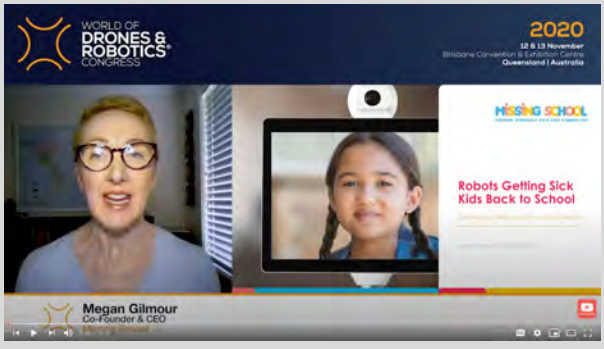
Learning and Innovation for a New Queensland (LINQ) and their work with drones in their school

Drones as a context for developing STEM learning and critical and creative thinking.



Drones in Education presented by Nicola Flanagan

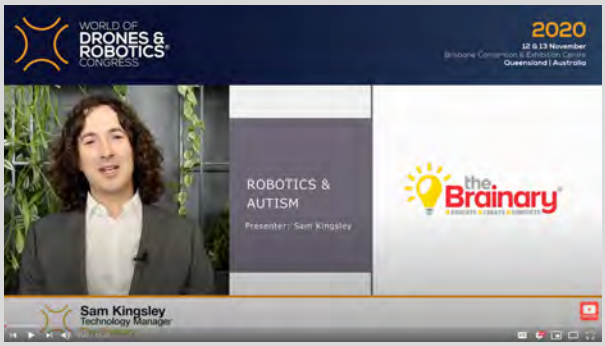
Drones and Curriculum Connections with Anna Kinnane



Robots Getting Sick Kids Back To School: Creating an interface for human connection w Megan Gilmour

EDUCATION WORKSHOP AT WORLD OF DRONES AND ROBOTICS CONGRESS 2020

Drones for Education and use in the Classroom (DJI D1Store) presented by Thomas Dyson



Robots and Autism Presented by Sam Kingsley from The Brainary

Techno Archaeology: 3D Immersive History Using Drones presented by Meredith Castles

Drones at Balmoral State High School presented by Kellie Baumgart (Science and Aerospace teacher)

Australian Airforce Cadets and Careers of the Future with Samatha Freebairn #SheFlies

Participation in the World of Drones Education events or workshops can contribute to your ***Continued Professional Development*** (CPD). This can be done via your MyQCT account on the Queensland College of Teachers website. Select the appropriate descriptor from the **Australian Professional Standards for Teachers.**

Professional Engagement

STANDARD 6

ENGAGE IN PROFESSIONAL LEARNING

FOCUS	GRADUATE	PROFICIENT	HIGHLY ACCOMPLISHED	LEAD
6.1 Identify and plan professional learning needs	Demonstrate an understanding of the role of the *Australian Professional Standards for Teachers* in identifying professional learning needs.	Use the *Australian Professional Standards for Teachers* and advice from colleagues to identify and plan professional learning needs.	Analyse the *Australian Professional Standards for Teachers* to plan personal professional development goals, support colleagues to identify and achieve personal development goals and preservice teachers to improve classroom practice.	Use comprehensive knowledge of the *Australian Professional Standards for Teachers* to plan and lead the development of professional learning policies and programs that address the professional learning needs of colleagues and preservice teachers.
6.2 Engage in professional learning and improve practice	Understand the relevant and appropriate sources of professional learning for teachers.	Participate in learning to update knowledge and practice, targeted to professional needs and school and/or system priorities.	Plan for professional learning by accessing and critiquing relevant research, engage in high quality targeted opportunities to improve practice and offer quality placements for preservice teachers where applicable.	Initiate collaborative relationships to expand professional learning opportunities, engage in research, and provide quality opportunities and placements for preservice teachers.
6.4 Apply professional learning and improve student learning	Demonstrate an understanding of the rationale for continued professional learning and the implications for improved student learning.	Undertake professional learning programs designed to address identified student learning needs.	Engage with colleagues to evaluate the effectiveness of teacher professional learning activities to address student learning needs.	Advocate, participate in and lead strategies to support high-quality professional learning opportunities for colleagues that focus on improved student learning.

Source: **Australian Professional Standards for Teachers**, Accessed November 2020 QCT website:

https://www.qct.edu.au/

Resources:

Are you a teacher interested in connecting with other teachers to learn and share resources used to support the use of drones across the curriculum? Or maybe you are interested in starting a conversation with other teachers who are currently using drone technology in teaching and learning. If so, visit TeachConnect, **an online community for Qld teachers.**

TeachConnect is the result of collaboration between universities and the Queensland College of Teachers to design an online community that meets the needs of teachers. Click here to find out more:

https://teachconnect.edu.au/t/videos-to-support-teachers-teaching-digitech/641

WORLD OF DRONES & ROBOTICS® CONGRESS 2020

RESOURCES

Inspiring
AUSTRALIA Queensland

WWW.INSPIRINGQLD.COM.AU

WORLD OF DRONES & ROBOTICS CONGRESS 2020

Factory of the Future:Where technology meets the everyday

Pandemic Proofing:Facing the new normal

The Future is in Their Hands:Tread softly, with purpose and courage

Australian National University

ENGINEERING AND COMPUTER SCIENCE AT AUSTRALIA'S LEADING UNIVERSITY

ANU College of Engineering & Computer Science

The Australian National University (ANU) College of Engineering and Computer Science is a diverse and vibrant community of scholars, students, educators, and researchers.

As one of the world's foremost research and educational universities, we're using our traditional expertise to explore creative, unconventional directions. We collaborate and engage with industry leaders, government, and researchers around the world.

ANU conducts fundamental research for unmanned vehicle technologies, particularly aerial robots. We have cutting-edge flying facilities and rapid prototyping equipment that enable in-house manufacturing and testing of robotic systems. ANU also hosts the Australian Centre for Robotic Vision, an Australian Research Council (ARC) Centre of Excellence, which leads the world in the emerging discipline of robotic vision.

At ANU, we are bringing together technical, ecological, social and scientific systems to build a new approach. We are passionate about taking on the global challenges of tomorrow and making a difference in people's lives using technology.

Reimagine engineering and computing

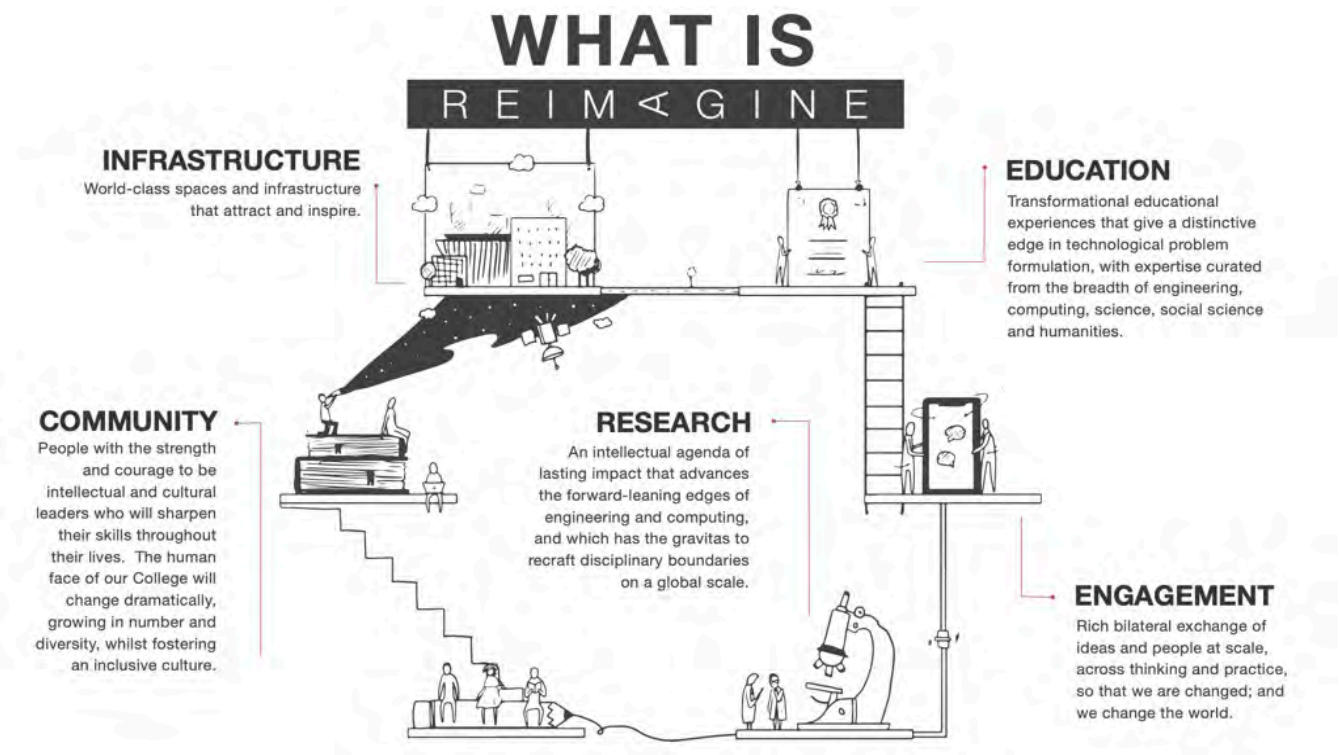
ANU is leading the way to reimagine a new type of engineering and computer science, one for the 21st century and beyond.

We need to look for creative problem finders, not just problem solvers, if we are to address the wicked challenges that face us globally.

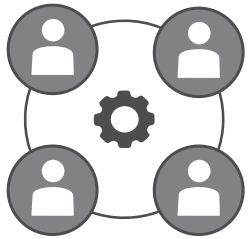
“Now more than ever our world needs a new approach. We need to completely reimagine who makes our world, with what skills and how they do it,” says Professor Elanor Huntington, Dean of the ANU College of Engineering and Computer Science.

“We will bring together expertise in technical, ecological, social and scientific systems to build this new approach… and we have already begun. Come join us!”

For more information, visit
cecs.anu.edu.au/reimagine



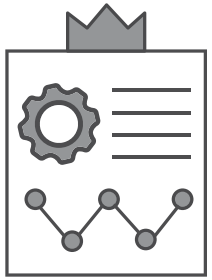
Engineering at ANU



Social impact engineering.
ANU is a leader of humanitarian engineering education in Australia, and was the first university to offer a dedicated humanitarian engineering elective.

Systems Engineering.
We take a unique multidisciplinary systems approach, engineering smarter and healthier living environments

The Big Dish.
Home to the world's largest paraboloidal dish solar concentrator



World-leading research.
Information and Computing Sciences, Engineering, and Technology research at ANU is rated well above world standard
(Australian Government Excellence in Research for Australia Report 2018)

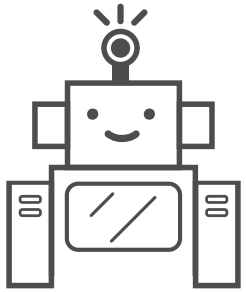
for **Computer Science and Engineering**
(ARWU Global Ranking of Academic Subjects 2020).

in Electrical and Electronic Engineering
(QS World University Rankings by Subject 2020)

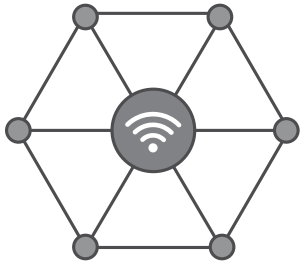
for **Automation and Control Engineering**, a key component of our Mechatronics courses
(ARWU Global Ranking of Academic Subjects 2020).

for **Telecommunication Engineering**
(ARWU Global Ranking of Academic Subjects 2020).

Computer science at ANU



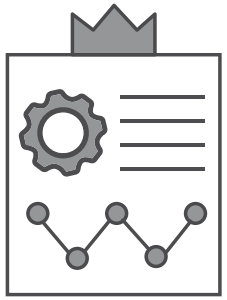
Creating robots that can see and understand.
ANU hosts the ARC Centre of Excellence for Robotic Vision



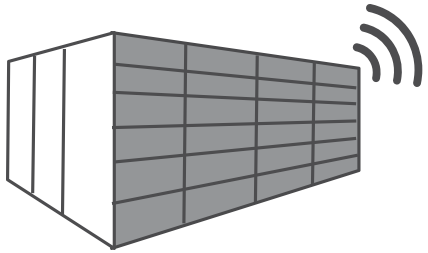
Future of the internet.
ANU plays a major role in the future development of the Web, as host of the World Wide Web Consortium (W3C) Australia Office

for **Computer Science and Engineering**
(ARWU Global Ranking of Academic Subjects 2020).

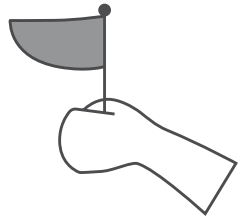
for **Computer Sciences & Information Systems**
(QS World University Rankings by Subject 2020)



World-leading research.
Information and Computing Sciences research – including Artificial Intelligence & Image Processing, Computation Theory and Mathematics, and Computer Software – at ANU is rated well above world standard
(Australian Government Excellence in Research for Australia Report 2018)



Next generation computation.
Home to Gadi, Australia's most powerful supercomputer



Recognised as a leader.
in algorithms and data, applied signal processing, artificial intelligence, computer vision and robotics, logic and computation, software intensive systems engineering, and systems and control.

Application information

Study options

Now is a great time to study engineering and computer science. Take on the global challenges of tomorrow and make a difference in people's lives using technology.

Be recognised with in-demand qualifications from Australia's top university (QS World University Rankings 2020/21).

Flexible undergraduate (Bachelor) study options available, including:

>Bachelor of Advanced Computing (Honours) – 4 years

>Bachelor of Advanced Computing (R&D) (Honours) – 4 years

>Bachelor of Applied Data Analytics – 3 years

>Bachelor of Engineering (Honours) – 4 years

>Bachelor of Engineering (R&D) (Honours) – 4 years

>Bachelor of Information Technology – 3 years

>Bachelor of Software Engineering (Honours) – 4 years

>Diploma of Computing – 1 year

Learn more at **cecs.anu.edu.au/study**

Apply direct to ANU

1. Check you're eligible to submit a direct Admission, Scholarships and Accommodation application

>You can complete a direct application if you are a domestic Australian school leaver wanting to apply for an undergraduate program starting the next year.

>Australian school leavers mean those who will complete an Australian Year 12 or International Baccalaureate Diploma (November session).

2. Consider which programs are best for you

>Choose from over 50 Bachelor degrees or combine two degrees together with a Flexible Double Degree program.

>Some degrees require you to have studied specific subjects in Year 12. Before you apply, make sure you're eligible for your chosen degree by checking the prerequisites.

3. Check you meet the co-curricular or service requirement

>All domestic school leavers are required to meet the co-curricular or service requirement.

4. Apply direct to ANU

>Remember that undergraduate applications are open from March to May of the year prior.

>**March** Direct applications to ANU open

>**May** Direct applications to ANU close

>**August** Conditional offers released

>**September** Conditional offer acceptance deadline

>**From late December** Further offers begin to be released

>**January** Final offer acceptance deadline

>**February** Classes commence

For up-to-date information and dates, visit **anu.edu.au/study/apply**

Apply through UAC

If you do not meet the criteria to submit a direct application to ANU, don't worry, you can apply to ANU via UAC (The Universities Admissions Centre). You can submit a UAC application if you're:

>not a school-leaver, e.g. a gap year student

>seeking admission as a mature-age applicant

>transferring from another institution

>otherwise not a domestic Australian school-leaver.

UAC application dates

>**August** UAC applications for Semester 1 open

>Refer to **uac.edu.au** for closing dates

Our students

Naomi

Bachelor of Applied Data Analytics

"Applied data analytics is perfect for people who are eager to learn and have broad interests. It combines sciences with arts to solve problems. The versatility of my degree has allowed me to discover what really sparks my passion, which is solving societal issues using holistic approaches. I'm combining the study of

Aaron

Bachelor of Advanced Computing (Honours)

"The best part about my degree here is the flexibility. Being able to choose nearly all of my courses and tailor my degree to my specific interests in computing is amazing. It keeps me excited and engaged in the courses I'm taking."

Nicola

Bachelor of Engineering (Research & Development) (Honours)

"Studying R&D gives you the opportunity to try out a variety of different fields of research, and collaborate with academics as an undergraduate. It's helped me to find the areas I want to focus on in further studies. The flexible double degree program has allowed me to pursue my interests in mathematics and computer science, giving me more specialised skills that build on my engineering degree."

Campus and facilities

Gadi

Robotics and drones

Big Dish

MakerSpace

Nano lab

Solar simulator

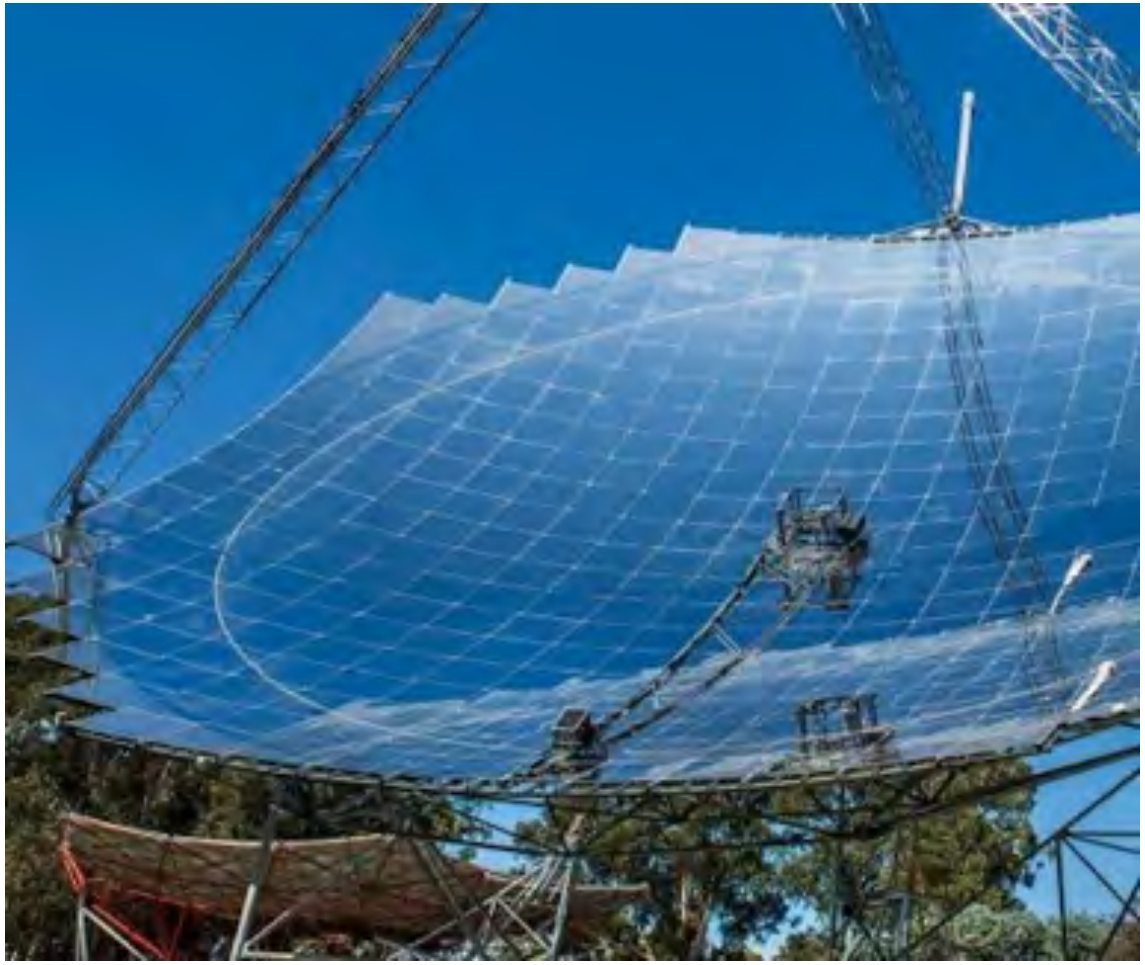
Gadi

- ANU is home to Gadi, a high-powered supercomputer at the National Computational Infrastructure (NCI) that is used by researchers across the University and country.
- Australian researchers can access Gadi from anywhere in the world, at any time of day. Running 24 hours a day, seven days a week, Gadi is the underpinning infrastructure for much of the Australian scientific community.
- It comes in at number 24 in the global ranking of supercomputers, and the most powerful in the southern hemisphere.
- The machine is named ‘Gadi’ [pronounced Gar-dee], a word of the Ngunnawal people meaning ‘to search for’.
- Gadi contains 145,152 CPU cores, 567 Terabytes of memory, and 640 GPUs, and iscapable of performing nine quadrillion operations per second.

Robotics and drones

- We conduct fundamental research for unmanned vehicle technologies, particularly aerial robots.
- We are co-located with the Computer Vision, Networked Systems and Quantum Cybernetics research areas, creating a dynamic environment that supports breakthrough interdisciplinary research.
- We have cutting-edge flying facilities and rapid prototyping equipment that enable in-house manufacturing and testing of robotic systems. With exposure to the latest technologies, students can gain job-ready skills.
- ANU hosts the Australian Research Council (ARC) Centre for Robotics Vision, which provides student scholarships and research fellowships as well as a link with the cutting-edge research in robotic vision world-wide.

Big Dish

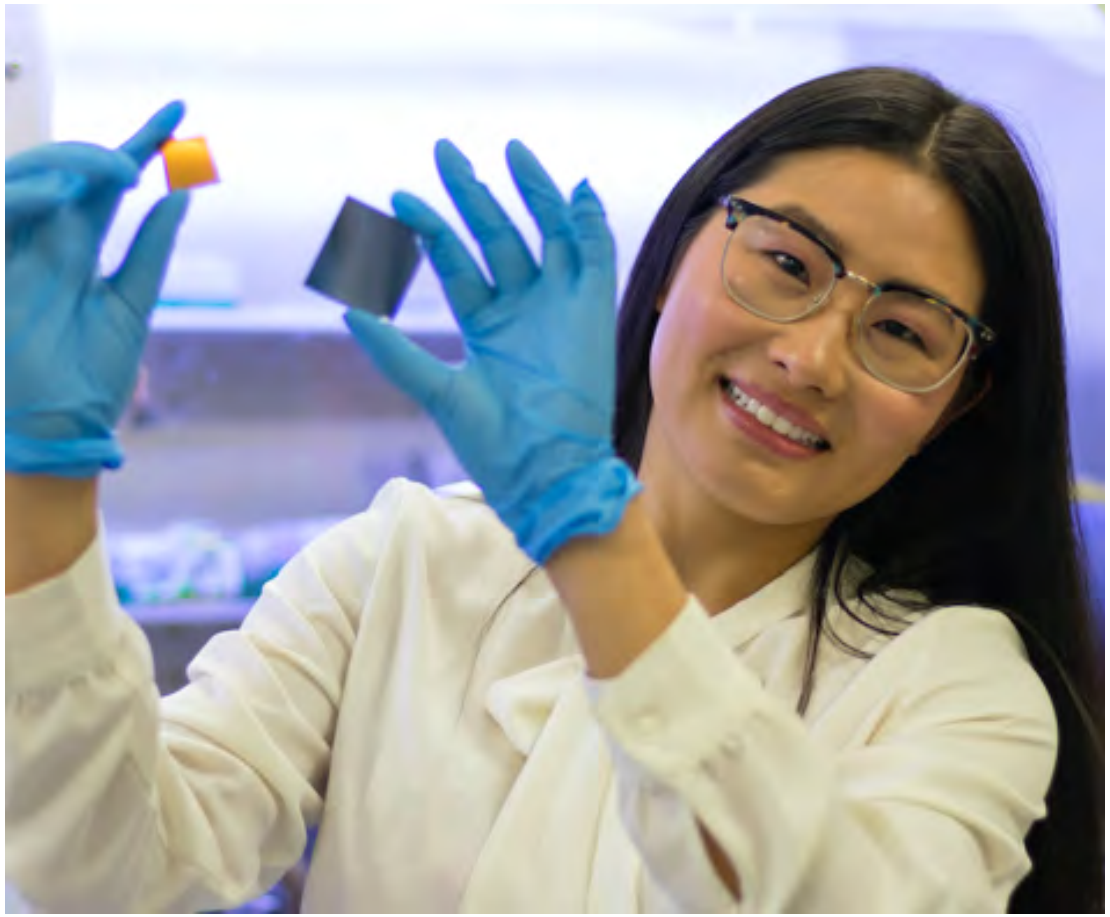


- The ANU Generation II Big Dish solar concentrator is the world's largest paraboloidal dish solar concentrator, with 489 m2 of mirror aperture area.
- This dish is a prototype of a design intended for large scale solar thermal power generation systems. Large arrays of dishes are joined to feed energy to a central power generation plant.
- It produces an average concentration of 2,100 suns over a disk with diameter 530 mm, with a peak concentration of 14,000 suns.
- The ANU prototype delivers experimental data to investigate energy conversion processes, inform design improvements, and support efforts to license and commercialise the technology.

MakerSpace

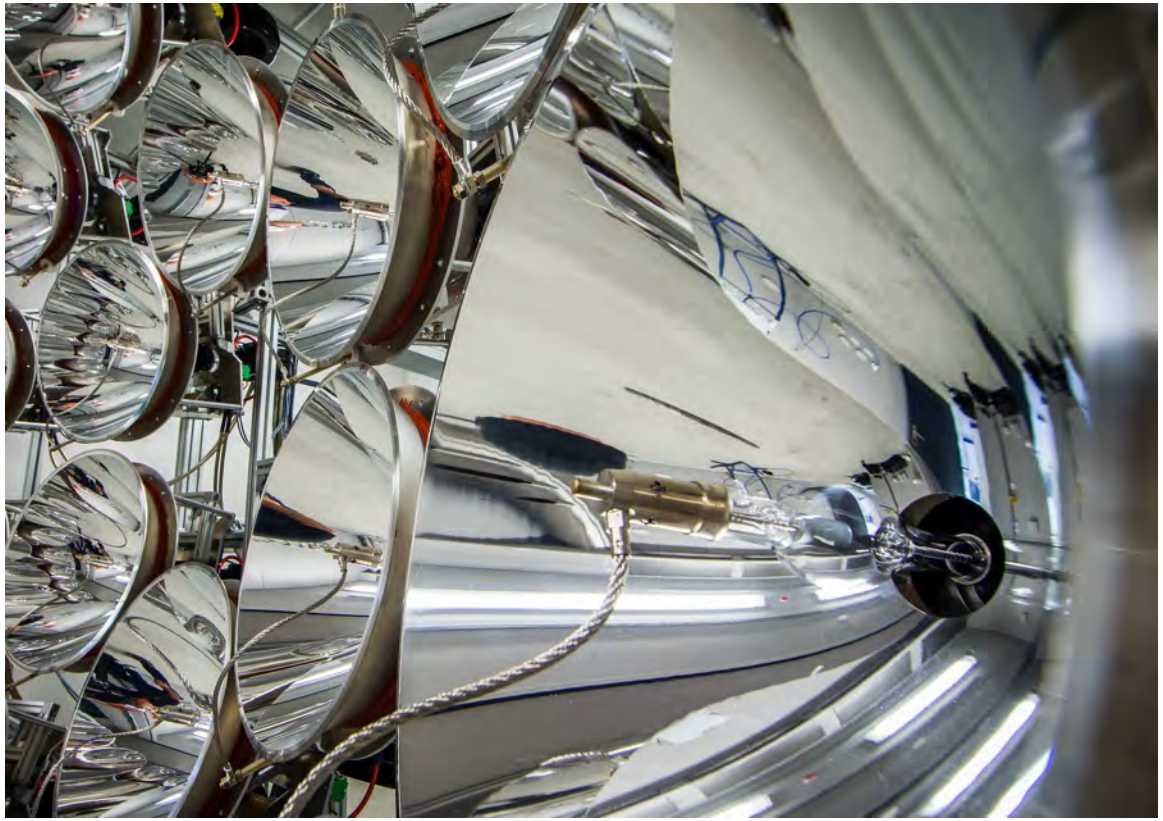
- The ANU MakerSpace is an area accessible to all our staff and students to experiment, investigate, prototype and solve problems.
- MakerSpace has a wide range of tools and appliances available, including power tools, 3D printers, laser cutters, soldering and testing equipment.
- The space can be used for education, research, and even personal hobbies.

Nano lab



- Nanotechnology is a rapidly emerging research area based on the manipulation of light and matter at the nano-scale. It has the potential to enable more efficient use of our limited natural resources. It could also provide new solutions for long-standing technological challenges.
- Researchers at the Nanotechnology Research Lab focus on the integration of nanomaterials into devices. This has applications extending from non-invasive medical diagnostics, to renewable energy production and storage.

Solar simulator



- This high-flux solar simulator is ideally suited for laboratoryscale testing of high-temperature solar thermal and thermochemical components and systems.
- It supports research in radiating reactive flows and provides up to 20 kW of radiation with peak heat flux up to about 10 MW/m2. The flux can be further augmented with secondary optics.
- The solar thermal capability and expertise at ANU can simulate similar heat flux conditions for high-speed spacecraft entry. Think the Moon, Mars and beyond!

Make an appointment

- Got a question? You can book a digital appointment to speak to our team.
- Learn more about the study options and student opportunities available at the ANU College of Engineering and Computer Science.
- Book a time at **calendly.com/anu-cecs**

Contact us

ANU College of Engineering and Computer Science

The Australian National University

Canberra ACT 2601 Australia

http://cecs.anu.edu.au/

Study with us

Call and chat to us from 8am-8pm Monday to Friday* (except public holidays):

1800 620 032 (within Australia)

+61 2 6125 7257 (outside Australia)

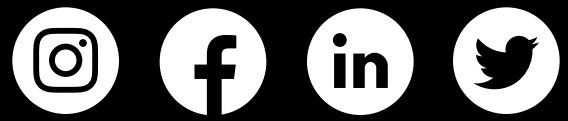
http://future.student@anu.edu.au

Speak to us about engagement opportunities

We regularly work in partnership with business, industry and government agencies on consultancies, research collaborations, educational partnerships, and student engagement opportunities.

+61 2 6125 3195
engagement.cecs@anu.edu.au

Connect with us on social media @anucecs



SHELDON LINQ ACADEMY
LEARNING AND INNOVATION FOR A NEW QUEENSLAND

WWW.LINQACADEMY.COM

WORLD OF DRONES & ROBOTICS CONGRESS 2020

SHELDON LINQ ACADEMY
LEARNING AND INNOVATION FOR A NEW QUEENSLAND

INSPIRE. PREPARE. EDUCATE.

Advanced Learning that Inspires Innovation.

OUR PURPOSE

The Sheldon LINQ Academy is a learning institution that aims to inspire the transformation of learning for students, educators and the wider community.

We cater for several different levels of learning, including school holiday workshops, international student and teacher incursions, teacher professional development and a newly formed Initial Teacher Education Pilot program in partnership with Griffith University.

OUR STORY

The Sheldon LINQ Academy was launched in 2019 advocating for a world-class system of teacher education and school-based programs. Our suite of programs allows schools to work collaboratively with our experienced team of academic leaders, ICT professionals and education specialists.

OUR PARTNERS

The Sheldon LINQ Academy Team acknowledges that one of the important facets of continuing the learning journey is developing relationships with relevant industry partners.

PROFESSIONAL DEVELOPMENT PROGRAMS

Offered remotely, on-site at the Sheldon LINQ Academy, or in your school setting.

> **LMS Professional Development** - Provides schools with expert support during the initial implementation phase of their LMS journey, through to tailored workshops.

> **SMART Technologies** - Aims to support teachers to develop interactive learning experiences, provide meaningful feedback and deeper collaboration with their students.

> **Digital Technology Tools** - Supports educators to further their expertise in digital tool integration and technological advancement across a variety of curriculum areas.

CONTACT US

We offer a suite of programs, products and services to provide advanced learning solutions that deliver maximum impact for all unique learning needs.
Visit our website for further information.

CALL: (07) 3206 5595
enquiries@linqacademy.com
www.linqacademy.com

CRICOS Provider 02177C

SHELDON LINQ ACADEMY

SAMPLE STEM LEARNING

YEAR 5 EXPLORING REMOTE LOCATIONS

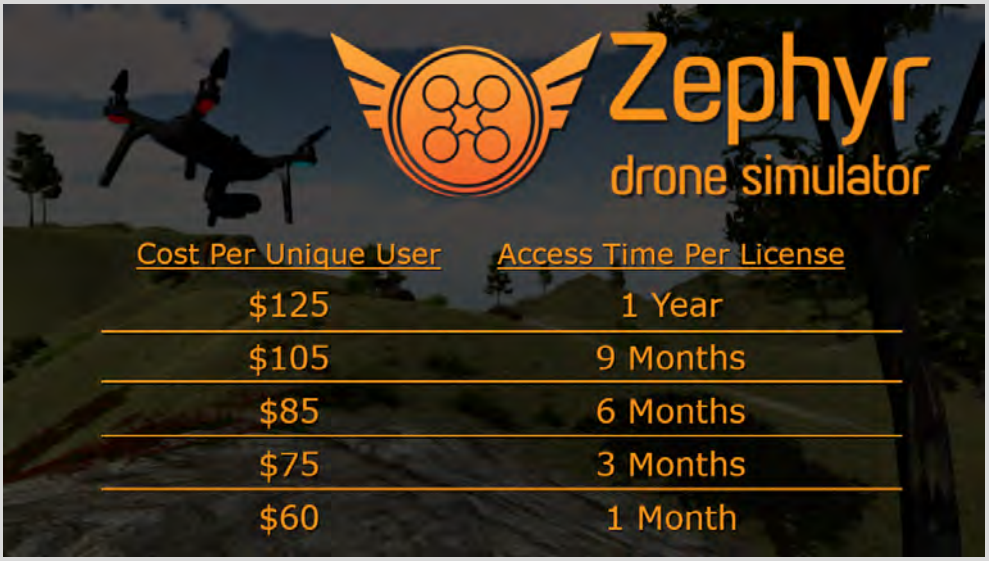
The following sample teaching and learning experiences have been mapped against ACARA content descriptors for Year 5 Digital Technologies, Science and Mathematics. Year 5 Exploring Remote Locations will fill your classroom with wonderment and awe. Teleport your class to space by sharing the inquisitive possibility that life could be sustained on Mars.

To learn more about the context of this project watch our dedicated webinar by scanning the QR on this page.
Contact the Sheldon LINQ Academy to learn more about this unit and to obtain the related maps and resources.

LEARNING OUTCOME	TEACHING AND LEARNING STRATEGIES	RESOURCES	DIGITAL	SCIENCE	MATH
We are learning to understand the solar system and its components. We are learning to identify the order of planets and relative distance from the sun.	**Introduce new knowledge** Explain how the solar system was formed including links with Aboriginal Dreamtime stories. **Practical Activities** Introduction to Robotics through the basic usage and controls for OzoBots.	Kahoot Butchers paper Spherical objects to represent planets http://sciencenetlinks.com/interactives/messenger/psc/PlanetSize.html	ACTDIP019 ACTDIP020	ACSSU078	
We are learning to understand the scope and impact of the simulated problem. We are learning to operate a drone safely.	**Introduce new knowledge and skills** Investigate the location of the six construction modules that landed on the surface of Mars. **Practical Activity** Code the Parrot Drone across the drop zone, photograph the area, and return the drone to the safe area so that the location of the construction modules can be identified.	Map of Mars iPads Drones Tynker App Collaboration space Student Learning Journal or Notebook	ACTDIP019 ACTDIP020	ACSIS093	ACMSP119
We are learning to design and test a digital solution to the identified challenge. We are learning to plan and write code to gather evidence about the simulated environment.	**Introduce new knowledge and skills** Collaborate in small groups to investigate the footage captured from the drone. **Practical Activity** With the data retrieved from the drone, determine the location of each of the modules and create an algorithm to determine the most important module to the least important module.	Module information Map of Mars Drones Tynker App Collaboration space Student Learning Journal or Notebook	ACTDIP019 ACTDIP020	ACSIS090	
We are learning to implement the planned algorithm to create a digital solution. We are evaluating the effectiveness of the solution.	**Introduce new knowledge and skills** Use student developed action plans to determine the order in which the robotic device navigates to the identified areas. **Practical Activity** Design algorithms to represent the movement, degrees and directional instructions to initiate the robotic solution.	OzoBlockly Games OzoBots iPads Student Maps Collaboration space Student Learning Journal or Notebook	ACTDIP019 ACTDIP020	ACSIS093 ACSIS090	ACMSP120

WWW.ZEPHYR-SIM.COM

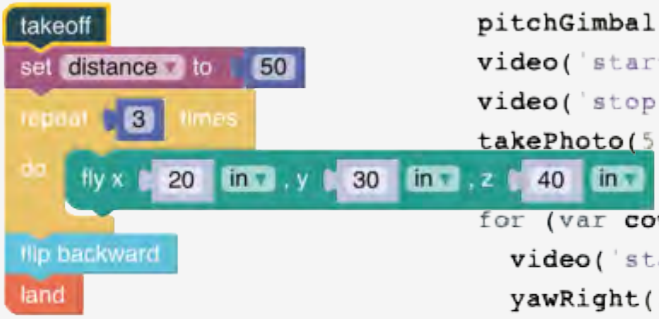
Zephyr drone simulator



DRONEBLOCKS

WWW.DRONEBLOCKS.COM

DRONEBLOCKS




```
takeoff(10);
change_altitude(40);
flyForward(75, 25);
hover(5);
pitchGimbal(25);
video('start', 20);
video('stop');
takePhoto(5, 5);
for (var count = 0; coun
  video('start');
  yawRight(10, 30);
  flyForward(25, 10);
  change_altitude(25);
```

Overview

Drones are not only a fun and engaging tool, but the applications in STEAM education are proving to be extensive and inclusive. Our curriculum can be applied with **varying age ranges** and is extremely conducive to students with diverse learning styles by helping them explore **math, science and logic** through fun and practical application. Students will learn **Block, Python, and JavaScript** coding by executing their code on small indoor friendly Tello drones that will **fly autonomously indoors**.

DroneBlocks Members will have full access to all DroneBlocks curriculum and DroneBlocks software **(including our new drone simulator)**. The simulator can take advantage of any DroneBlocks "Block-Coding" curriculum and missions for distance learning. We also offer **professional development services;** Our one on one sessions are available to assist educators, walk through curriculum, and build user confidence. With the use of brain-based learning and coaching models we create positive outcomes, where technology is used as a tool for supporting more productive and engaging STEAM learning experiences.

Real World Application

THE GLOBAL DRONE MARKET TO BE WORTH $127 BILLION BY 2020

IN ADDITION TO DEFENSE, DELIVERY, OR AERIAL PHOTOGRAPHY, DRONES WILL SOON BE USED FOR VERIFYING BUSINESS CLAIMS, BOOSTING CROP YIELDS, AND CREATING SPECIAL EFFECTS FOR HOLLYWOOD BLOCKBUSTERS.

$1.9 BILLION IN VENTURE CAPITAL IN DRONE RELATED START-UPS

THE AVERAGE VALUATION OF THESE START-UPS IS $5.3 MILLION, AND THE THREE MOST FOLLOWED START-UPS ARE COMMERCIAL LOGISTICS FIRM SKYCATCH, CLOUD-BASED DRONE MAPPING AND ANALYTICS FIRM DRONEDEPLOY, AND SMART DRONE MAKER MATTERNET.

PROGRAMMERS ARE IN HIGH DEMAND

71% OF ALL NEW STEAM JOBS ARE IN COMPUTING, YET ONLY 8% OF STEAM GRADUATES ARE EMPLOYED IN COMPUTER SCIENCE. LEARNING TO CODE WILL INCREASE STUDENTS ODDS OF SECURING A LUCRATIVE STEM CAREER. IN A WORLD WHERE COMPUTING JOBS ARE GROWING AT OVER TWICE THE NATIONAL AVERAGE, CODING HAS QUICKLY BECOME A VITAL SKILL.

IMPROVES CREATIVITY

CODING EMPOWERS KIDS TO NOT ONLY CONSUME DIGITAL MEDIA AND TECHNOLOGY, BUT TO CREATE IT. INSTEAD OF SIMPLY PLAYING A VIDEO GAME OR USING AN APP, THEY CAN IMAGINE MAKING THEIR OWN VIDEO GAME, OR ENVISION WHAT THEIR OWN WEBSITE, OR APP MIGHT LOOK LIKE.

IMPROVES PROBLEM SOLVING

WHEN KIDS CODE, THEY TAKE COMPLEX PROBLEMS AND BREAK THEM DOWN INTO SMALLER PARTS. KIDS LEARN WHAT IT'S LIKE TO APPROACH A PROBLEM THE WAY A SOFTWARE ENGINEER DOES, WITH LOGICAL, COMPUTATIONAL THINKING.

COLLABORATION & COMMUNICATION

STUDENTS ARE CHALLENEGED TO CALLABORATE AND CLEARLY COMMUNICATE COMPLEX IDEAS WITH PEERS WHO ARE JOINED BY THROUGH A COMMON INTEREST IN TECHNOLOGY. PEOPLE WHO CAN PROBLEM-SOLVE WITH OTHERS TEND TO BE SUCCESSFUL IN THE TECH INDUSTRY.

Drones

Extremely lightweight:

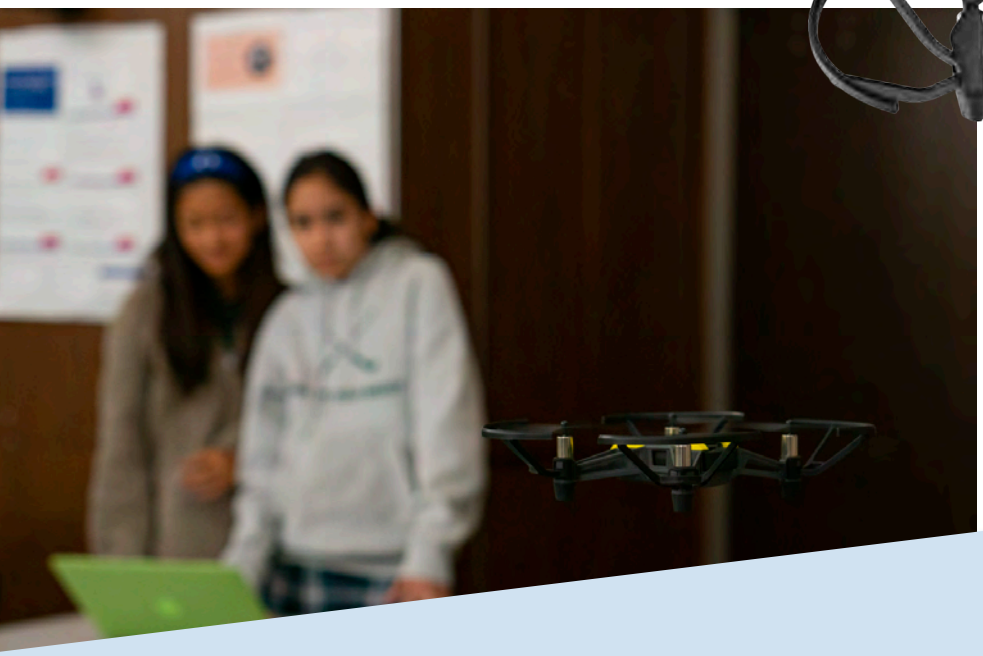
This incredibly small drone fits in your palm and only weighs approximately 80g (propellers and battery included). However, its durable design combined with DJI's flight technologies ensure that you can always fly with confidence. Just grab it from your bag and have fun.

Safe to fly indoors:

Tello is super safe with its software and hardware protections. With a single tap, it can takeoff/land automatically; its vision positioning system facilitates precise hovering; when the battery gets low, alerts will go off. Moreover, even if you lose the connection, the Tello can still land safely thanks to its failsafe protection. Tello's high-capacity battery offers an impressively long flight time, giving it one of the longest flight times in the mini-drone category.

Programmable:

You can learn the basics of programming while having fun. By using Droneblocks or Python coding system, you will be able to program your own flight patterns with the Tello. If you're a more advanced user, you can use the Tello SDK to develop software applications. You will find Tello the smallest yet smartest drone you'll ever fly.



Droneblocks (Block-Coding)

Droneblocks is available on iOS, Android, and Google Chrome. This will allow you to utilize virtually any existing device whether it be a tablet or laptop. With over 100,000 users around the globe there are now support communities on various social media forums which are also available for free.

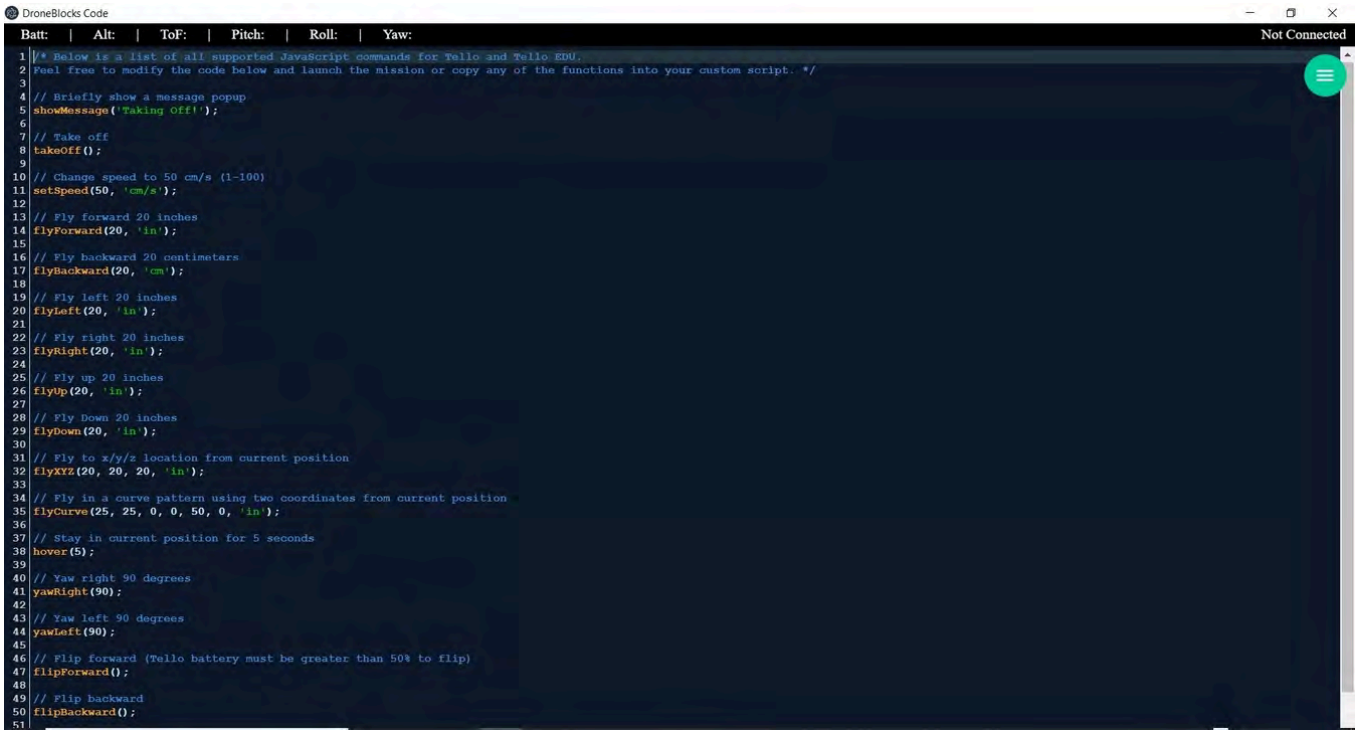
Scan to Download Droneblocks App

DRONEBLOCKS

Droneblocks Code

Membership Exclusive

DroneBlocks Code is available on PC and Mac. DroneBlocks Code is for advanced users that have moved beyond block coding. Now program your Tello and Tello EDU using JavaScript and more advanced programming techniques.

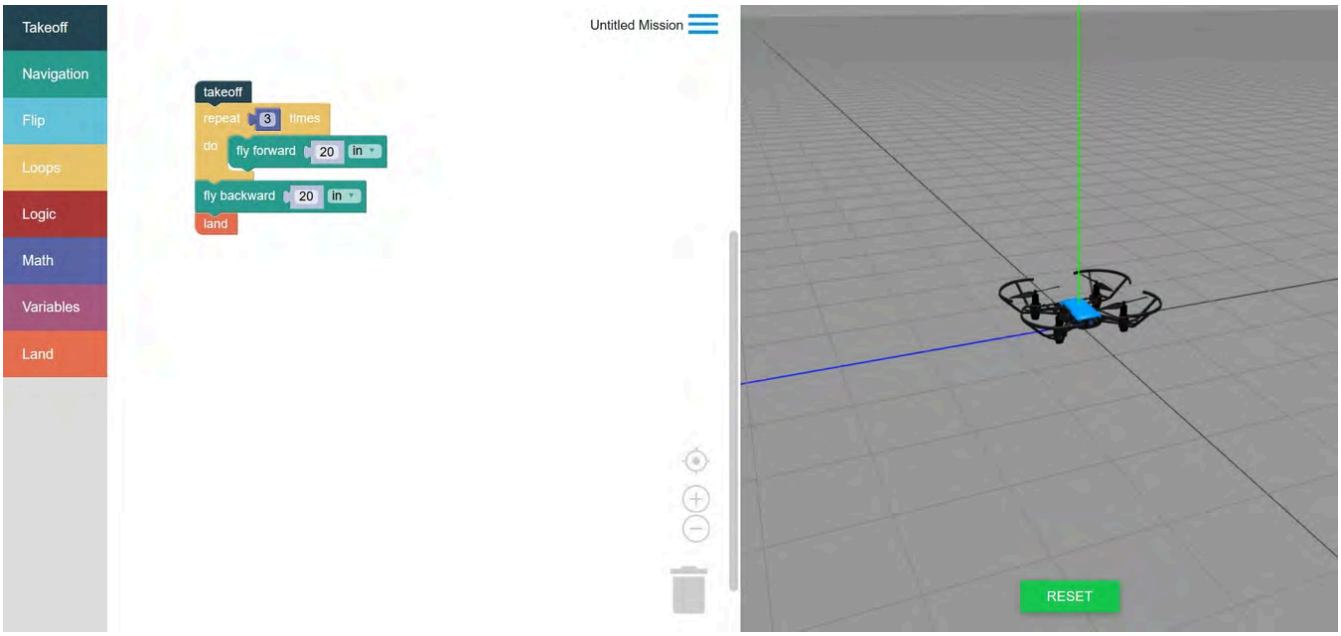


Contact us for a Private Demo

Drone Simulator

Membership Exclusive

Explore DroneBlocks coding without a drone from anywhere! Compatiable with all DroneBlocks block coding curriculum. Excellent resource for distance learning and environments where flying drones is not suitable.



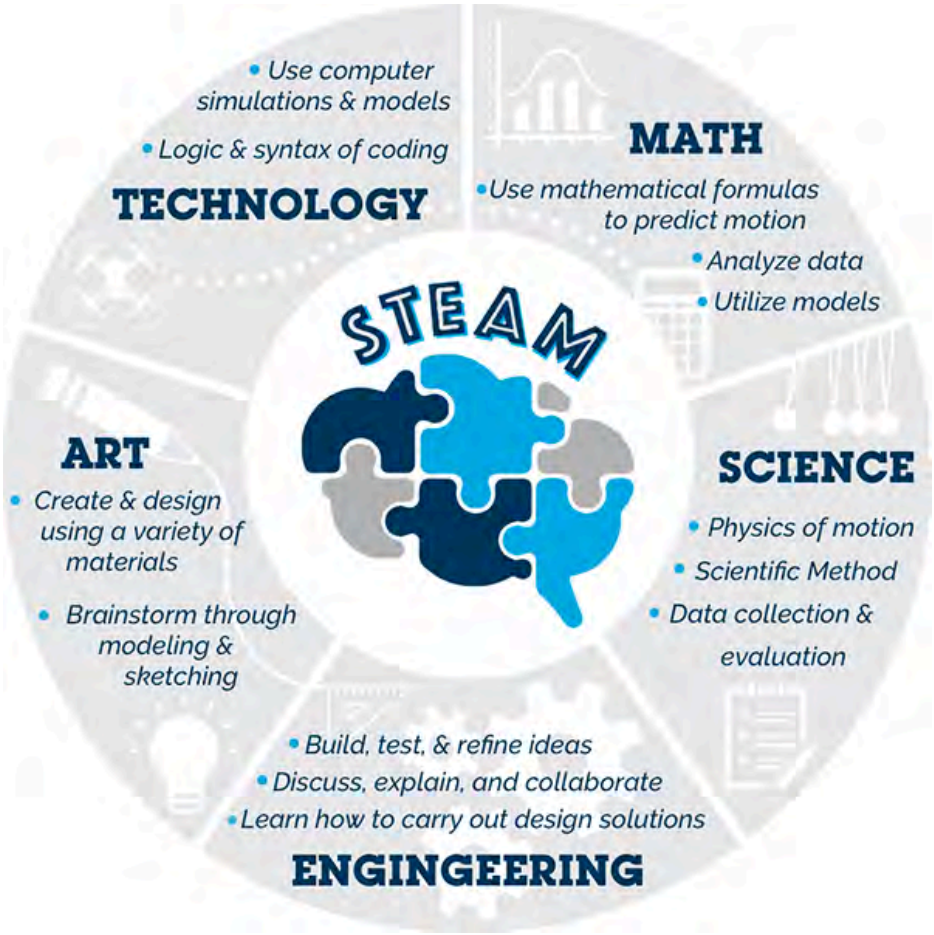
Contact us for a Private Demo

Curriculum

Curriculum is an important part of the DroneBlocks experience. While the DroneBlocks app is a blank canvas for programming autonomous flight, we also provide in-depth curriculum that guides users through all aspects of responsible drone use. Our curriculum covers safety, regulations, and the real-world applications of drone technology. We offer various courses that demonstrate what can be done the powerful Tello and Tello EDU micro drones.

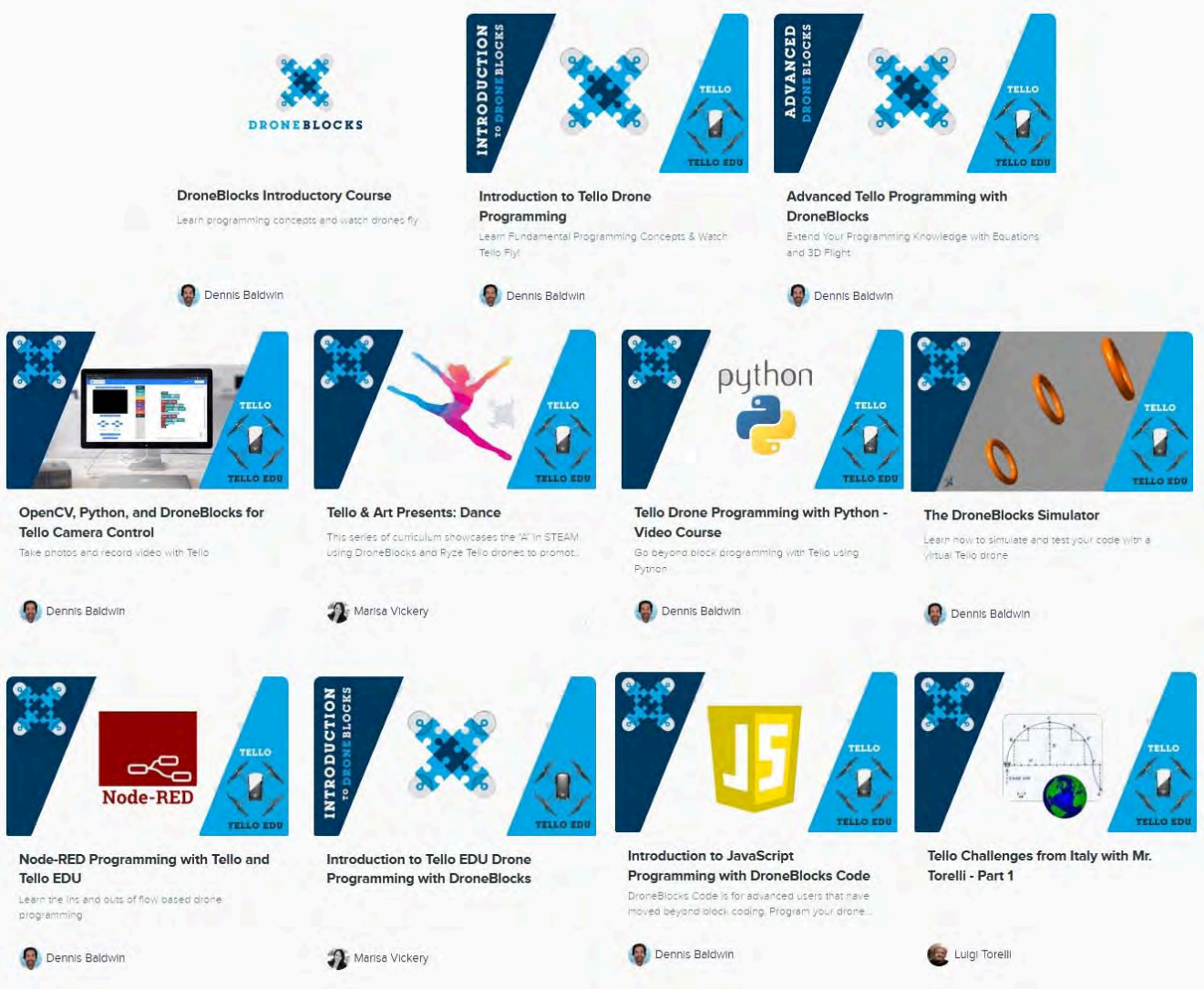
Coding Languages to Learn

- **Droneblocks (Block-Coding)**
- **Python**
- **Node-JS**
- **JavaScript**



Key Advantages

- 75+ Cloud Based Lessons and videos
- Clear lessons that build upon each skill introduced
- DroneBlocks lessons are aligned to include universal education standards, including CCSS, NCTM, TEKS, NGSS, and ISTE
- True STEM/STEAM applications across all subjects
- Open Source – Dynamic Block Based Coding engaging coding learners of all ages
- Compatible on iOS, Android, & Chrome
- Collaborative: we encourage & incorporate feedback from students, teachers & developers



Professional Development

Our one on one sessions are there to assist educators, walk through curriculum, and build user confidence. With the use of brain-based learning and coaching models we create positive outcomes across education and professional development communities, where technology is used as a tool for supporting more productive and engaging STEAM learning experiences.

Virtual Sessions hosted by our Microsoft Global Training partners prepare educators from all skill levels on facilitating a class with drones. Educators will learn the ins and outs of the drone technology from capabilities to troubleshooting techniques to ensure as little downtime as possible during class. Courses are available in 2 hours blocks, more time means more detail, practice, and time for questions.

Topics include:

- What are the educators needs?
- Updating the drone & troubleshooting
- Connection & flights
- Block coding & introduction to DroneBlocks
- Introduction to edu.droneblocks.io
- Simple & Complex flight plans
- Application using Python

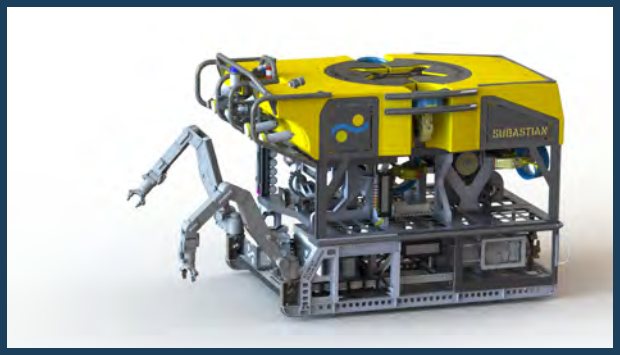
SCHMIDT OCEAN INSTITUTE

WWW.SCHMIDTOCEAN.ORG

SCHMIDT OCEAN INSTITUTE

4500 M REMOTELY OPERATED VEHICLE (ROV)

CHECK IT OUT HERE



MAPPIN' THE FLOOR

CHECK OUT THIS COMIC

WHY WE SAMPLE

CHECK IT OUT HERE

ROV SuBastian Animated Tour

WHY WE EXPLORE

CHECK IT OUT HERE

Video 1 - Developing a Scientific ROV

Video 2 Meet the Team

Video 3 - Designing the ROV

Video 4 - The Manipulator Arms

Video 5 - Under Pressure

Video 6 - Connecting the ROV to Falkor

Video 7 Foam & Pressure ROV

Video 8 - Building the Frame

Video 9 - Loading the Frame ROV

Video 10 - Sam Van ROV

Video 11 - Packing Up The ROV

Video 12 - Tank Testing the ROV at MBARI

Video 13 - Integrating ROV SuBastian onto Falkor

Video 14 - Preparing ROV SuBastian for a Dive

Video 15 - ROV SuBastian Diving into the Deep

Video 16 - ROV SuBastian Reaching to 4500m

IT'S ROCKET SCIENCE

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WORLD OF DRONES & ROBOTICS CONGRESS 2020

IT'S ROCKET SCIENCE

IT'S ROCKET SCIENCE: IN A BOX

WHAT'S INCLUDED:

Your subscription includes:

- Hardware: 2x launchpads, 2x measuring wheels, 1x pump, 1x silicone spray, 1x box
- Bottle rocket starter kit: 30 bottles, fins and nose cones
- Online learning: full access to our e-learning portal with curriculum resources
- Setup video and guides, safety video and risk assessment templates

Learning pathways - Australian Curriculum driven programs

Primary

Prep/Foundation: PC On the Move; C2C Move It, Move It

Year 1: PC Schoolyard Safari; C2C Living Adventure

Year 2: PC Physical Science – Push Pull; C2C Toy Factory

Year 3: C2C Design and Technologies

Year 4: C2C Fast Forces

Year 5: Earth's Place In Space

Year 6: Probability and statistics

Secondary

Physical sciences - forces: Physics, Forces & Flight

Physical sciences - motion & accelaration: Speed & Velocity

Sustainable design and technology: Junk Pile Engineers

VALUE FOR MONEY

Our subscriptions are excellent value for money. Borrow the Box for **1 month, 1 school term, or 12 months**.

It's Rocket Science In A Box can be used again and again to provide fun and practical application to curriculum topics including forces, measurements, motion, space science, energy transfer… and more.

- Perfect to introduce key learning areas or reinforce curriculum units
- Additional online resources and worksheets to extend learning
- Ideal for fundraisers and end of term events
- Reliable and safe equipment for all ages and abilities

Call: 0401 217 052
Email: bookings@itsrocketscience.com.au

IT'S ROCKET SCIENCE

WWW.DRONELEGENDS.COM

WORLD OF DRONES & ROBOTICS CONGRESS 2020

You want your kids to be ready for the careers of tomorrow. So we created Drone Legends, an exciting educational program that uses drones as interactive and engaging teaching tools. The Drone Legends experience gives children valuable skills in the burgeoning drone services field and computer coding; skills they'll need to succeed in the 21st Century!

DRONE LEGENDS

DRONE STEM CLUBS

www.dronelegends.com

Inside Every Child Lives a Legend

Drone Legends is a unique drone flight training, aerial cinematography, and computer coding drone club curriculum designed specifically for girls and boys ages 9-13. There is nothing else like it!

We place equal emphasis on teaching kids about drones, drone technology, and how to competently and correctly pilot a drone as it does on coding and programming fundamentals. There are many reasons behind this model. Here are just a few:

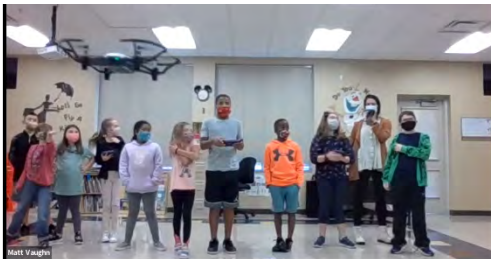
- Teaching kids how to properly fly a drone builds their confidence and allows them to get the most value out of their drone.
- Learning to fly gives kids the freedom to explore the technology while having fun!
- Drones are the future. They are being used in nearly every industry imaginable, from agriculture, medicine delivery and surveying, to Hollywood blockbuster cinematography.

We are developing the drone innovators of tomorrow!

Coding with a drone? Yes! We use an incredible little programmable drone called the Tello. Tello allows us to teach kids the basics of programming while having fun with a flying machine. By the very first class your kids will program their own flight patterns with Tello, commanding it to perform fully autonomous flight missions! Now that they are expert pilots, they will spend countless hours flying their drone, capturing aerial video and photographs long after the program is completed!

Your child's participation in Drone Legends will enable them to:

- Competently pilot a drone.
- Understand and identify the many ways drones are making a positive impact on society from medicine delivery to first-responder support.
- Understand film creation and editing fundamentals, and create their very own aerial movies! Great to share with family and friends!
- Create autonomous flight coding/programming missions including "repeat loops/refactoring", variables and logic statements (introduction to artificial intelligence).



WORLD OF DRONES & ROBOTICS® CONGRESS 2020

INSTRUCTIONAL

flythefarm

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WORLD OF DRONES & ROBOTICS CONGRESS 2020

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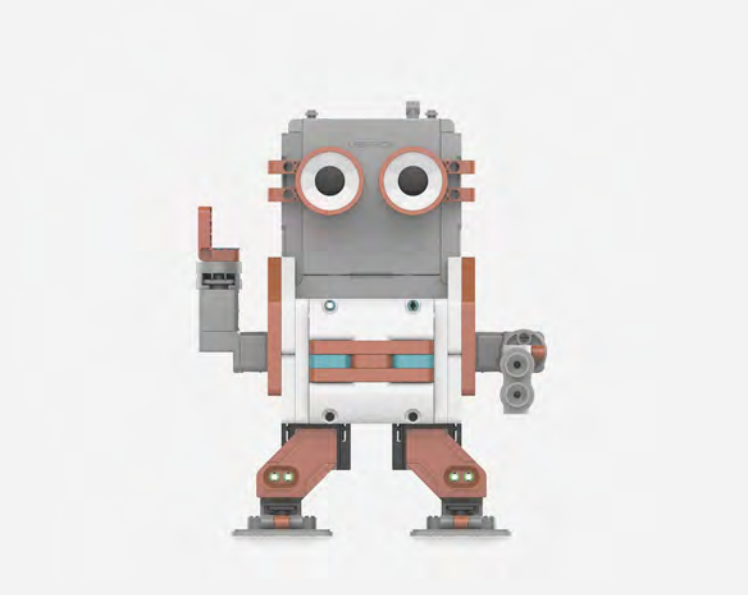


STEM Offering

DJI

UBTECH

www.flythefarm.com.au

flythefarm

STEM Offering

UBTECH

Jimu robot

Small project STEM Kits for students. From Prep to Grade 6. Each kit has a step by step guide on how to assemble the robot (using your tablet or phone). Once built, the scratch platform can be used to write programs for the robot to follow.

flythefarm

STEM Offering

uKit is a programmable building block kit. Students easily access the coding world with its APP dynamic instruction. The hundreds of parts allow creative construction of many different models.

UKIT Entry Pack
Elementary school
36+ course hours
309 components and parts
20+ official models
4 servos

UKIT Advanced (Extension Pack)
Elementary school (middle-grade)
20+ official models
4 servos / 2 sensors
36+ course hours
Bluetooth speaker / LED lamp
479 components and parts

uKit Explore
Senior/FET Phase
60+ course hours
600+ components & parts
34+ official models
16 servos / 4 sensors
Bluetooth speaker - LED lamp

www.flythefarm.com.au

flythefarm

STEM Offering

Alpha 1 Pro is a programmable humanoid robot that can be used for education and entertainment. This perfectly designed robot has high-precision servo joints, 3D visual programming software and PRP (Pose, Record & Playback) function. These are seamlessly controlled in one App. The Alpha 1P's life-like human movements makes it appear to be a member of the family.

The Alpha Mini robot is highly portable. It brings fun interactions, has a wealth of expressions and functionality. Alpha Mini has voice interaction, 4G LTE connectivity, face recognition, illustrated book recognition and object recognition.

Yanshee combines an advanced AI interface, a programmable Raspberry Pi card and a host of sensors and functionality. This unique combination creates the ultimate open source platform for students and educators to learn, experiment, research and engage. The Yanshee app provides a fun and inviting environment where students can program the robot to interact with the world around it. Yanshee is open source and supports multiple programming languages, including Java, C/C++, Blockly, Perl, and Python, making it the perfect partner whether students are just learning to code or diving deep into robotics and AI. High school and university students can take advantage of Yanshee's functionality a comprehensive Raspberry Pi computer with more than 6 included sensors, 17 servos for precision movement, and a fully extensible architecture.

www.flythefarm.com.au

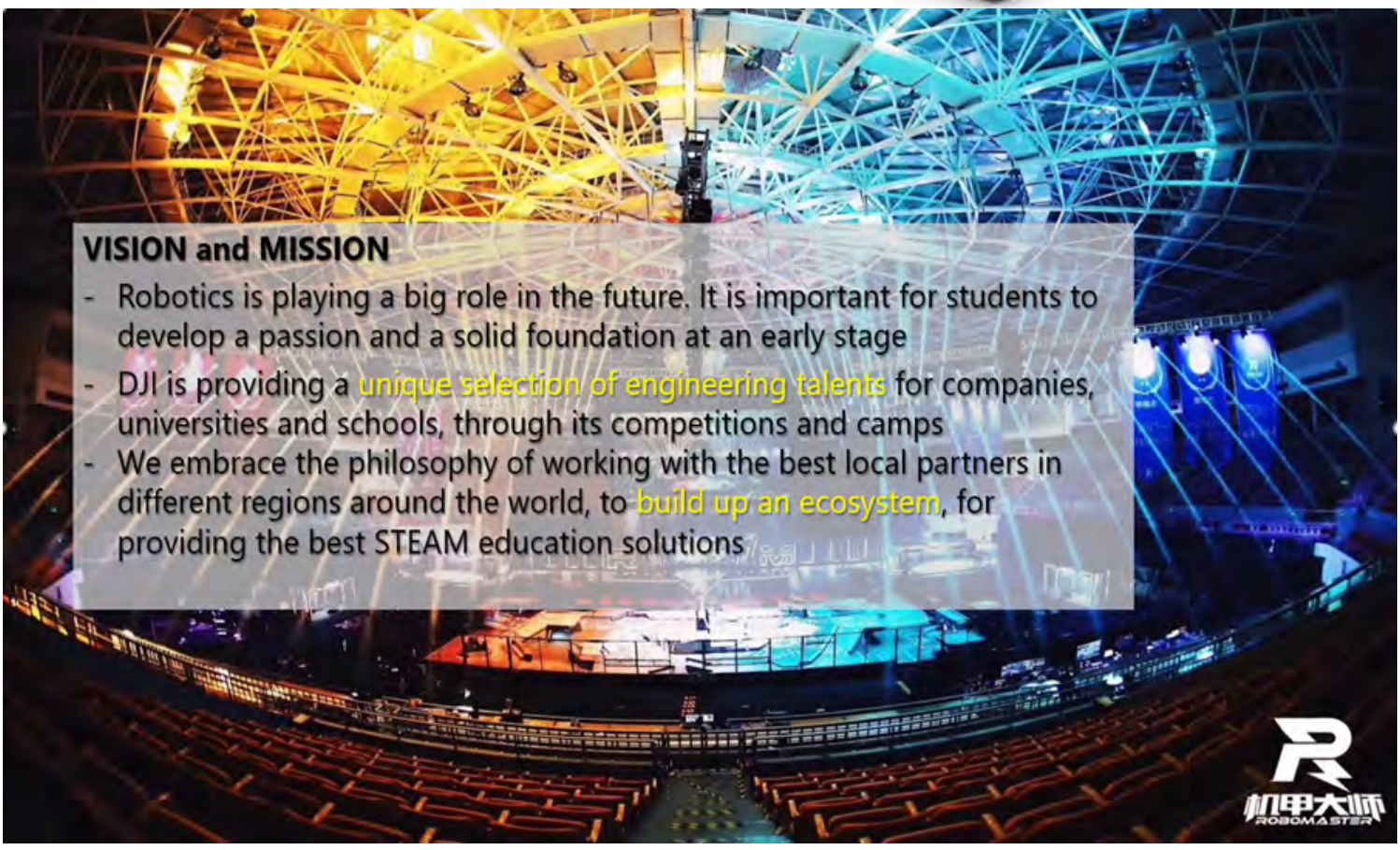
flythefarm

STEM Offering

DJI EDUCATION

DJI Tello EDU

DJI RoboMaster EP



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C.R.Kennedy
CONSUMER DIVISION

2020
The year of
Working Smarter

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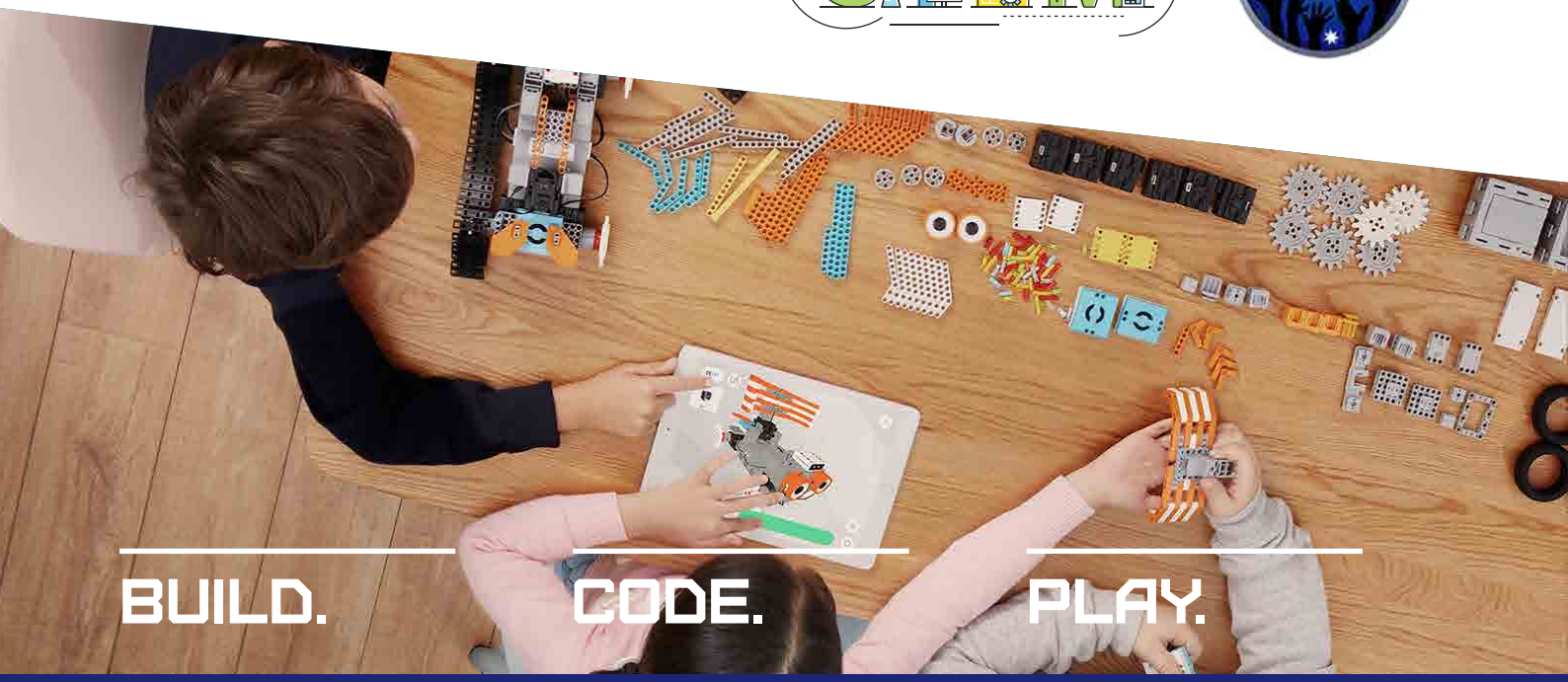
UBTECH
ASTRO CHALLENGE

RATIONALE FOR THE CHALLENGE

- To increase the participation of school aged students in innovative, engaging and creative STEM robotics and coding learning experiences.
- To support the growth of creative thinking in children to enhance their future opportunities.
- To develop skills for future workforce, such as teamwork and collaboration.
- To inspire and equip participants to achieve anything they can imagine.



Contact C.R. Kennedy for more information:
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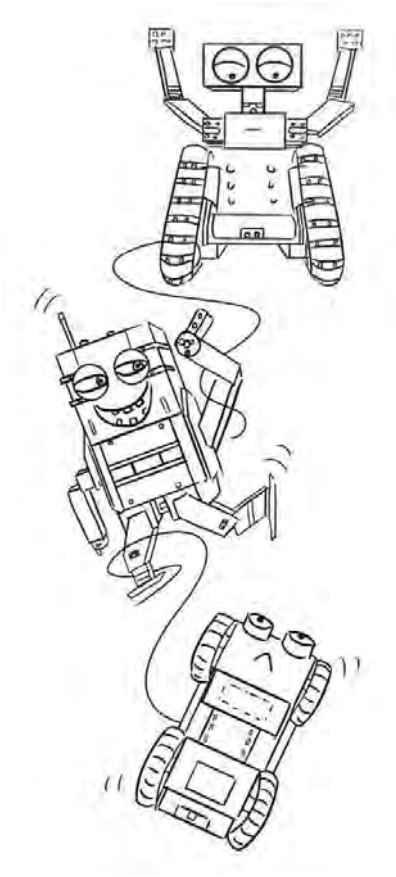
UBTECH



WHY ROBOTICS?

Robotics provide a real-world context of discovery and learning that leads to engaged, active problem solvers of all ages. By combining practical experiences in engineering and mechanics, this program allows you to be a creator and designer, not just a user and consumer of technology.

COMMUNICATION

By using the UBTECH Robot kits, important communication skills will develop – explaining ideas, describing the process and challenges along the way.

PERSEVERANCE

Using UBTECH kits encourages persisting with a task to see the vision realised. Having a go, taking time and perseverance to complete the challenge will give an immense satisfaction when the completed work is successful. This has an immensely positive affect on one's confidence and self-esteem.

CODING FUNDAMENTALS

Programming can be too abstract. By having to control a physical robot and seeing what goes wrong, we can learn what UBTECH robots are able to do. Very quickly it is recognised that precise instructions are required.

WHY UBTECH ROBOTS?

Our robotics programs establish the strong foundation students need to thrive. We have created a high-quality STEM program integrated with the development of 21st century skills and computational literacy. UBTECH robots will spark greater curiousity, innovation and ingenuity in all ages.

JIMU ROBOTS AND SPACE

Blast off into a robotic galaxy to build one of three robots in the AstroBot Kit. This interactive, building block system takes creativity and learning out into the stratosphere! The kit comes with 387 interlocking and interchangeable parts - everything needed to create AstroBot, Rover, Astron or even your own creation.

TO START:

1. Open the kit and lay all the components out on a clear, flat space.
2. Download the app - **BEING CAREFUL TO CHOOSE THE CORRECT KIT!**
3. Follow the instructions to build.
4. Register and log in – unlock your robot through the Learning Modules.
5. Once you have opened all 8 padlocks – you are now ready to take part in our unique **'out of this world'** challenge!

UBTECH

THE UBTECH ASTRO CHALLENGE

The UBTECH Astro Challenge is an 'out of this world' programming challenge that aims at providing an innovative and creative program, whilst utilising the unique robots from UBTECH.

We can send robots to space without worrying about their safety. It is much cheaper than training and sending a human. Robots can do many things that humans cannot do. Some can withstand high levels of radiation, extreme temperature or harsh conditions. We also need the robots to be robust and designed to complete many tasks.

This challenge has been designed to simulate the development of robots to explore our universe. Each challenge is in 3 parts. Your choice is the Moon or Mars.

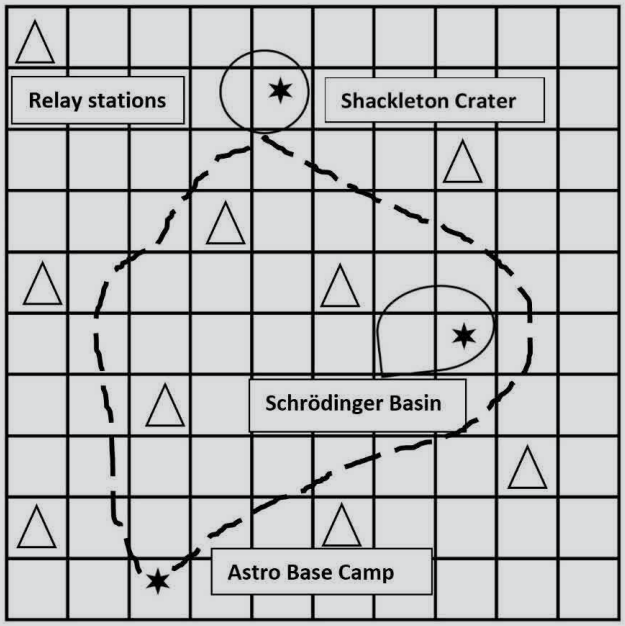
MOON MADNESS

Part 1 Using the scale model of the Lunar surface, code Astron to walk the Lunar surface in 1/6th gravity.

Part 2 Design and build an ice sample carrier to retrieve samples from Shackleton Crater – an icy crater on the South Pole of the Moon. Place the carrier at the crater.

Part 3 Send out Astrobot to retrieve the ice sample from Shackleton Crater and bring it back to base camp. (Code would take some time – just driving would be easier.)

Create a 2 – 3 minute video of your Moon or Mars Astro Challenge and upload to the website: **onegiantleapfoundation.com.au/ubtech**



BUILD. CODE. PLAY.

UBTECH

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This challenge has been designed to simulate the development of robots to explore our universe. Each challenge is in 3 parts. Your choice is the Moon or Mars.

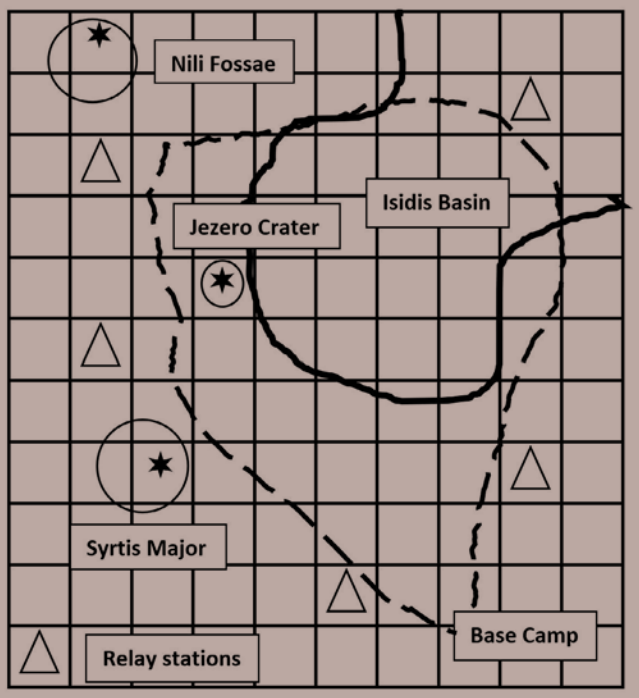
MARTIAN MAYHEM

Part 1 Using the scale model of the Martian surface, code Astron to walk the surface of Mars in 1/4th gravity.

Part 2 Design and build a model of a series of solar panels to be used in the area between Nili Fossae and the Jezero Crater.

Part 3 Send out Rover to deliver the solar panel array and come back to Base Camp. (Code would take some time – just driving would be easier.)

Create a 2 – 3 minute video of your Moon or Mars Astro Challenge and upload to the website: **onegiantleapfoundation.com.au/ubtech**



BUILD. CODE. PLAY.

AUSTRALIAN CURRICULUM

GRADE 5 AND 6

STANDARD IDENTIFIER	LEARNING AREA	STANDARD DESCRIPTION
ACTDIP019	Digital Technologies	Design, modify and follow simple algorithms involving sequences of steps, branching and iteration (repetition).
ACTDIP020	Digital Technologies	Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input.
ACMMG108	Mathematics	Choose appropriate units of measurement for length, area, volume, capacity and mass.
ACMMG113	Mathematics	Use a grid reference system to describe locations. Describe routes using landmarks and directional language.
ACMMG137	Mathematics	Solve problems involving the comparison of lengths and areas using appropriate units.
ACELY1703	English	Use comprehension strategies to analyse information, integrating and linking ideas from a variety of print and digital sources.
ACELA1524	English	Identify and explain how analytical images like figures, tables, diagrams, maps and graphs contribute to our understanding of verbal information in factual and persuasive texts.
ACSSU078	Science	The Earth is part of a system of planets orbiting around a star (the sun).
ACSHE083	Science	Scientific knowledge is used to solve problems and inform personal and community decisions.
ACSIS218	Science	Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate.
ACSIS110	Science	Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts.

YEAR 7 AND 8

STANDARD IDENTIFIER	LEARNING AREA	STANDARD DESCRIPTION
ACTDIP030	Digital Technologies	Implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language.
ACTDIK023	Digital Technologies	Investigate how data is transmitted and secured in wired, wireless and mobile networks, and how the specifications affect performance.
ACTDIK024	Digital Technologies	Investigate how digital systems represent text, image and audio data in binary.
ACMNA173	Mathematics	Recognise and solve problems involving simple ratios.
ACMNA189	Mathematics	Solve problems involving profit and loss, with and without digital technologies.
ACELY1728	English	Use a range of software, including word processing programs, to confidently create, edit and publish written and multimodal texts.
ACELY1738	English	Use a range of software, including word processing programs, to create, edit and publish texts imaginatively.
ACSIS133	Science	Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate.

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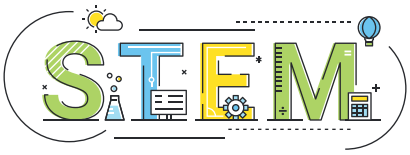
UBTECH

PROGRESSIVE STUDY FOR ALL GRADES:

From primary, secondary to university students.

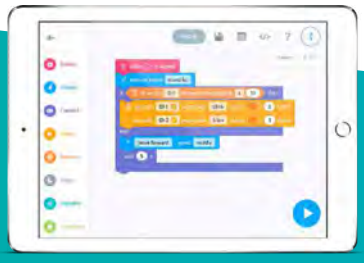
LINKING AI WITH THE REAL WORLD:

The APP is used as a tool and means, from a hands-on experience, problem-solving. Once a robot is built the student then learns basic programming skills through the scratch program. Combining Science, Technology, Engineering and Mathematics (STEM).



RICH TEACHING RESOURCES:

Covering lesson plans, textbooks, teacher's handbooks, teaching kit & programming software.



ANDROID APP ON Google play

Download on the App Store

DOWNLOAD THE APP

Use a compatible iOS or Android device to download the JIMU Robot app. Share or discover new models and connect with other creators in our international robotics community.

BUILD.

BUILD YOUR ROBOT

Choose to build either the robot using the 3D, 360° animated instructions that will guide you through each step of construction. You can also choose to build your own JIMU robot.

CODE.

PROGRAM YOUR ROBOT

Blockly coding makes programming simple and fun. Drag-and-drop interlocking blocks of customisable sequences to make your JIMU robots navigate obstacles, pick-up objects, control light and sound effects, show emotions, and more.

PLAY.

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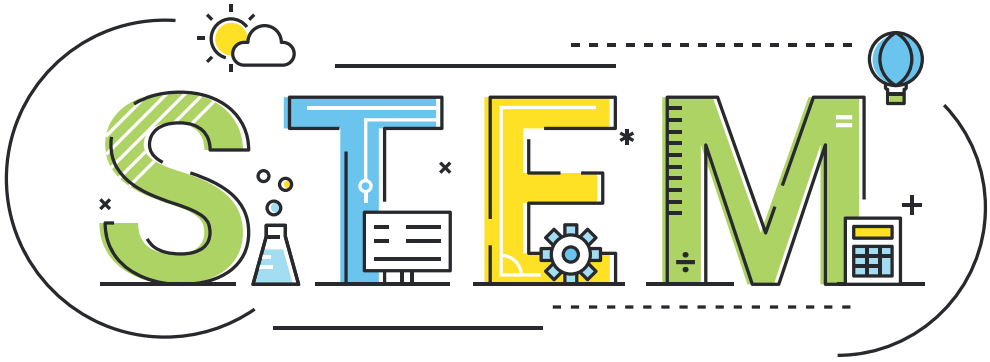

WHAT IS STEM?

STEM stands for science, technology, engineering, and mathematics. STEM is important because it pervades every part of our lives. Science is everywhere in the world around us. Technology is continuously expanding into every aspect of our lives. Engineering is the basic designs of roads and bridges, but also tackles the challenges of changing global weather and environmentally-friendly changes to our home. Mathematics is in every occupation, every activity we do in our lives. By exposing students to STEM and giving them opportunities to explore STEM-related concepts, they will develop a passion for it and hopefully pursue a job in a STEM field. A curriculum that is STEM-based has real-life situations to help the student learn. Programs like Engineering For Kids integrates multiple classes to provide opportunities to see how concepts relate to life in order to hopefully spark a passion for a future career in a STEM field. STEM activities provide hands-on and minds-on lessons for the student. Making math and science both fun and Interesting helps the student to do much more than just learn.

WHY STEM

The Australian Government regards high-quality science, technology, engineering and mathematics (STEM) education as critically important for our current and future productivity, as well as for informed personal decision making and effective community, national and global citizenship .

The Government is committed to improving the STEM skills of young Australians to ensure that they have the skills they need to live and work in a globalised world.

Over $64 million allocated to fund early learning and school STEM initiatives under the Inspiring all Australians in Digital Literacy and STEM measure of the $1.1 billion National Innovation and Science Agenda.

- $1.5 million to support the delivery of Artificial Intelligence in Schools, under the Australian Technology and Science Growth Plan, as part of the $29.9 million Artificial Intelligence Capability Fund measure.
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- $2.35 million for the extension and expansion of Curious Minds (STEM Summer Schools for Girls) over four years under the Women's Economic Security Package.

Contact C.R. Kennedy for more information:
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email sales@crkennedy.com.au | **web** crkphotoimaging.com.au

UBTECH

SCOREBOT

This kit includes everything you need to build a real shoot-and-score, interactive football robot. ScoreBot is designed to be your robotic football playing companion. The ScoreBot Kit is your exclusive champion shooting football robot which can be built, programmed and driven all by you!

3D APP BUILDING GUIDANCE DELIVERS HANDS ON FUN!

The visual aspect of building the ScoreBot Kit through the free JIMU App offers a fresh and immersive experience for both first time and experienced builders. The step by step instructions are easy to follow that makes the building process fun.

BUILD. CODE. PLAY.

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UBTECH

Bring the magic of robotics home with the Mythical Series: UnicornBot Kit. This buildable, codable UnicornBot kit comes with everything needed to build and program your own magnificent unicorn. Activate the color sensor and smooth motion servos to make UnicornBot drive, dance, play and more. Kids can even program the brilliant LED horn with a wide selection of custom colors! UnicornBot is the perfect introduction to coding and programming for kids who love mythical creatures. Always inspiring creativity, the JIMU Robot system motivates kids to explore robotics and STEM learning. Smart Robots. Smarter Kids.

3D APP BUILDING GUIDANCE DELIVERS HANDS ON FUN!

The 3D app once downloaded onto your smart device will guide you through a step by step process to assemble the Robot. Then use the Scratch program to code and play.

BUILD. **CODE.** **PLAY.**

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UBTECH

Create Your All-Star

COURTBOT

This kit includes everything you need to build either ShootBot, DunkBot, or DumperBot. Basketball to Football - CourtBot has you covered. With sports in its DNA, the CourtBot Kit provides you with endless fun, learning, and robotic competition with friends.

BLOCKLY CODING MADE EASY!

The blocked-based drag and drop programming editor lets users of all levels create custom programmed sequences. Program the robot to shoot, score, drive and more all using Blockly Coding.

BUILD. CODE. PLAY.

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UBTECH

TRACKBOT

This kit includes everything you need to builder either GrabberBot or DiggerBot - or build your very own JIMU Robot creation. The high speed motor ensures realistic, linear movement and the colorful LED light gives your robot a little personality that can show off different emotions based on what you program it to do.

3D APP BUILDING GUIDANCE DELIVERS HANDS ON FUN!

The visual aspect of building the TrackBot Kit through the free JIMU App offers a fresh and immersive experience for both first time and experienced builders. The step by step instructions are easy to follow that makes the building process fun.

BUILD. CODE. PLAY.

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UBTECH

ASTROBOT

Blast off into a robotic galaxy to build one of three robots in the AstroBot Kit. This interactive, building block system takes creativity and learning out into the stratosphere! The AstroBot Kit comes with everything needed to create AstroBot, Rover, Astron or even your own creation. Program and code these robots to explore, move, and more with five smooth robotic servos, two LED eyes, a Bluetooth speaker, and an infrared sensor. Al-ways inspiring creativity, the JIMU Robot system motivates kids to explore robotics and STEM learning. Smart Robots. Smarter Kids.

3D APP BUILDING GUIDANCE DELIVERS HANDS ON FUN!

The 3D app once downloaded onto your smart device will guide you through a step by step process to assemble the Robot. Then use the Scratch program to code and play.

BUILD. **CODE.** **PLAY.**

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UBTECH

WARRIORBOT

WarriorBot is an intelligent battle robot with leveled building and programing learning system, providing users with an in-depth understanding of science, math, physics, programming, and more through captivating gameplay modes and intelligent features.

BUILD. CODE. PLAY.

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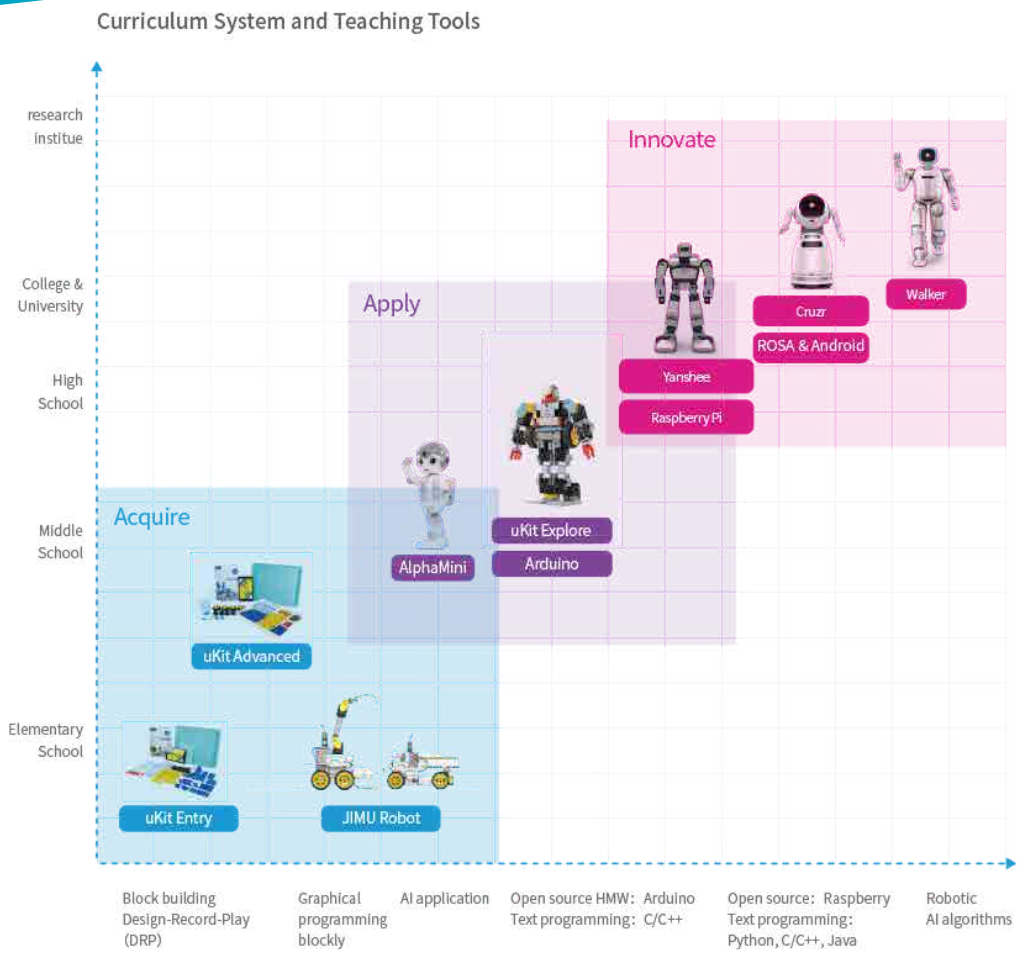
UBTECH



Jimu robot





	SCOREBOT	TRACKBOT	COURTBOT	UNICORNBOT	ASTROBOT
Recommended Age	8+	8+	8+	8+	8+
Parts and Connectors	261	198	500+	440	387
Pre-Designed Characters	1	1	3	1	1
Special Features	1 UltraSonic Sensor	1 Infrared Sensor	1 UltraSonic Sensor	1 Color Sensor, 1 RGB Light-up Uni-corn Horn	2 LED Lights, Blue-tooth Speaker
Digital Servos	1	6	3	2	5
Blockly-Based Coding	✓	✓	✓	✓	✓
Compatible with JIMU Robot App	✓	✓	✓	✓	✓

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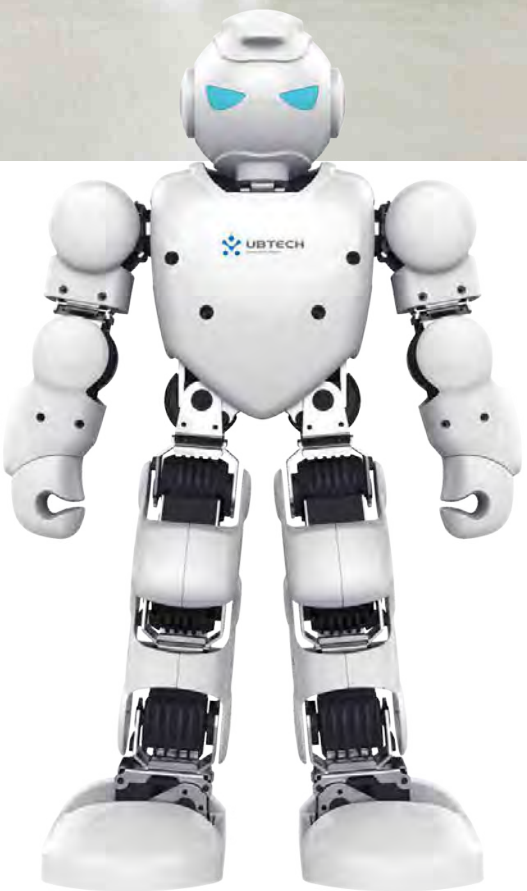
UBTECH

ALPHA 1 PRO

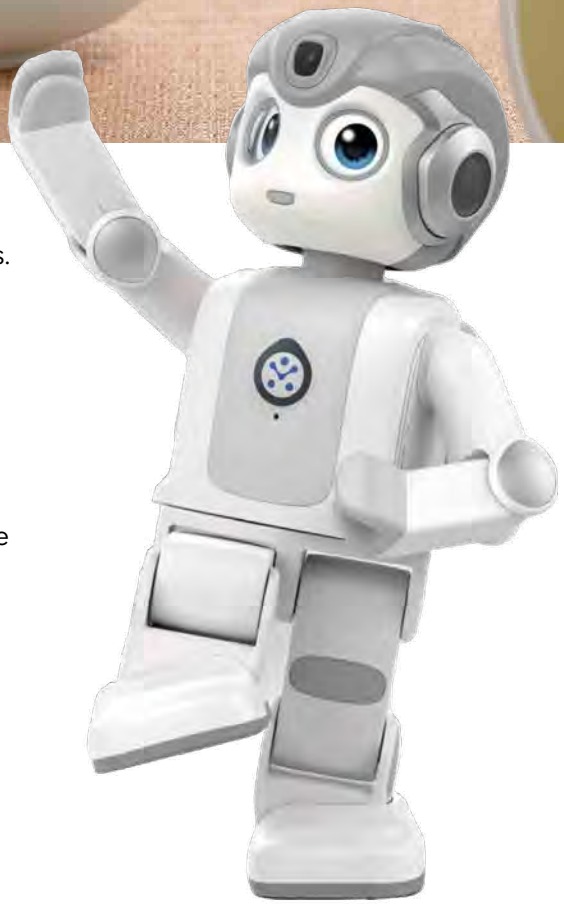
Alpha 1 Pro is a household programmable humanoid robot that can be used for education and entertainment. This robot has perfectly designed, high-precision servo joints, 3D visual programming software and PRP (Pose, Record & Playback) function are seamlessly controlled in one App. Alpha 1P's life-like human movements make it a member of the family.



CODE. PLAY.

UBTECH

ALPHAMINI



Your Intelligent Companion robot is here, ready to befriend, entertain, teach, and communicate in a wide variety of scenarios. Alpha Mini is highly portable, bringing fun interactions and a wealth of expressions and functionality, including voice interaction, 4G LTE connectivity, face recognition, illustrated book recognition, and object recognition. Fourteen servo motors power a variety of flexible movements, such as dancing, kung fu, and getting up after a fall, while the adorable LCD eyes can show emotion and expressions – making Alpha Mini feel like a true part of the family.

CODE. PLAY.

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UBTECH

YANSHEE

Yanshee is an ideal educational robot designed to provide the ultimate open-source platform for educators and students to learn, experiment, research and engage with.

Standing at nearly 15 inches tall, Yanshee combines an advanced AI interface, a programmable Raspberry Pi card, and a host of sensors and functionalities. All these enable Yanshee to perform tasks on command, test environmental conditions, speak, listen, thoughtfully answer questions, and relay data.

WHY AI ROBOTIC EDUCATION?

In the fourth industrial revolution, AI mindset and computer science skills are needed more than ever. AI talents will inevitably become the foundation of a country's AI development and the core power source be-hind competitions among countries. And now is the time to inspire them.

AI robot is the best carrier of AI technolo-gies. UBTECH robots can serve as a teaching assistant, student's learning companion as well as an essential teaching tool to make AI robotic curriculum work in the classroom.

DIVERSE CODING LANGUAGES

The open source nature of the platform means students can leverage multiple coding lan-guages – including C, C++, Python, Java and Blockly &Scratch– to collaborate and engage with Yanshee.

CODE. PLAY.

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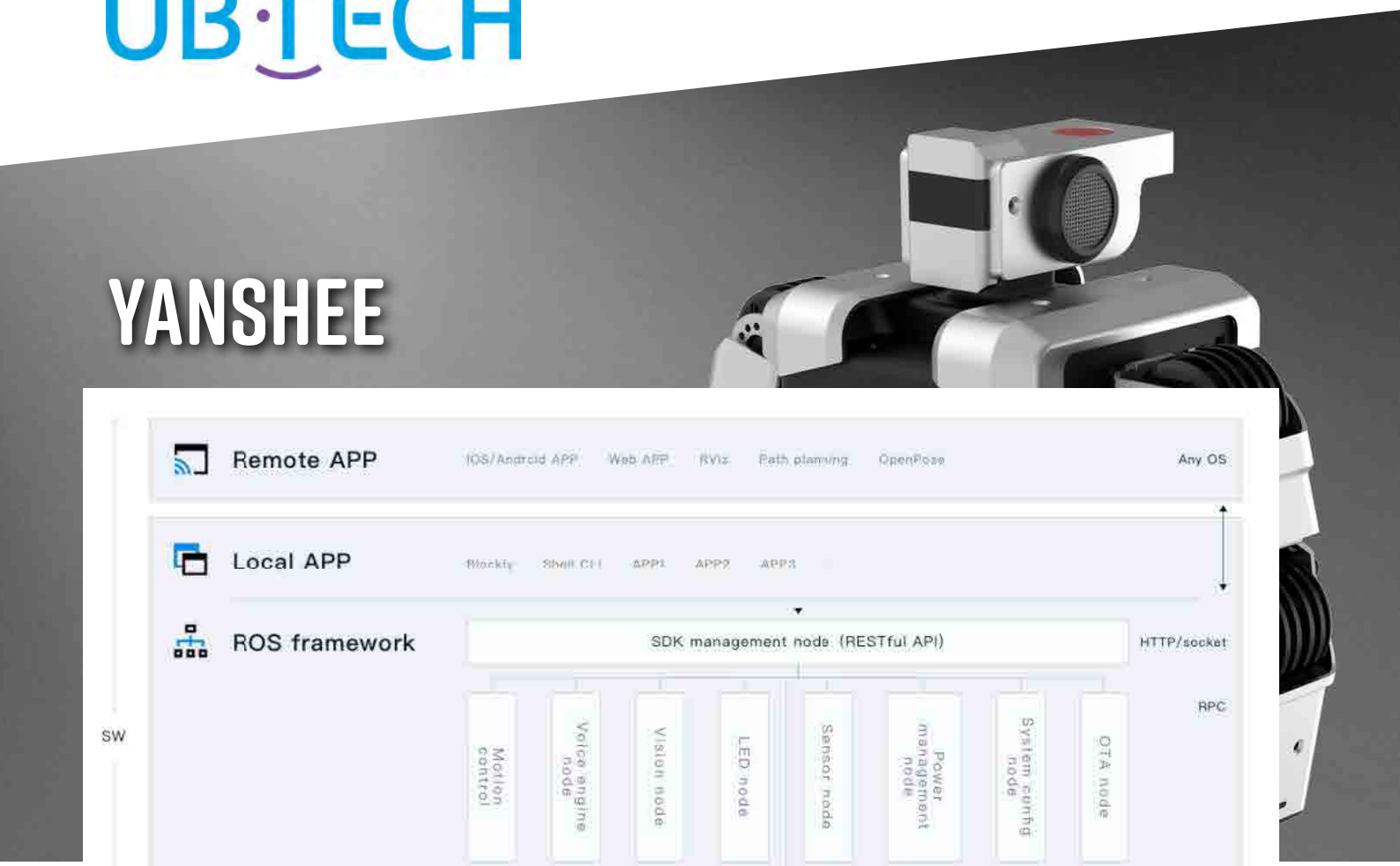
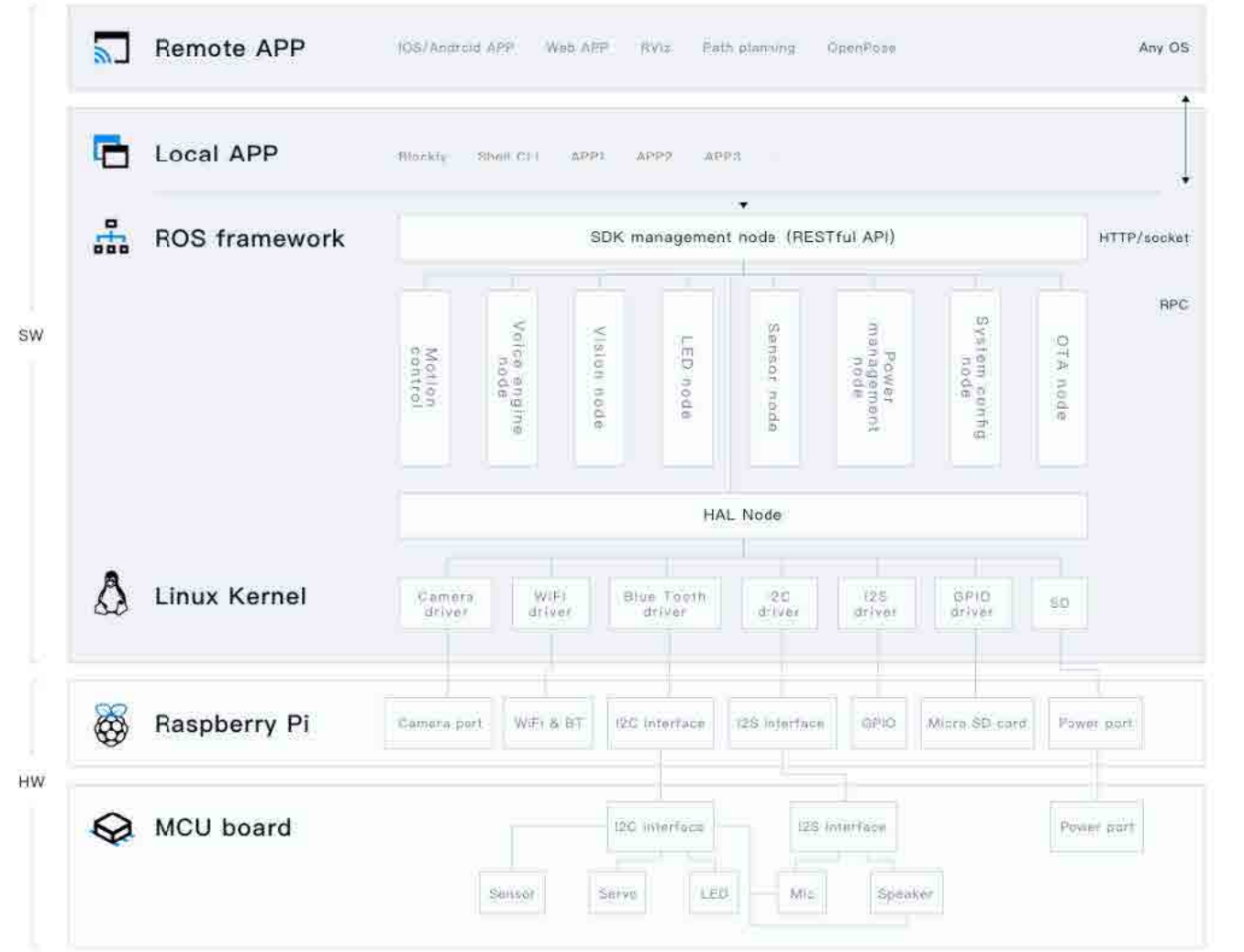
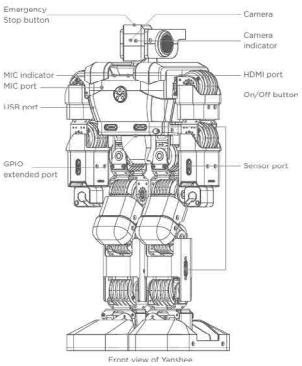
UBTECH

YANSHEE







CODE. PLAY.

Press release

Lost for words

Imagine coming home from school and there is a knock on the door. Your mum opens the door and a stranger walks in and gives you a cheque for $4,000 and a robot. This is exactly what happened to Luke Aylmore from Western Australia.

He recently received a wonderful surprise when Andrew Waddington turned up at Luke's home to present him with an UBTECH scholarship. The scholarship is to assist Luke to achieve a long-held dream to go with One Giant Leap Australia on their Space Camp USA Tour in 2021. Andrew also presented Luke with one of UBTECH's robot kits. Andrew said, “It was wonderful to see the excitement in Luke’s eyes when we were able to fulfill one of his dreams. It is one of those moments I will never forget!”

The One Giant Leap Australia Foundation actively searches for scholarships to assist students to attend its life changing opportunities. This scholarship was made possible by UBTECH and Jeff Bethell from CR Kennedy.

Jeff says, “I am very proud to be part of a business and organisation that not only supports the youth of today, but we are educating them for tomorrow and beyond! It is such a humbling moment to assist Luke in achieving his dreams. I am extremely lucky to be able support One Giant Leap Australia Foundation and their goals. I wish Luke the very best and hope this small amount of support will help him with his dreams!”

Luke's mum, Julia, was notified by phone and had to keep the scholarship a secret. “Honestly, I could barely put a sentence together I was so overwhelmed. Our family is going through a very difficult period at the moment and without the determination of Jackie and the generosity of Jeff Bethell, this is an opportunity that Luke simply would not have had. Ever since Luke was little he has been fascinated by everything to do with space and flying. I often find him at his computer on the Kerbal Space Program simulator building a space station or practicing his approach and landing on Mars. I simply can’t express my gratitude for the wonderful people at One Giant Leap Australia Foundation and UBTECH for making this happen for Luke. “

Luke, a Royal Australian Air Force Cadet, wants to become a pilot and for him attending the One Giant Leap Australia Space Camp Tour will literally be a dream come true. “I thought I had just missed out on the scholarship. I freaked out for a second when this man I’d never seen before walked into my computer room and handed me a plain white envelope. When I realised what was happening I was lost for words. I have always wanted to attend the One Giant Leap Australia Space Camp Tour and didn’t think that it was an option available to me. My shock has now turned to excitement and I seriously can’t wait!”

More scholarships will be on offer next year. To be kept informed of these opportunities register your interest at https://onegiantleapaustralia.com/space-camp/

Media Contact: Jackie Carpenter, Managing Director, One Giant Leap Australia Foundation
onegiantleap@bigpond.com/0412326509

DJI EDUCATION

FILL THE GAPS TO CREATE JOBS

It is also important for the younger generation to be properly educated about the technology in general, its safety regulations and the knowledge to **use them safely and ethically.**

The **development of skills** in drone and robotic technologies are meeting the requirements for operators and experts to provide services for different industries.

While the demand is growing, the program to **prepare the young generation for future jobs** in public safety, construction, infrastructure, energy, agriculture...

The program/partnership could help advance and promote **as an attractive destination for drone related education and vocational training** in the world.

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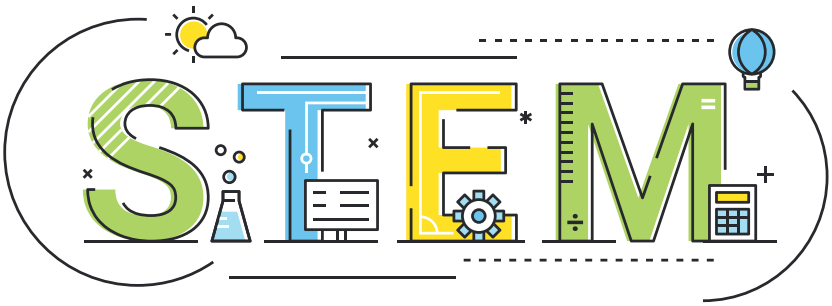
DJI EDUCATION



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DJI EDUCATION

TELLO EDU

ROBOMASTER EP

HARDWARE | COURSE | MATERIAL | APP | TEACHING TOOLS | COMPETITION

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DJI EDUCATION

TELLO EDU

ENTRY LEVEL SOLUTION

Tello EDU is an impressive and programmable drone perfect for education. You can easily learn programming languages such as Scratch, Python, and Swift. With an upgraded SDK 2.0, Tello EDU comes with more advanced commands and increased data interfaces. Complete with DJI's flight control technology, Tello EDU also supports Electronic Image Stabilization. Write code to command multiple Tello EDUs to fly in a swarm, and develop amazing AI functions. Programming has never been this fun with Tello EDU!

- 720P HD Transmission
- 5 MP Photos
- 13-min Flight Time
- Precise Hovering
- Program a Swarm of Drones
- Mission Pads Offer Multiple Fun Uses
- Multiple Flight Mode
- Unlock More Possibilities with SDK

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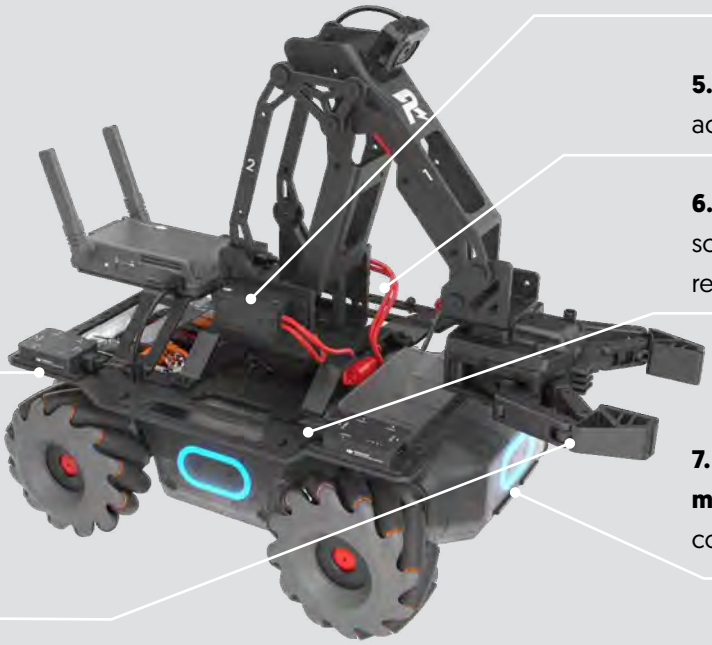
DJI EDUCATION

1. Additional sensors (such as trigger sensors, infrared sensors): to increase the number of categories of data **input**

2. Sensor adaptors: to accommodate new sensors

3. Mechanical Gripper: to replace the blaster and transform the S1 into a new shape



4. Servo: to power more accessories

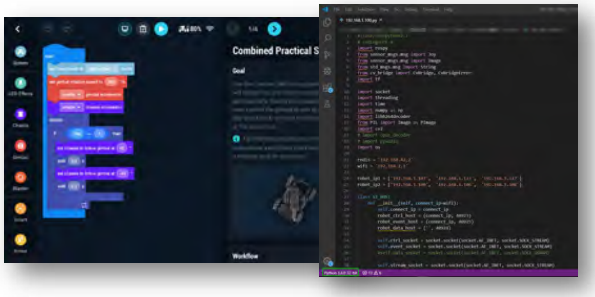
5. Cable package: to accommodate more accessories

6. Building blocks: to help build some mechanical structures and realize more mechanical functions.

7. Internal Power management modules: to power 3rd party components

ROBOMASTER EP

ROBOMASTER SOFTWARE PLATFORM



WEB ACCESSIBLE PLATFORM

MACHINE-GRADED EXAMS

DJI EDUCATION

ROBOMASTER EP

CORE COURSE - SYLLABUS

Chapter 1: Intro to Robotics

Chapter 2: Intro to Scratch Programming

Chapter 3: Controller - The “Brain” of a Robot

Chapter 4: Actuator - Move It Like a Jagger

Chapter 5: Chassis – Omnidirectional Movement

Chapter 6: Gimbal – Keep It Stable!

Chapter 7: Sensors – How Does It Feel?

Chapter 8: AI 101

Chapter 9: Image Recognition – Let It See

PRODUCT AVAILABLE

ITEM CODE	DESCRIPTION	EAN
DJIROBOMASTERP17	DJI RoboMaster S1 PT17 Gamepad	6958265191329
DJIROBOMASTERP19	DJI Robomaster S1 PT19 Playmore Kit	6958265188138
DJIROBOMASTERP9	DJI RoboMaster S1 PT9 Gel Beads V2	6958265188336
DJIROBOMASTERPT3	DJI RoboMaster S1 PT3 Battery	6958265188312
DJIROBOMASTERS1	DJI RoboMaster S1	6958265194412
DJIROBOMASTERS1E	DJI RoboMaster S1 Education Expansion Set	
DJITELLOEDU	DJI Tello Toy Drone EDU	6958265179297
DJITELLOEDUGPAD	DJI Tello EDU Guidance Pad	9319499097066

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Universal Standards

At DroneBlocks we understand that each province, region or school district adhere to a variety of skills and standards that are required to guide student learning. To best administer this array of standards, we have developed a universal indicator of the standards practiced throughout the DroneBlocks lessons. Skills developed in our lessons are summarized below to provide support for all educators (whether using CCSS, NCTM, TEKS, NGSS, ISTE, or other curriculum standards). We understand that you, the educator, are the professional in knowing which skills align with the lessons you teach.

SCIENCE

- Understand that force acts on an object and includes strength and direction, causing the object to move.
- Objects that appear to not be moving have multiple forces compiling to create zero force on the object.
- The motion of an object can be observed and measured.
- Investigate and test solutions to solve each challenge efficiently.
- Synthesize information from a variety of sources.
- Evaluate solutions, taking into consideration safety, reliability and impact.
- Observe, question, collect and evaluate data.

TECHNOLOGY

- Technology can be created and improved by the interconnection of Science, Mathematics, and Engineering.
- Utilize a variety of technology and resources to better understand concepts and solve problems.
- Develop comprehension of the logic and syntax that goes into building or coding a program through engaging in and elaborating upon activities.
- Simulate solutions to real-world problems using models and/or computer simulation.
- Program variables that represent quantities in mathematical problems.

- Write conditional expressions to create program logic using if-else statements.

ENGINEERING

- Improve and optimize results by identifying errors and using mathematics and technology to redesign and solve problems.
- Evaluate, use prior knowledge such as scientific processes and real-world problems, and troubleshoot to develop a solution.
- Discuss, explain, and collaborate to improve a product through iteration.
- Design a device that converts one form of energy into another by building, testing, and refining. Determine the best solution to accomplish a given challenge.
- Plan and carry out investigations and gain feedback through design process (design solutions).
- Construct arguments that provide a convincing explanation of solutions created through programming.

ART

- Make, design, and create using a variety of materials to develop a concept or learning experience.
- Brainstorm ideas through modeling and sketching.
- Compile works of art to relate knowledge.

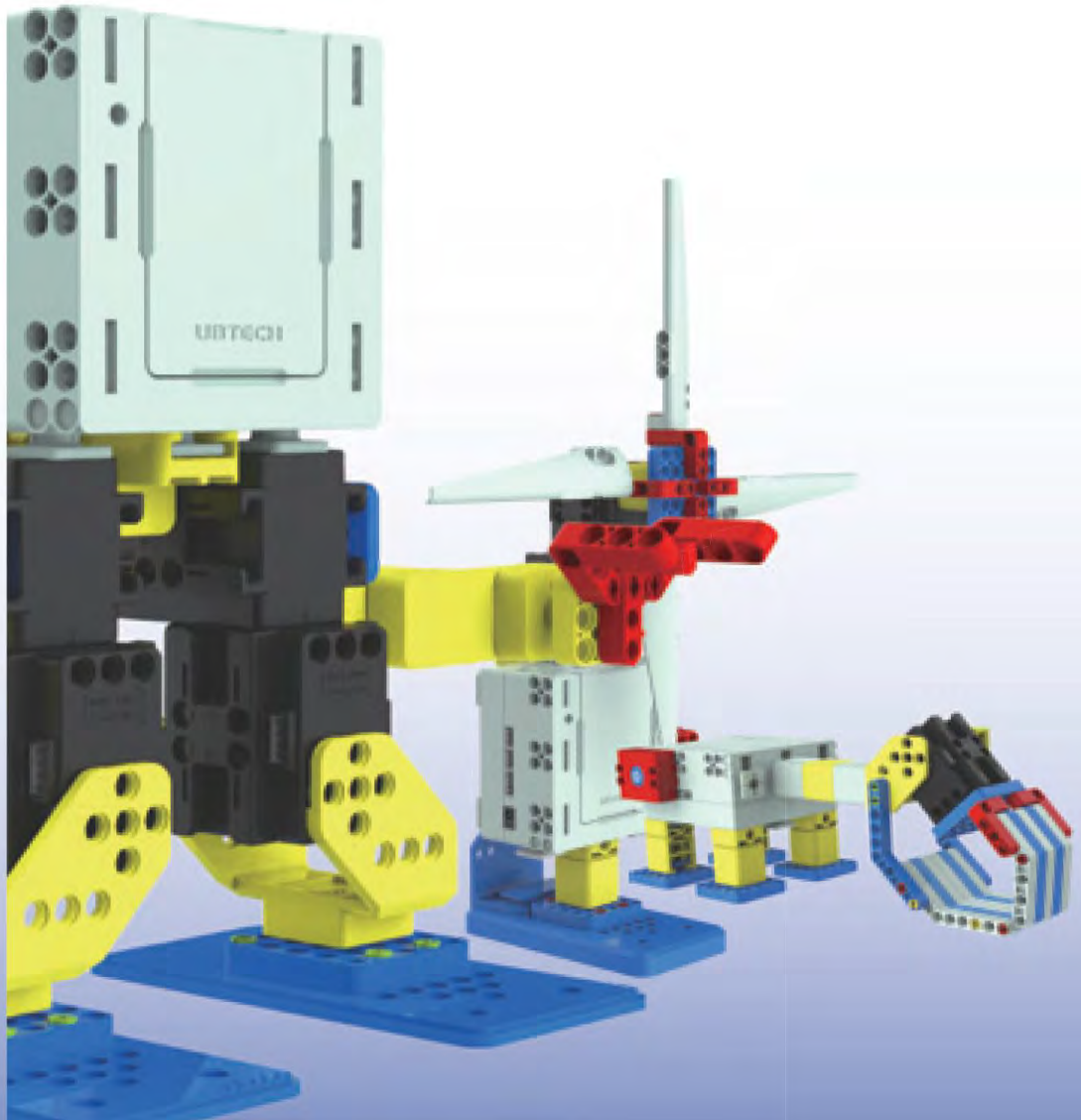
MATHEMATICS

- Measure distances, width, length and speed to gain data for interpretation and refining engineering and design.
- Integrate data analysis to collaborate and gain feedback.
- Solve mathematical problems with numbers in any form, strategically using applicable tools.
- Determine the probability of events and compare data from observed models. Explore and evaluate possible reasoning for discrepancies between models.
- Observe an object's motion, providing data and evidence to evaluate and predict future motion.
- Develop and expand knowledge of geometry, understanding the concepts of measuring angles, and geometric constructions.
- Understand how variables can be used to represent quantities in a real-world or mathematical problems.

UBTECH
Dream With Robots

Programmable Jimu Robot - **Entry Level**

UBT-EDU STEAM Curriculum



About the Authors

Zhang Jiang *PhD, professor in the School of Systems Science at Beijing Normal University, founder of Swarma Club and Swarma AI Campus, and an online think tank expert. Dr. Zhang's main research fields include complex systems theory and artificial intelligence. He mainly teaches about artificial intelligence, complex thinking, MATLAB basics and applications, computer modeling and simulation, etc.*

Liu Yan *PhD, associate professor in the School of Systems Science at Beijing Normal University, studying complex systems theory and cognitive neuroscience. She is interested in STEAM in basic education.*

Wang Shuang *PhD, Education Lab Manager at Shenzhen UBTECH Robotics Corp., committed to the theoretical research and course development of artificial intelligence and educational robotics.*

He Yongzhen *Majored in preschool education at Beijing Normal University, Master of Software Engineering at the Chinese Academy of Sciences, senior programmer, and has long been engaged in the research and implementation of STEAM education for teenagers.*

Contents

Description of the uKit Robot Elementary Course

Implement the 2017 Science Standards through a robotics curriculum

After years of compilation, the *Science Standards for Primary Education (2017 Edition)* (hereinafter referred to as *the Standards*) have been implemented in schools across the country since September, 2017. Here, we discuss how to implement *the Standards* through the primary school curriculum and in particular, how to organically combine a robotics curriculum with a science curriculum. The latter should involve input from teachers, researchers, textbook authors, and classroom experts. The original article uses the uKit Robot *Elementary Course* as an example in an attempt to explore this issue and gain industry feedback.

Improve scientific knowledge through robotics

In *the Standards*, objectives for scientific knowledge and curriculum content are divided into four areas, namely, Material Science, Life Science, Earth Science and Cosmology, and Technology and Engineering. Moreover, they are divided into three stages according to the age of the students, namely Grade One to Two, Grade Three to Four, and Grade Five to Six. The traditional robotics curriculum is information-centered, with an emphasis on software programming supplemented by hardware knowledge. It lacks a horizontal link to other disciplines. This textbook attempts to extend the course into other disciplines as designated by *the Standards*.

Related content in the field of Material Science

Course Name	Corresponding course content in *the Standards*	Specific course content in the textbook
The Lifting Lever	Learning Chapter 4.3 The mechanical motion of an object takes different forms.	According to the trajectory of an object, you can determine the form of motion and understand linear motion in general.
The Golf Club	Learning Chapter 5.2 The change in an object's motion is related to the force exerted on that object.	The distance a ball travels is related to both the force of the swing and the mass of the ball.
The Snail	Learning Chapter 5.1 Some forces are directly applied to objects and some can be exerted on objects by invisible substances.	Friction is the force exerted directly on an object, which can change its velocity.

Related content in the field of Life Science

Course Name	Corresponding course content in *the Standards*	Specific course content in the textbook
The Mouth	Learning chapter 10.2 The human body has the organs required for various vital movements.	The movement involved in opening and closing the mouth
The Dinosaur The Octopus	Learning Chapter 7.2 There are different animals on earth, each with differing characteristics.	Comparing different forms of gait and motion.
The Mini Man	Learning Chapter 10.2 The human body has the organs required for various vital movements.	Understanding a bipedal gait from the perspective of motion.

Related content in the field of Technology and Engineering

Course Name	Corresponding course content in *the Standards*	Specific course content in the textbook
The Bionic Robot – End of Term	Learning Chapter 17.1 Technical innovation usually applies certain scientific principles.	Observe the primary structure of a moving biological system, understand the relationship between it and bionic machinery, and then design and build a bionic robot.

Improve scientific inquiry through robotics

The Standards propose “Initiating Inquiry-based Learning” as a core principle of the curriculum, and “approaches this from eight main areas namely, Raising Questions, Making Assumptions, Planning, Collecting Evidence, Processing Information, Reaching a Conclusion, Presenting and Communicating, and Reflecting and Appraising”.

The textbook tries to integrate various elements of scientific inquiry into the robotics curriculum organically. To this end, a segment entitled “Observing and Reflecting” is specially designated.

The basic steps for this link are as follows:

A. After the model is constructed, the teacher assigns experimental tasks to students and guides them to verify their assumptions;

B. Students, conduct their experiments such as modifying the hardware and software of the model, and modifying the control variable, wherein the teacher may set different experimental conditions in advance;

C. Students observe and record the experiment’s results;

D. The teacher guides students to find the correspondence between the designs and actions of the models and the outcomes, reach regular conclusions, and verify or overthrow the hypothesis according to the results. The conclusions or hypothesis must correspond to the knowledge expected to be acquired in our curriculum objectives.

A case in point is The Golf Club. After students finish constructing the robot model for a golf club and debugging the running program, the class is not over. Now, the experiment can finally begin. We respectively take the “time of the swing” and “mass of the ball” as the control variables, and set different swing times and choose balls of different masses for students to observe the difference in motion under various conditions and record the results. Then, students may conclude the relationship between the time of the swing, the mass of the ball, and the distance travelled.

Students will gain a much deeper understanding of the science through active exploration and inquiry-based learning as opposed to a more passive, lecture-based approach to learning.

Realize interdisciplinary integration and the STEAM form of study through robotics

The Standards point out in “Implementing Advice” that “Science is closely related to other disciplines taught in primary school” such as Mathematics, Language Studies, and Physical Education. Specifically, “Data processing and modeling in science are inseparable from mathematics”; “There are many opportunities for listening, speaking, reading, and writing in science class (language interaction).” In particular, *the Standards* propose that “we initiate an interdisciplinary learning style. Science, technology, engineering, and mathematics, namely the STEM fields, is a mode of curriculum organization guided by project-based learning and problem solving, which integrates science, technology, engineering, and mathematics organically.”

In the present textbook, the objectives of each unit are broken down into the five areas required by the STEAM, namely, Science(S), Technology(T), Engineering(E), Art(A) and Mathematics(M). More importantly, knowledge of these disciplines is not taught in isolation; instead it is integrated into a robotics-themed model through a project-oriented curriculum. It is closely combined with a students’ real life experiences, from which the knowledge of various disciplines are extracted and then refreshed through the lens of integration.

Take *The Snail* as an example. The curriculum objectives of this Unit can be broken down into following five areas:

- **Science**

  Measure time and calculate speed.

  Understand that force can either add power or resistance.

- **Mathematics**

  Grasp the mathematical relationship between distance, speed, and time.

- **Technology**

  Master how to adjust the angle and time for the rotation of two servo motors.

- **Engineering**

  Imitate a snail’s movement through combining the positive inversion of two servo motors.

- **Art**

  Decorate and modify the snail, and finally, conduct a snail race.

Unit 5 Little Elephant Trunk - Joint and Degree of Freedom

Objectives

1. **Science**

   Understand the skeletal system, joint system and muscle system of the mammal;

   Understand the type of motion of bones, joints and muscles;

2. **Mathematics**

   Preliminary understanding of the concept of planes and angles;

   Calculate the number of finger bones by multiplication four arithmetic operations.

3. **Technology**

   Master how to adjust the rotation angle and time of two servo motors;

4. **Engineering**

   Simulate the motion of an elephant's trunk through the combination of positive and reverse rotation of two servo motors.

5. **Art**

   Communicate and describe how a simulation robot arm may be applied in the future.

Lead-In

Do you know how many bones there are in the five fingers of each hand? Let's count them.

So how many phalanges in all ten fingers?

Please make an integrated formula here:

Answer: in the ten fingers of our hands there are a total of ( ) phalanges.

Which finger do you think has the largest range of motion among your fingers? Why?

Our thumb has () phalanges;

Our index finger has () phalanges.

Our middle finger has () phalanges;

Our ring finger has () phalanges;

Our little finger has () phalanges.

Please observe the range of motion of each finger and discuss it with your partner for 2 minutes.

I think the finger with the largest range of motion is:

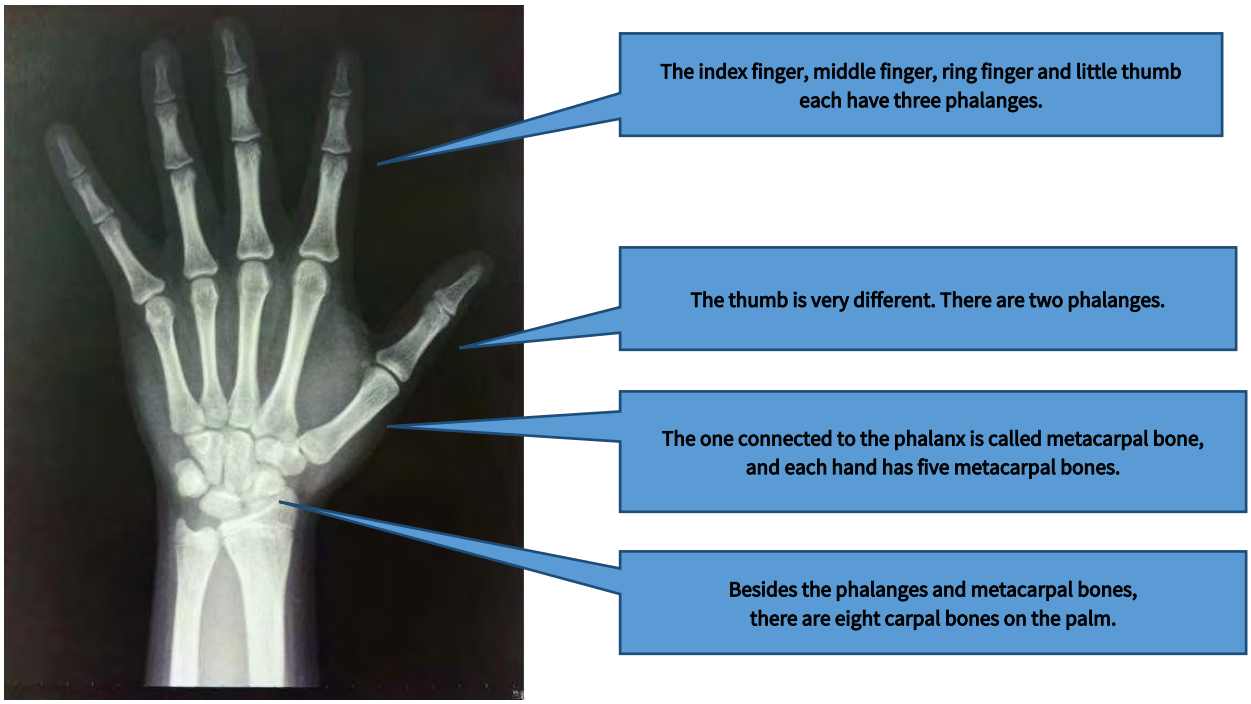
Because

Preliminary Knowledge

Through experiments, we know that there are fourteen phalanges in one hand, totaling twenty-eight phalanges in both hands. What bones are there besides phalanges in one hand?

Knowledge Point1

Number and types of bones on the palm of your hand



There are 27 bones in one hand. There are five metacarpal bones, eight carpal bones and fourteen phalanges.

Rontgen and X-rays

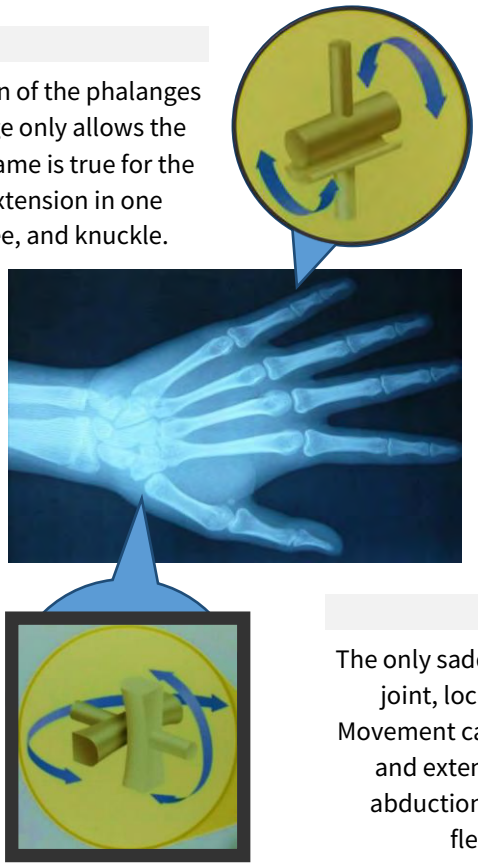
William Roentgen

In 1895, the German physicist William Roentgen discovered the X-ray. He discovered that when an X-ray passes through the body and is projected onto photographic negatives, it produces clear bone images.

Through experiment, we know that the thumb has the largest range of motion and is the most flexible finger in the hand. It can bend not only to the palm but also in the direction of the index finger. Why is our thumb the most flexible?

Xu Joint

In the palm, the joint at the connection of the phalanges is called the Xu joint. The door's hinge only allows the door to swivel in one direction. The same is true for the Xu joint, allowing for flexion and extension in one direction, much like the elbow, knee, and knuckle.



Saddle joint

The only saddle joint in your body is the thumb joint, located at the base of the thumb. Movement can occur in two directions: flexion, and extension, as well as adduction and abduction. This makes your thumb more flexible than other fingers.

Knowledge Point 2

Of the type of motion in the joints

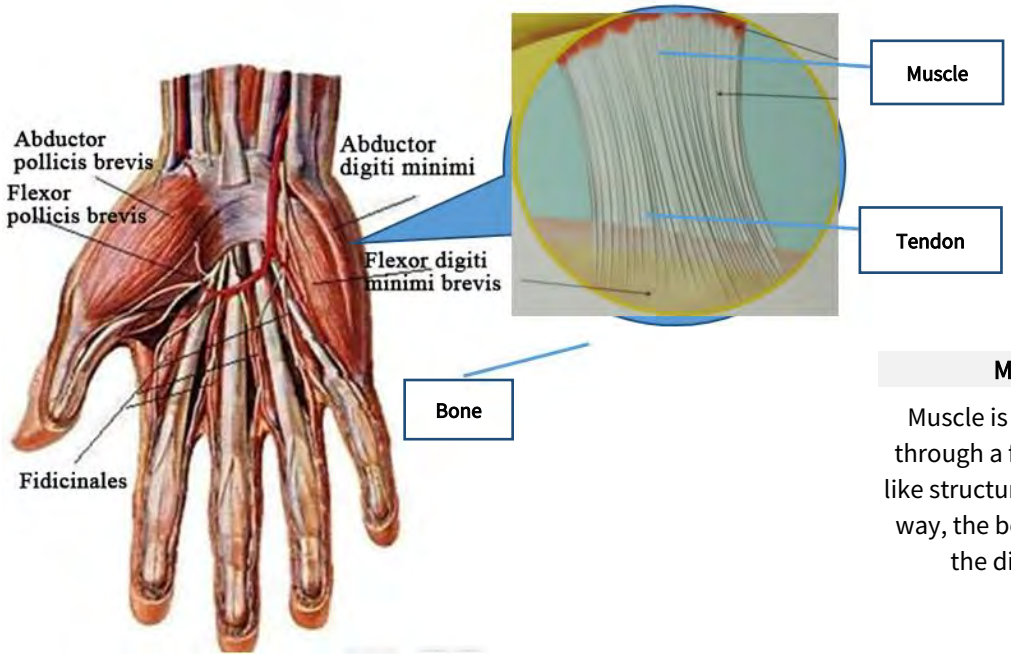
In your skeletal system, where two bones meet, you have a joint. Some joints are fixed and stiff. However, most joints can move freely, giving your skeleton system the ability to run, jump, write, and perform other complex activities. The joints connect your bones together providing the skeleton with stability.

There are about 400 joints in our body. However, each joint is slightly different.

Knowledge Point3

Muscle connecting the bones

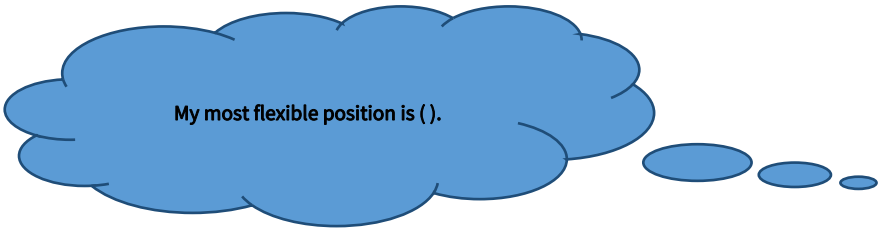
You move because you have muscles - a fleshy machine that transforms fuel into action and directs bone movement. Some muscles are controlled consciously, for example, when you decide to open a book with your hands. However, there are many other muscles that are not controlled in this way. They operate independently, keeping your body alive and healthy, and stable so you don't fall over!



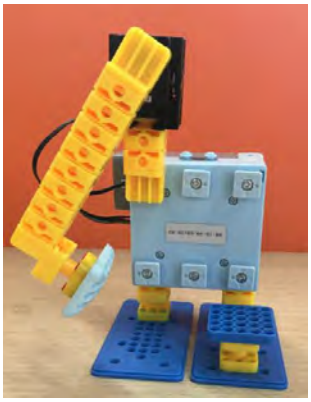
Muscle structure

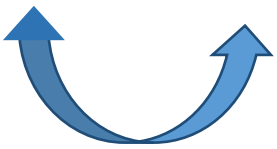
Muscle is connected to the bone through a flexible, elastic and strip like structure called a tendon. In this way, the bone can flexibly move in the direction it needs to.

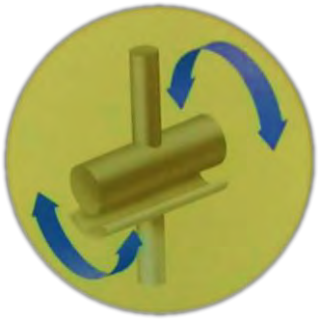
Our Skeleton, joints and muscles not only enable us to move flexibly, but allow us to coordinate that movement. Can you tell which position taken by each animal in the pictures requires the most flexibility?



The robot's motion depends on the servo motor, which is just like the Xu joint of a human and can only move back and forth in one direction. Look at the golf robot we've made before. Notice the similarity?







If we design a robot, we certainly hope it can be more flexible than that. We'd like it to not only swing to the left and right, but also extend in and out.

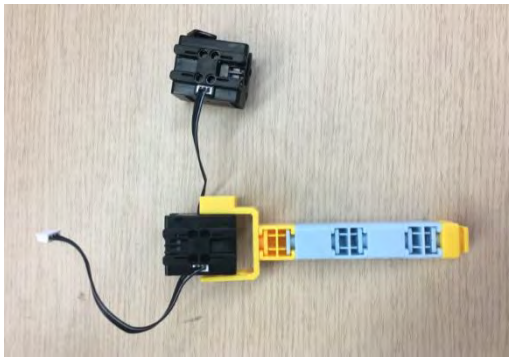
Wouldn't it be better if our robot not only had 'bones' and 'joint' but also a 'muscular system', like an elephants trunk for instance?

In order to simulate an elephant's trunk, we need two connected servo motors. This makes the challenge a little trickier.

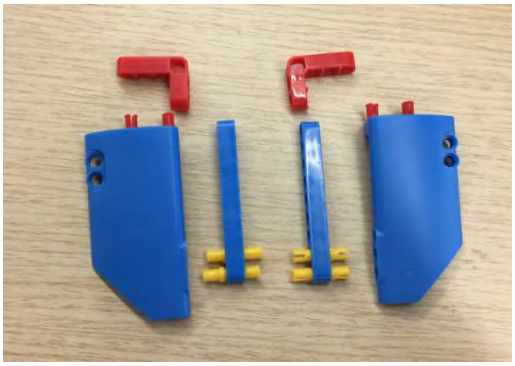
Mechanical structure building guidance

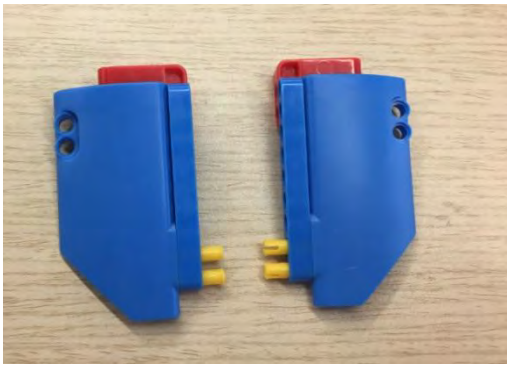
Step 1 Build the head of elephant.

Step 2 Build the trunk of the elephant.



Step 3 Build the ear of elephant.



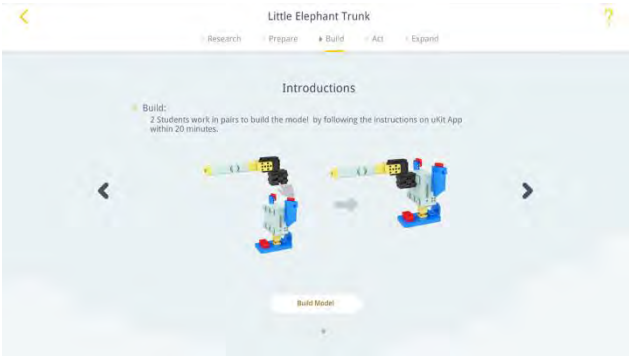


Step 4 Assemble.

Modeling

Next, let’s walk through the construction process.

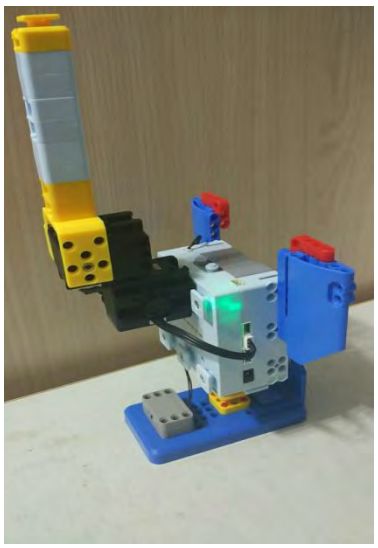
Open you tablet or computer, select “elephant trunk”, “modeling”, and start building.



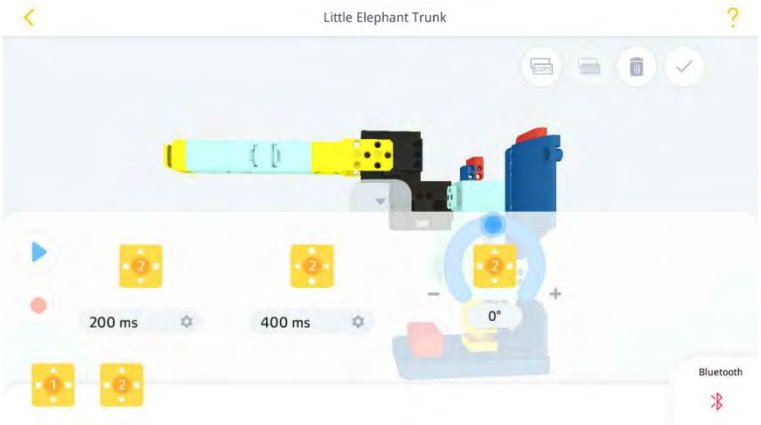
Action design

After the construction is complete, practice the knowledge learned in the previous units, establish the Bluetooth connection, and click “action editing”.

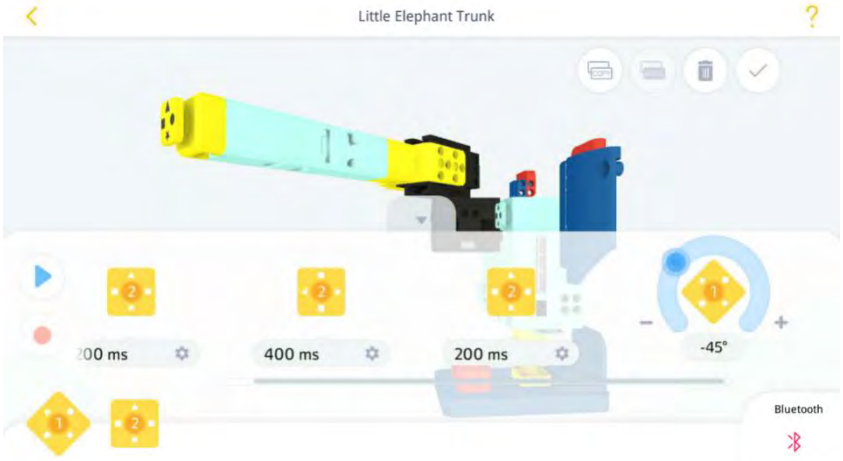
First, we simulate the action of an elephant extending its trunk.



Then we simulate the action of an elephant straightening its trunk.



After that, we allow the elephant's trunk to stretch out at a 45 degree angle



Finally, we edit in a coherent movement to allow the elephant's trunk to return to the original movement and stretch upward. We need to make servo motor 1 and servo motor 2 move at the same time. This action is set for a long time to see the difference between a simultaneous movement and an isolated movement.

Observing and Reflecting

Discuss with your group members:

1. How many servo motors do we need to make the mechanical arm below with the electronic blocks?

2. What can this mechanical arm be used for? Specify at least two applications.

Further Discussions

Question

Discuss freely what kind of new action you could design for your “elephant’s trunk”?

Summary

Knowledge Point

Calculate the number of phalanges in both hands. We need to list the integrated multiplication formula: (3 x 4+2) x 2=28. The calculation contains multiplication, division, addition, and subtraction. First, do the multiplication and division, followed by the addition and subtraction. If there are multiple sums inside a parentheses, which are calculated first?

There are two types of finger joints: the Xu and Saddle. The Xu joint can only move in one direction while the saddle joint can move in two.

Humans, like most mammals, have a complex skeletal system, complete with joints and muscle., The interaction of these various systems allows us to perform more complex movements.

Small Game (Optional)

Coordination game

Put the “elephant’s trunk” robots in a group together. Set a unified action and start moving at the same time to see if your robot can stay as consistent as those in the New Year Gala. (Note: action settings must be consistent with time settings.)

www.ubtrobot.com

Page 1 and 2

UBTECH Golfing challenge

(Insert picture of Scorebot)

RATIONALE FOR THE CHALLENGE

• To increase the participation of school aged students in innovative, engaging and creative STEM robotics and coding learning experiences.
• To support the growth of creative thinking in children to enhance their future opportunities.
• To develop skills for future workforce, such as teamwork and collaboration.
• To inspire and equip participants to achieve anything they can imagine.
(Replicate first pages of Astro Challenge)

JIMU ROBOTS AND SPORT

Jump into building this sporty robot that has the ability to score goals and achieve a 'Hole in one'! This interactive, building block system takes creativity and learning out into the sports field!
The kit comes with interlocking and interchangeable parts – it can avoid obstacles, has accurate movement and is fast and flexible.

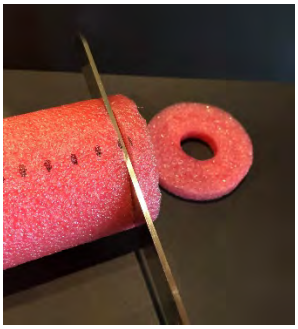
Page 3

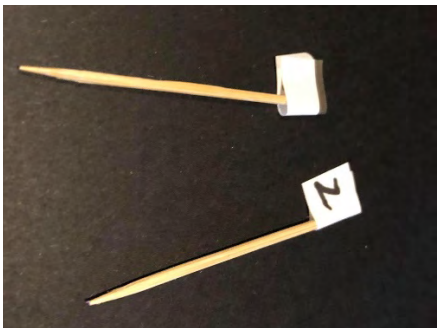
STEM Challenge – create your own golf course!

You will need:

A pool noodle
9 Toothpicks
1 mailing label
Ruler
Permanent marker
Glue
Cardboard paper towel tubes
Scissors
Blutack
Cardboard
Paper
Sand
Aquarium gravel
Masking tape or chalk
Serrated knife

Procedure:

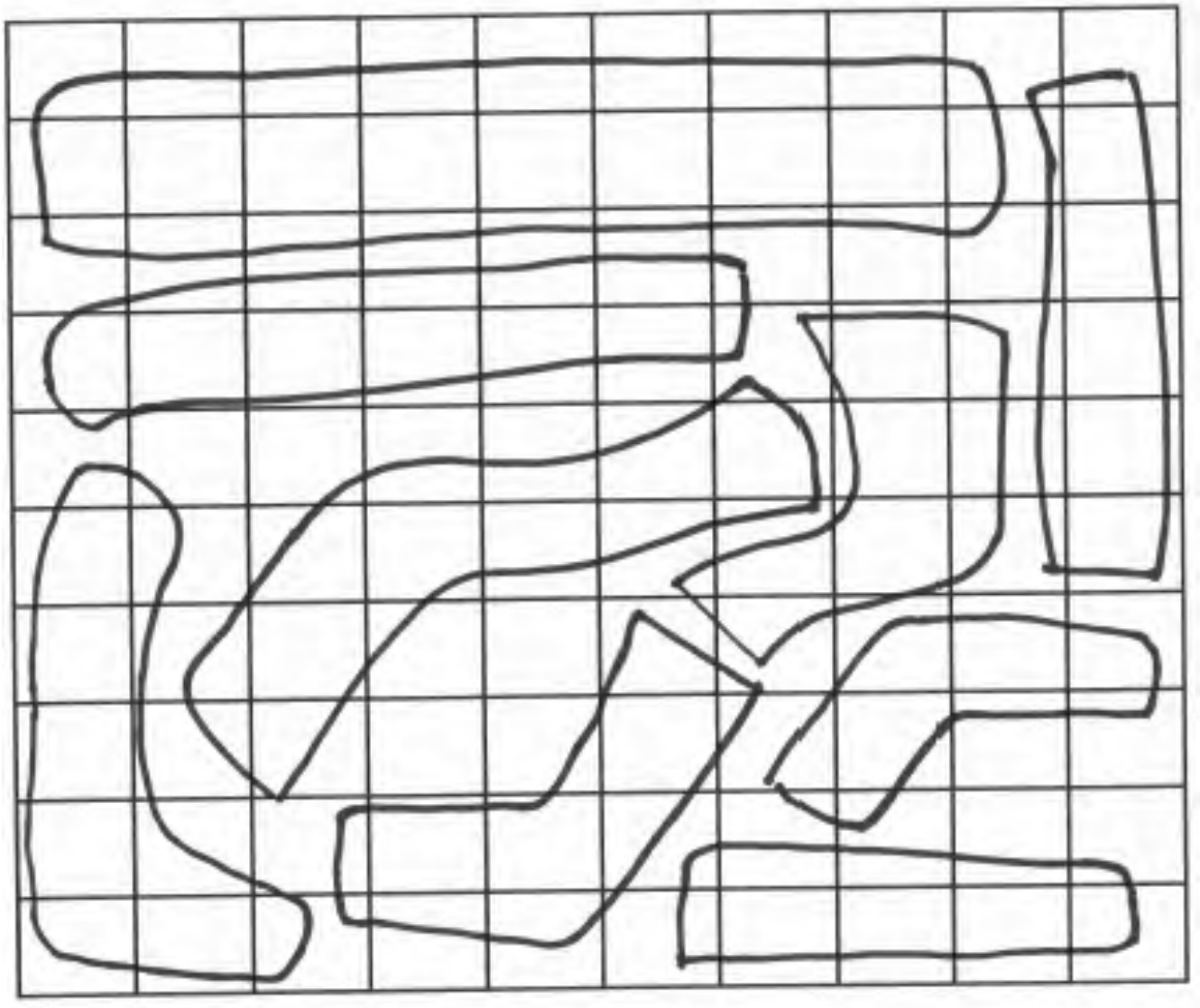
1. With the ruler and using the permanent marker, measure 1 cm sections up to 12 cm.	
2. Using the serrated knife, cut the pool noodle, creating 12 slices each one 1 cm thick.	

3. Put 9 pool noodle slices to the side.	
4. Using scissors, cut up the remaining 3 slices in half and then half again (making 12 quarters).	
5. With the glue stick, glue a quarter of the pool noodle slice about half a centimetre from the hole in the centre. Repeat for all 9 pool noodle slices.	
6. Cut up the sticky label into small flags. Remove the backing and wrap the label to the top of the toothpick. Using the permanent marker, label each flag 1 – 9.	
7. Push toothpick flag into the double thickness pool noodle slice.	

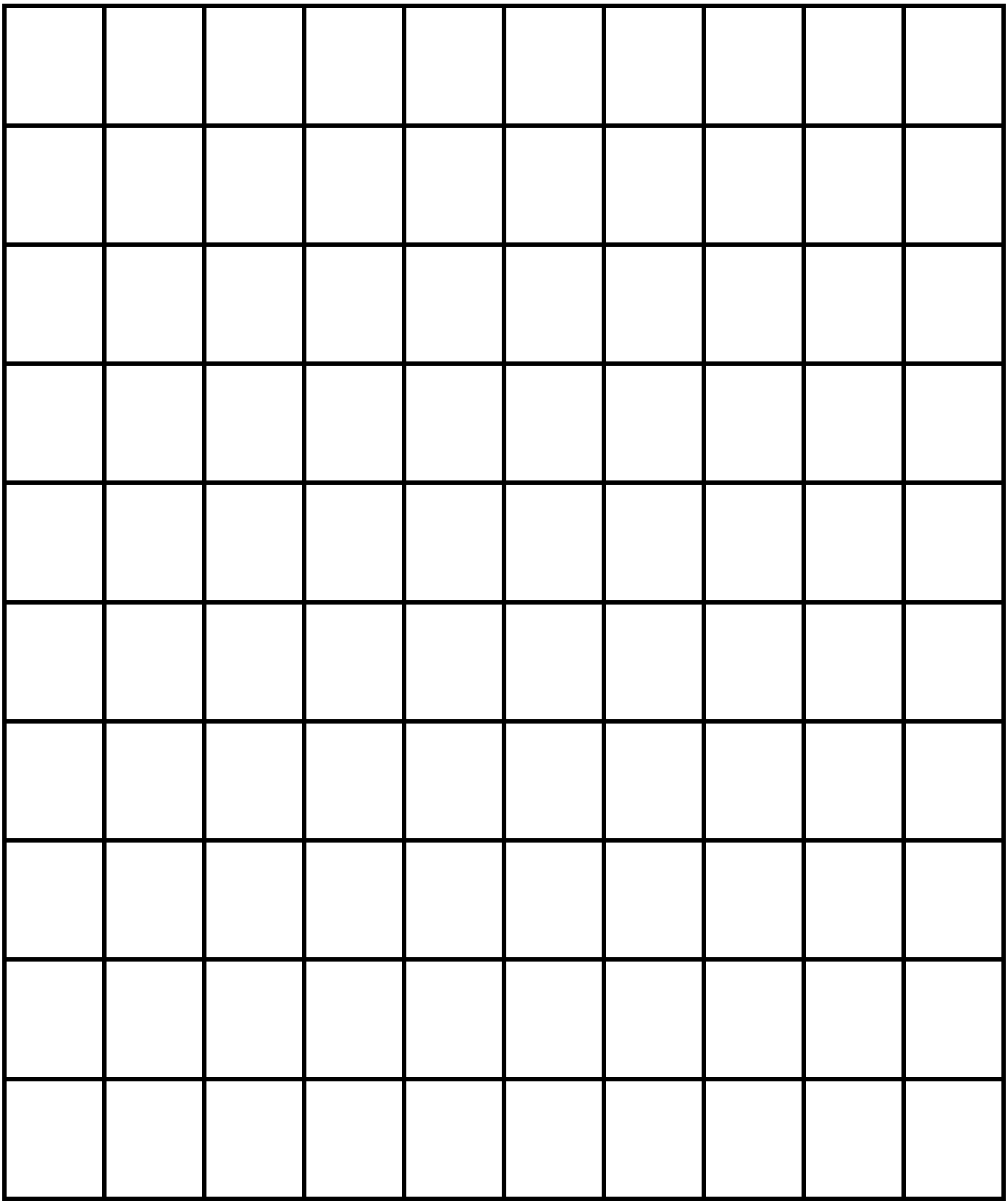
8. Repeat to make 9 golf holes with flags.	

Cardboard and paper can be used to make ramps.
Cardboard tubing can be used to make tunnels.
Sand and gravel can be used as obstacles.
Use Blutack to secure the golf holes to the ground.
Masking tape or chalk can be used to mark out the course.

A scale model of a golf course is below.



A grid is supplied in case you wish to design your own golf course.



You may compete against others, keeping score in the number of strokes it takes to complete the course.

Other ideas:

Timing how long it takes to complete the course against others.

Design harder courses.

Program the robot to complete the course at the press of a button.

Create a 2 – 3 minute video of your Golf course/hole in one and upload to the website:
onegiantleapfoundation.com.au/ubtech

Australian Curriculum Years 5 and 6

Standard Identifier	Standard Learning Area	Standard Description
ACTDIP019	Digital technologies	Design, modify and follow simple algorithms involving sequences of steps, branching and iteration (repetition).
ACTDIP020	Digital technologies	Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input.
ACMMG108	Mathematics	Choose appropriate units of measurement for length, area, volume, capacity and mass.
ACMMG113	Mathematics	Use a grid reference system to describe locations. Describe routes using landmarks and directional language.
ACMMG137	Mathematics	Solve problems involving the comparison of lengths and areas using appropriate units.

Page 1

Enchanted Challenge

Unicornbot is not just a robot. It has magical powers. In the future, it could assist you in getting the job of your dreams! It starts with one simple step – constructing the robot!

RATIONALE FOR THE CHALLENGE
• To increase the participation of school aged students in innovative, engaging and creative STEM robotics and coding learning experiences.
• To support the growth of creative thinking in children to enhance their future opportunities.
• To develop skills for future workforce, such as teamwork and collaboration.
• To inspire and equip participants to achieve anything they can imagine.

Page 2

Why robotics

Change:
JIMU ROBOTS AND IMAGINATION Join us on an enchanted journey of discovery and adventure. This interactive, building block system takes creativity and learning out into imagination and creativity! The kit comes with 387 interlocking and interchangeable parts - everything needed to create Unicornbot or even your own creation.

TO START:
1. Open the kit and lay all the components out on a clear, flat space.
2. Download the app - BEING CAREFUL TO CHOOSE THE CORRECT KIT!
3. Follow the instructions to build.
4. Register and log in – unlock your robot through the Learning Modules.
5. Once you have opened all 8 padlocks – you are now ready to take part in our unique enchanted, magical challenge!

Page 3

The UBTECH Enchanted Challenge is an imaginative and magical programming challenge that aims at providing an innovative and creative program, whilst utilising the unique robots from UBTECH. Skills in robotics are combined with Literacy – a true STEM environment. This challenge has been designed to incorporate storytelling, imagination, creativity and problem solving.

Page 4

The Enchanted Forest Mystery

“It’s Unicornbot’s birthday today. Let’s throw a surprise party in the Enchanted Forest!”

The UBTECH robots agreed and send an SMS message to Unicornbot with a map.

“Meet us at the Magic Clearing at midday. We need to discuss secret business.”

The robots ventured out to the Enchanted Forest very close to their headquarters.

“I know there is a great clearing where we can dance,” said Astron.

“We all know you love to hip hop dance Astron and we could even make magical music for you to dance to!” exclaimed Rover.

The excited robots were talking and planning this amazing magical birthday party for Unicornbot.

Muzzbot had created a list of things needed for the party:

Berries - Muzzbot
Cake - Trackbot
Fruit juice - Scorebot
Eggs - Astrobot
Fish - Rover

The list included the robot who had to bring the item to the party.

Everyone agreed and off they went into the Enchanted Forest – knowing they had to be the meeting spot at midday.

At exactly 12 midday, Unicornbot arrived at the meeting place. There was no one there.

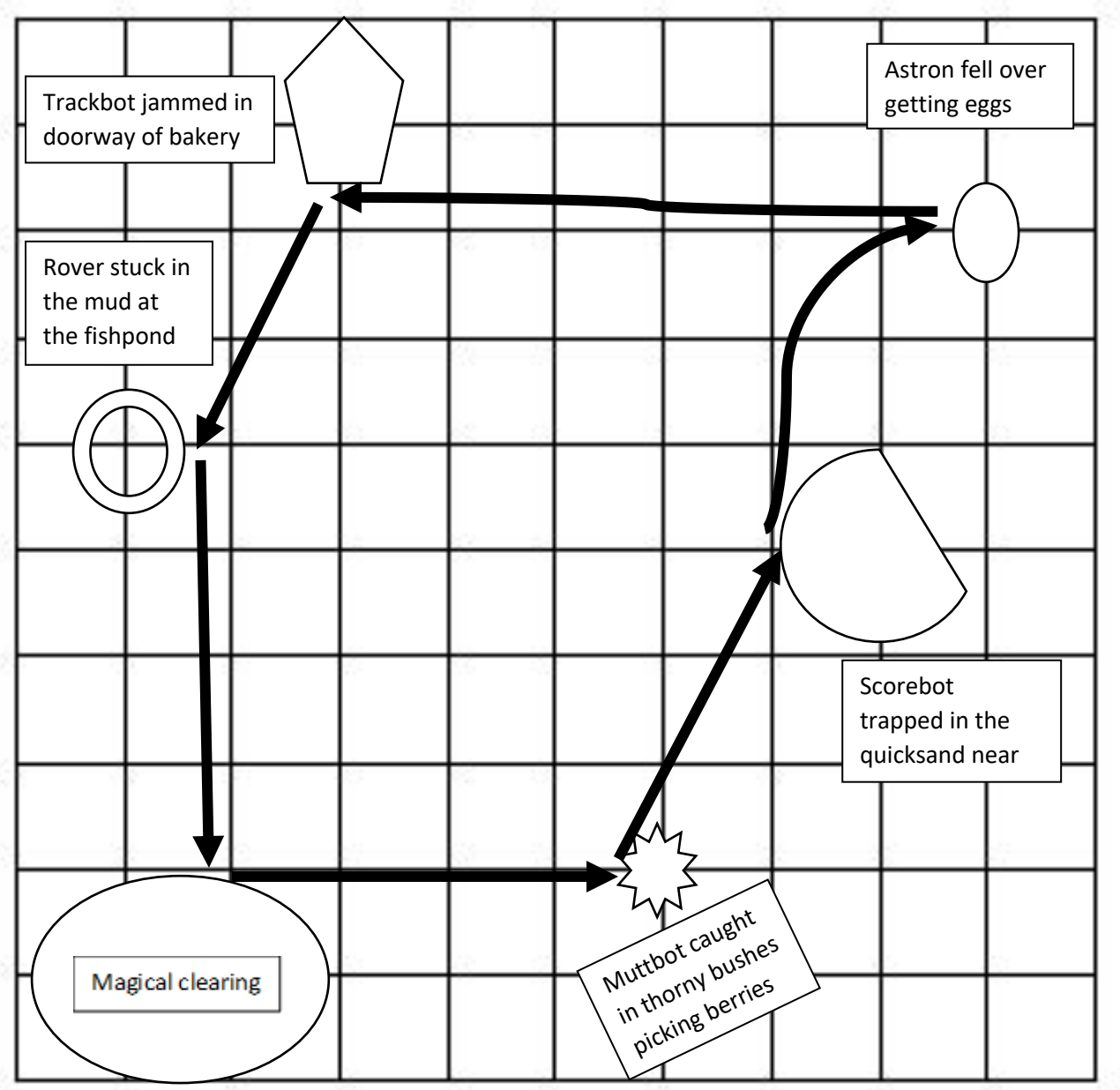
“Hmmm…I wonder if the robots are playing a joke on me?” Just then her horn started glowing red. The danger sign.

“Oh no! I can’t believe what my magical horn is telling me. My friends are in danger! Look at the map! This will not do at all. I will have to go and save my friends!”

Muttbot had been caught in thorny bushes getting berries.
Astron fell sideways getting eggs and could not get up.
Scorebot was trapped in the quicksand lagoon next to the fruit orchard.
Rover was stuck in the mud beside the fishpond
Trackbot was jammed in the Forest Bakery doors trying to buy a cake

Page 5

Enchanted Forest Map



Part 1 Using the scale model of the Enchanted Forest, code Unicornbot to help the robots in trouble.
Part 2 Create another story about the Unicornbot and set a challenge to solve.
Part3: Design and make a board game using the robot game pieces on the next page.
EXTENSION ACTIVITIES:
Turn Unicornbot into a flying unicorn!
Design a harness to protect Unicornbot being so fragile!

Upload your video footage or stories to: https://onegiantleapfoundation.com.au/ubtech/

Page 6

Page 7

Standard Identifier	Standard Learning Area	Standard Description
ACTDIP019	Digital technologies	Design, modify and follow simple algorithms involving sequences of steps, branching and iteration (repetition).
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ACMMG113	Mathematics	Use a grid reference system to describe locations. Describe routes using landmarks and directional language.
ACMMG137	Mathematics	Solve problems involving the comparison of lengths and areas using appropriate units.
ACELY1703	English	Use comprehension strategies to analyse information, integrating and linking ideas from a variety of print and digital sources.
ACELA1524	English	Identify and explain how analytical images like figures, tables, diagrams, maps and graphs contribute to our understanding of verbal information in factual and persuasive texts.
ACELY1417	English	Plan, draft and publish imaginative, informative and persuasive texts, choosing and experimenting with text structures, language features, images and digital resources appropriate to purpose and audience.

Golf club

Building steps

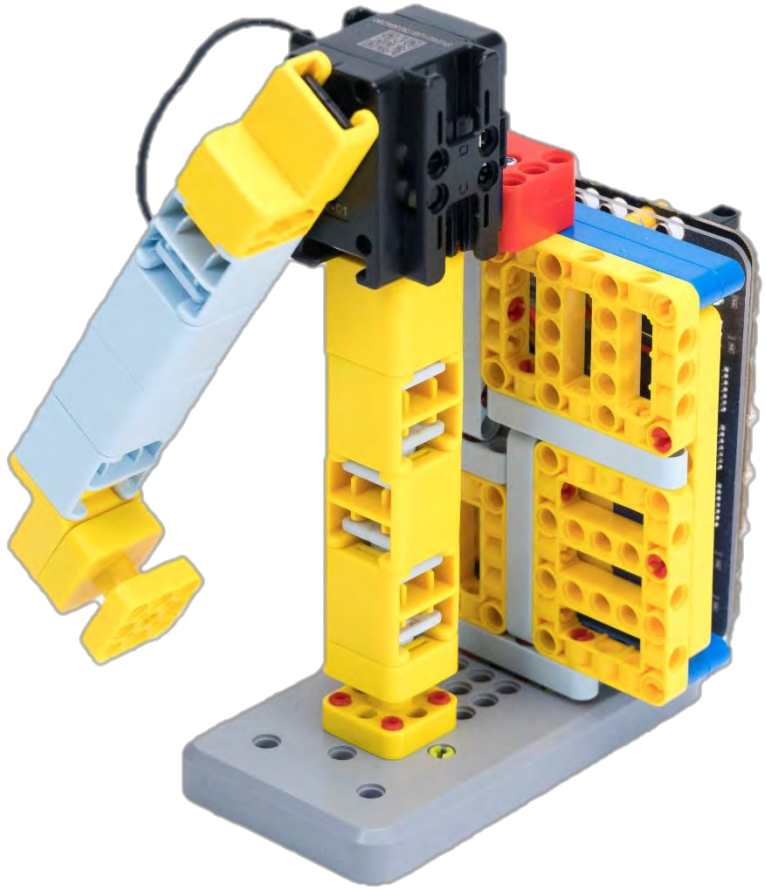
Editor：Rayna Gu
Date：November, 2018

1

PART

Overall Effect View

1 Overall Effect View



2

PART

Number of components

Number of components 2

P47-YLW x16

P48-RED x18

P70-YLW x4

P80-RED x1

C11-YLW x2

C6-YLW x6

C4-YLW x7

C5-LTBLU x10

C15-YLW x7

C15-LTBLU x7

Servo x 1

Battery x 1

Number of components 2

P21-BLU x 4

P22-YLW x 2

P24-LTBLU x 4

W1-BLU x1

W4-BLK x 1

M1-WHT x1

uKit Explore controller x1

Protection board-A x1

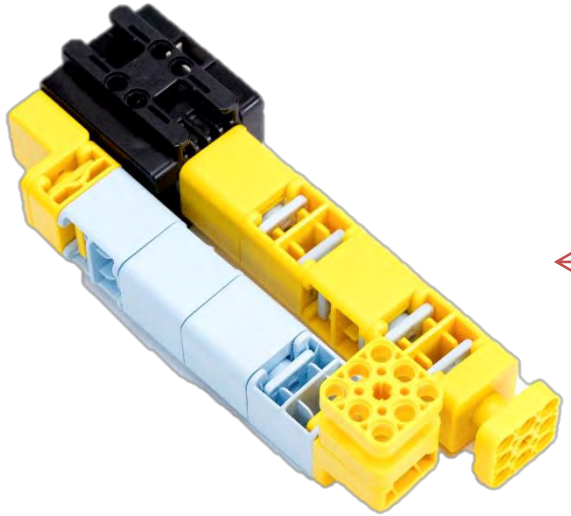
Protection board-B x1

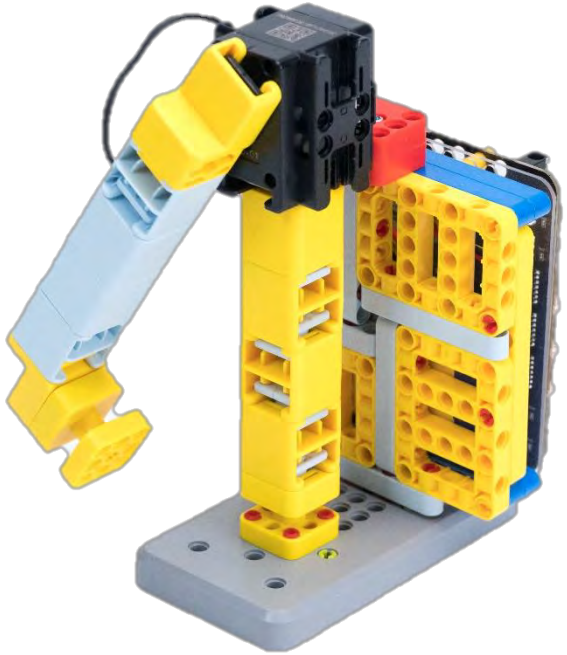
3

PART

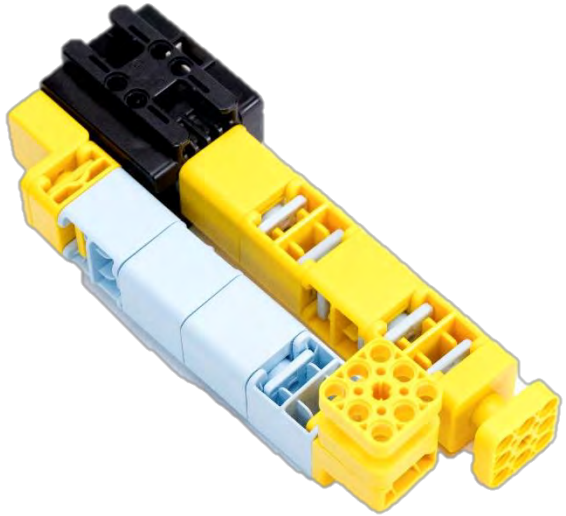
Model constructing parts

3 Model constructing parts





3 Model constructing parts



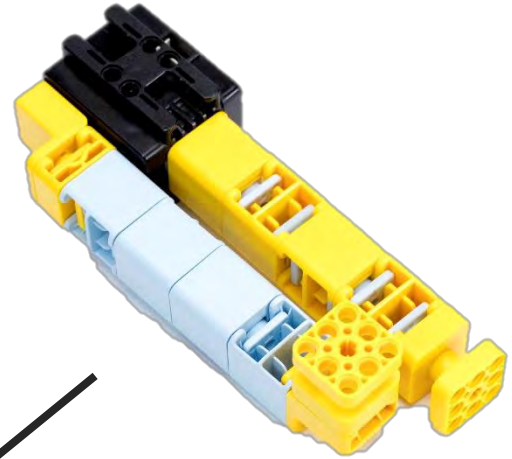
1

2

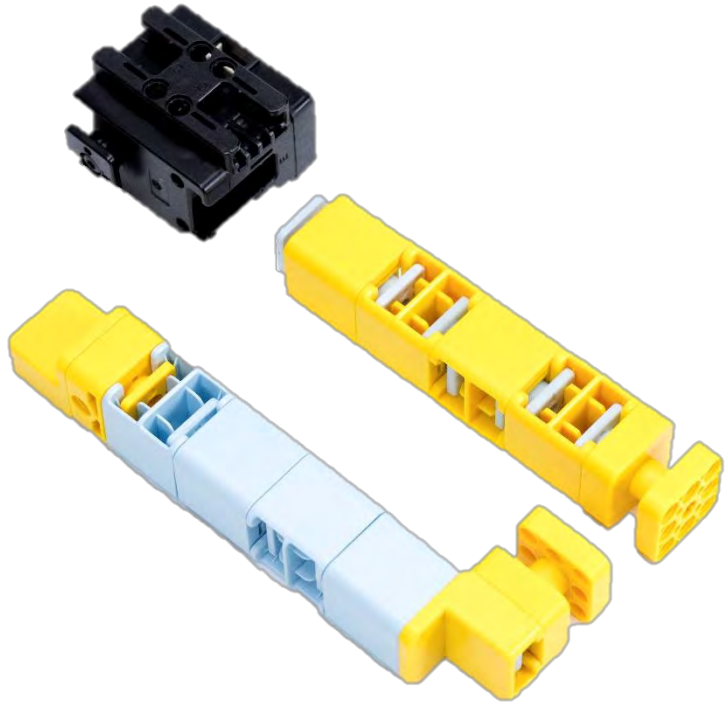
3

4

PART

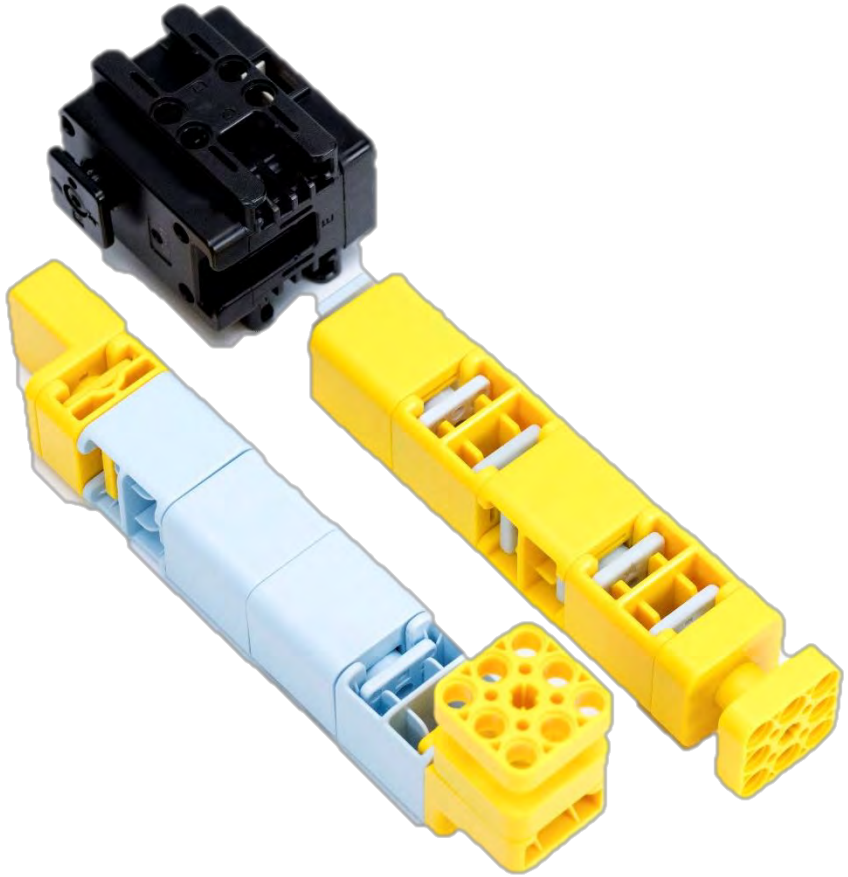


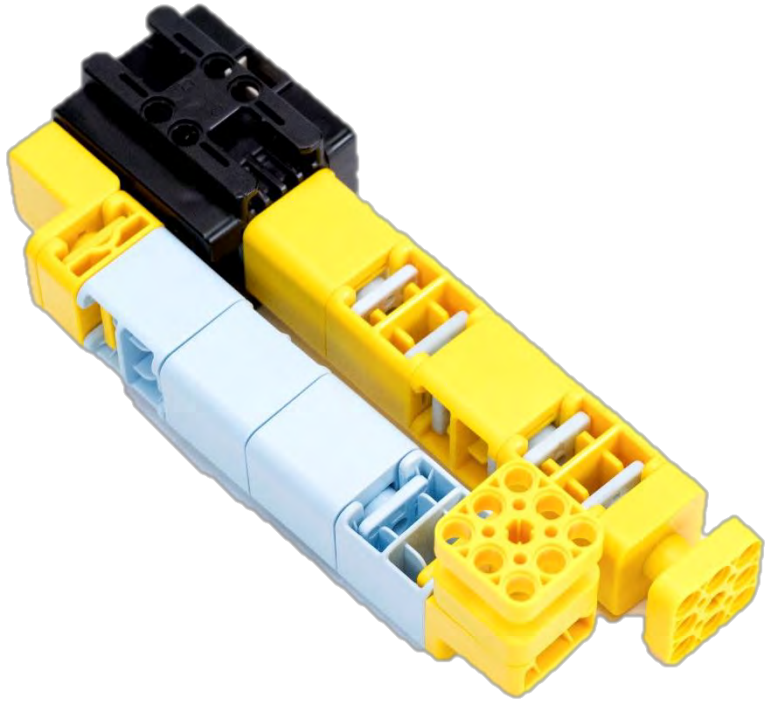
Building step 1



Use servo with ID 1

Pay attention to the position of the buckle





Attention the servo initial scale is 0°

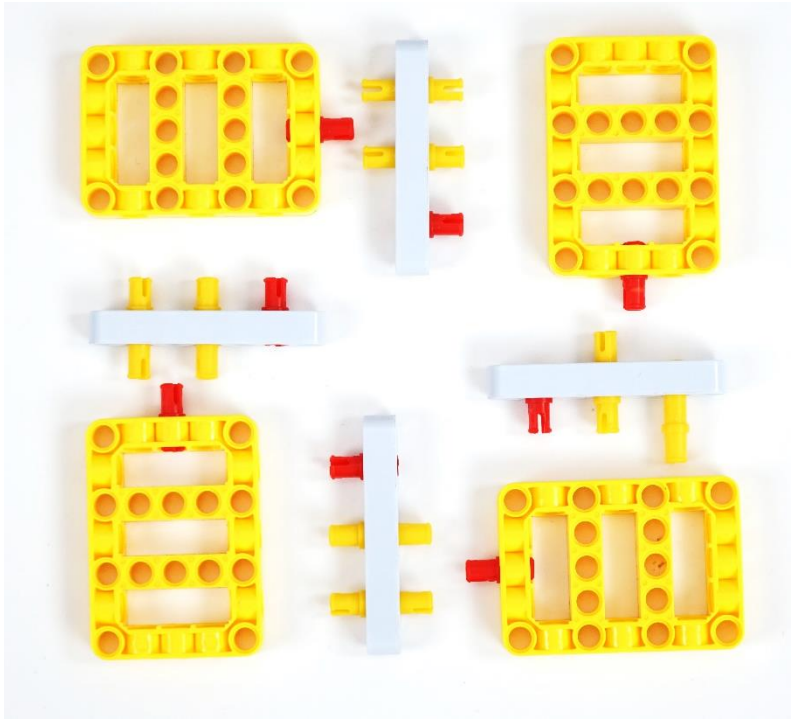
Part 1 completed

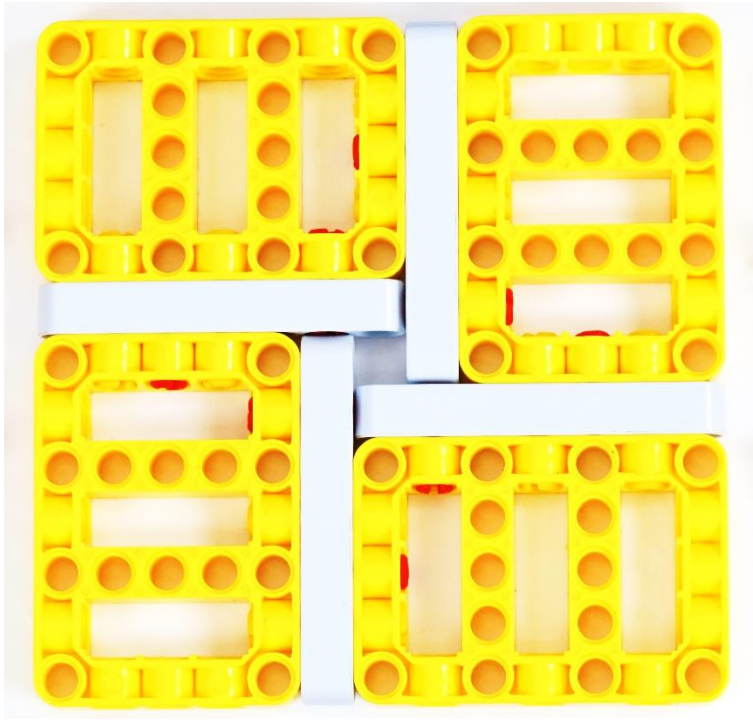
5

PART

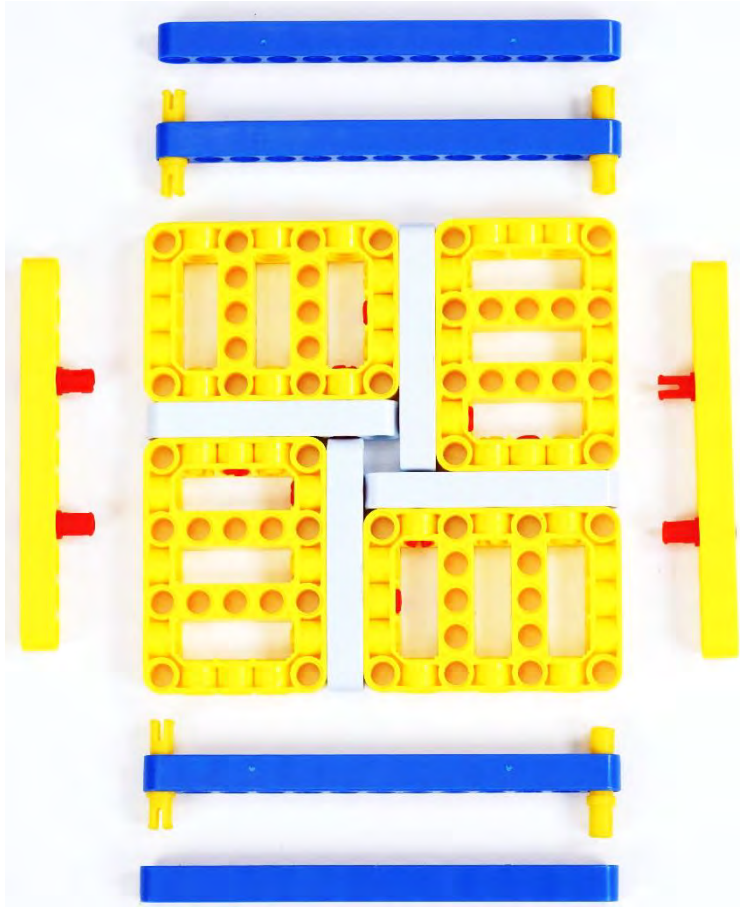
Building step 2

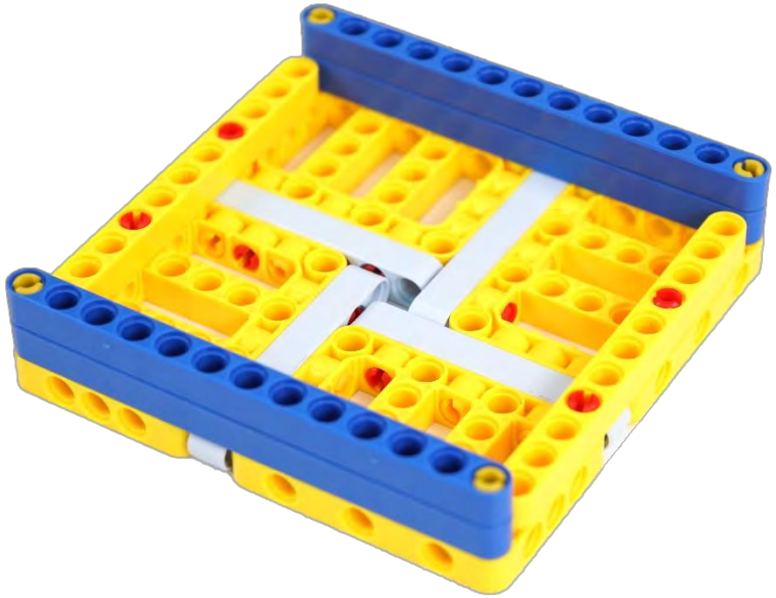
5 Building step 2



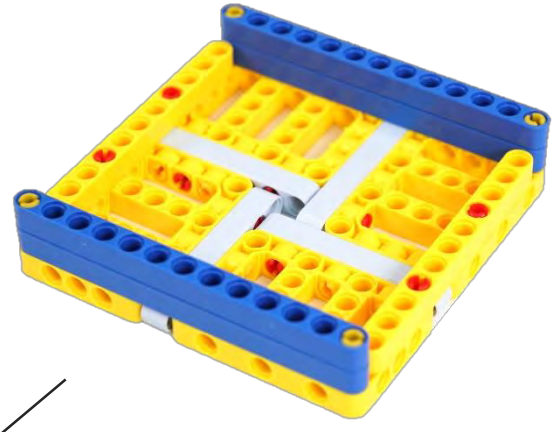


5 Building step 2





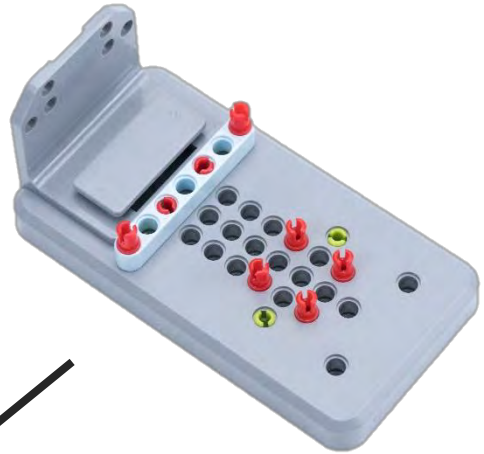
5 Building step 2



Part 2 completed

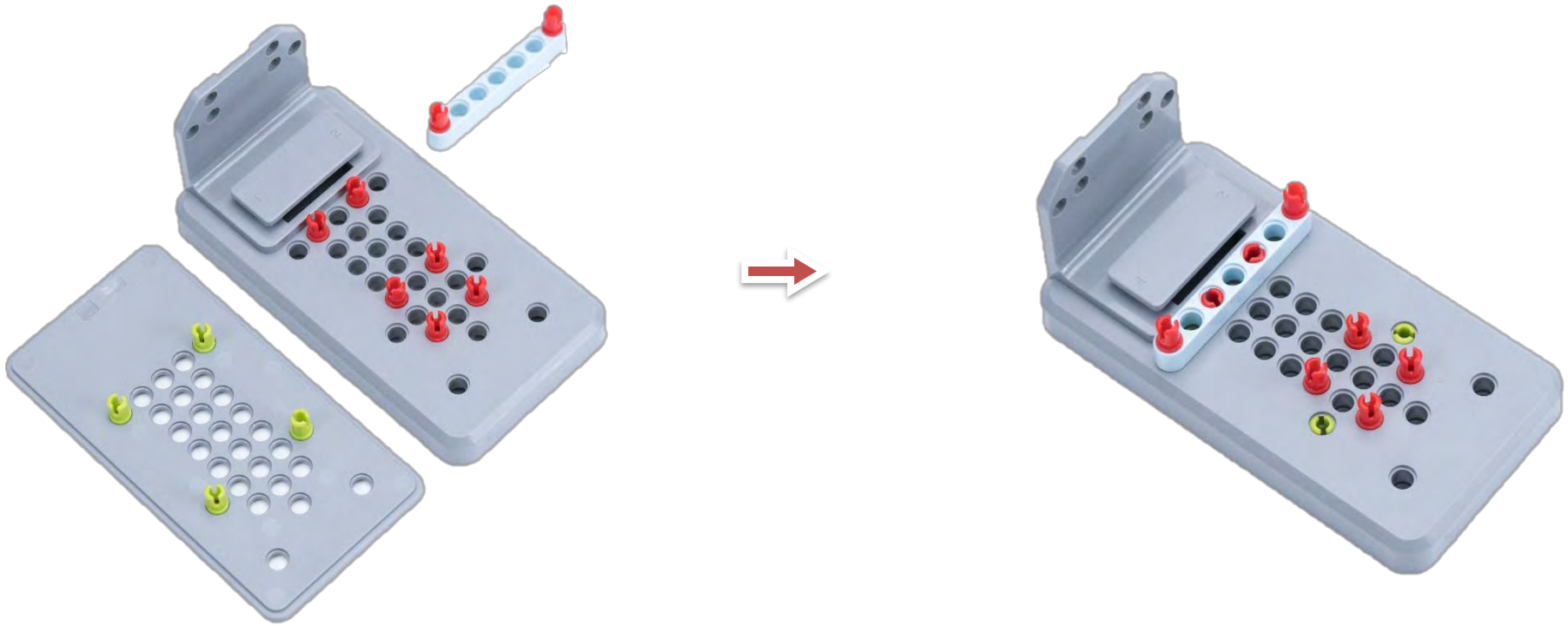
6

PART



Building step 3

6 Building step 3



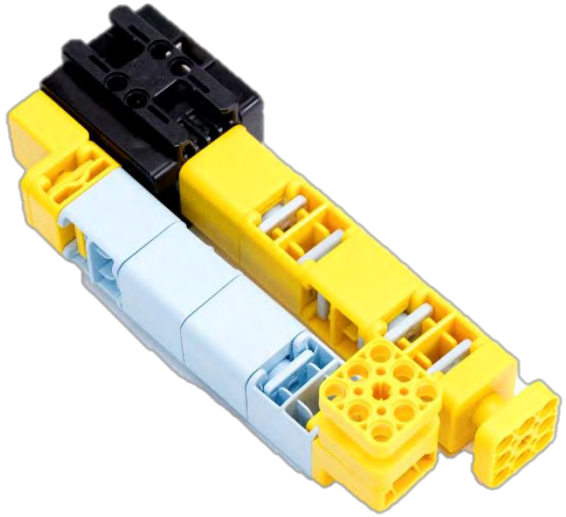
Part 3 completed

7

PART

Model assembly

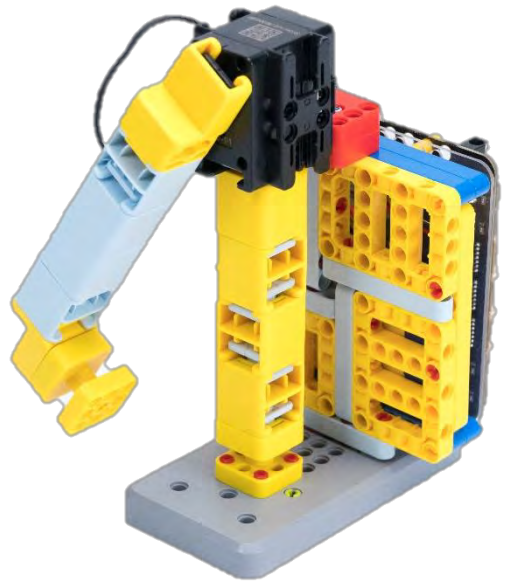
7 Model assembly



1

2

3



Model building completed

Light -chasing car

Building steps

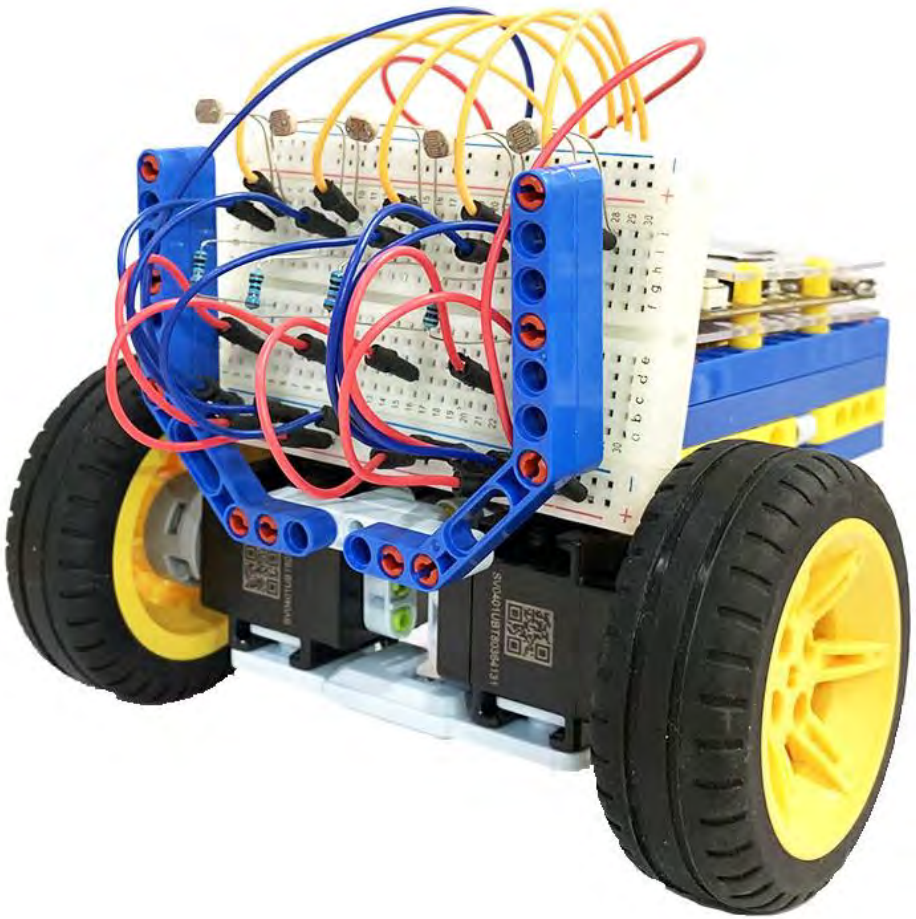
Editor：Rayna Gu
Date：November, 2018

1

PART

Overall Effect View

1 Overall Effect View



2

PART

Number of components

Number of components 2

C4-YLW x 2

C5-LTBLU x1

C15-LTBLU x2

C15-YLW x1

C8-BLU x5

P47-YLW x32

P48-RED x104

P49-GRN x4

P34-LTBLU x2

P70-YLW x4

C14-LTBLU x2

C16-GRY x2

P18-BLU x 2

P84-BLK x2

P82-YLW x2

P80-RED x1

P116-YLW x1

Battery x 1

Servo x 2

10K x 5
Bakery board x 1
Photoresistance x 5

Number of components 2

P21-BLU x 4

P22-YLW x 2

P24-BLU x 2

P24-LTBLU x 5

P26-LTBLU x 1

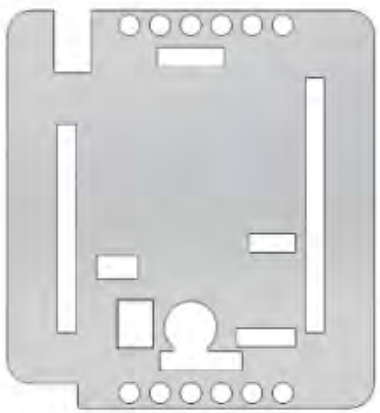
W3-BLK x1

W2-GRY x1

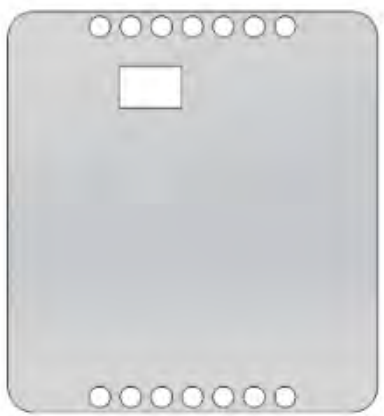
W4-BLK x1

M1-WHT x1

uKit Explore controller x1



Protection board-A x1



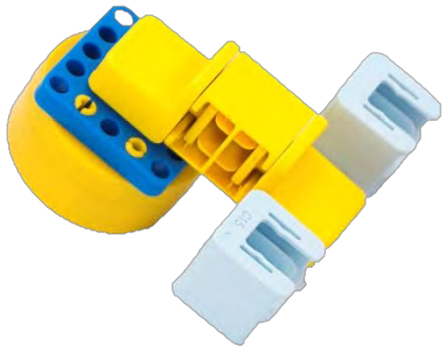
Protection board-B x1

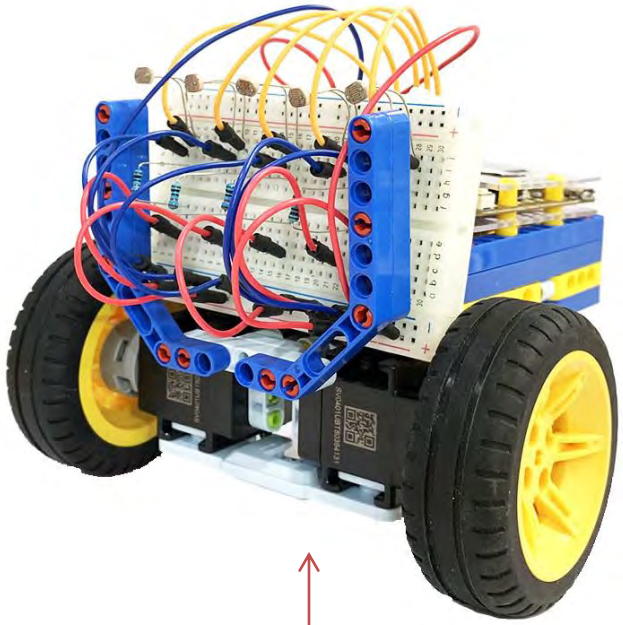
3

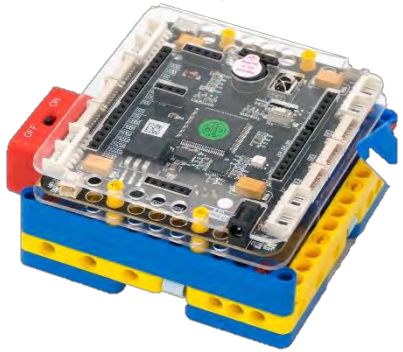
PART

Model constructing parts

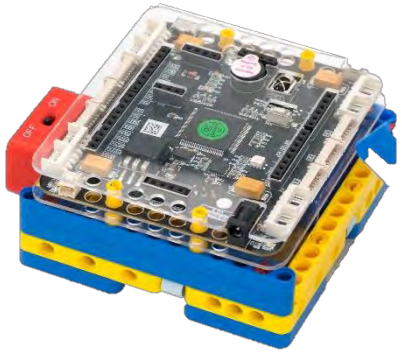
3 Model constructing parts



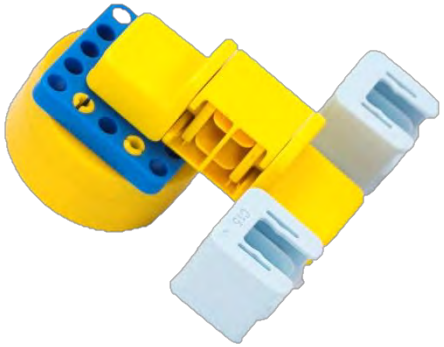




3 Model constructing parts



1

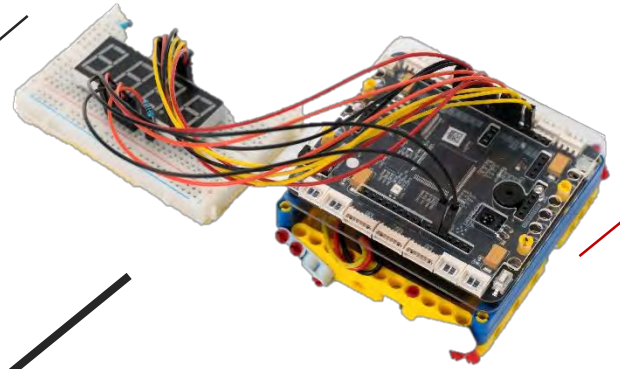


2

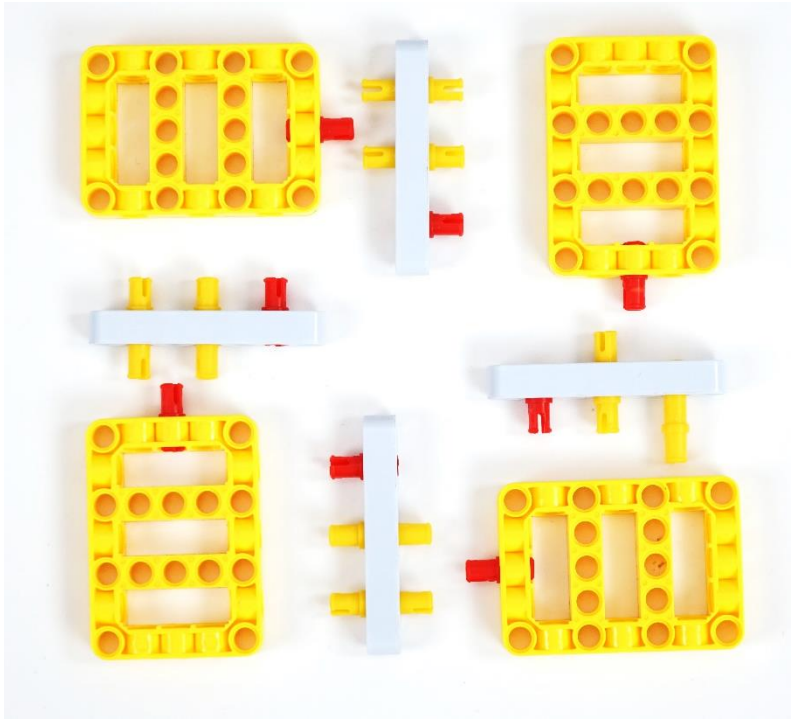
3

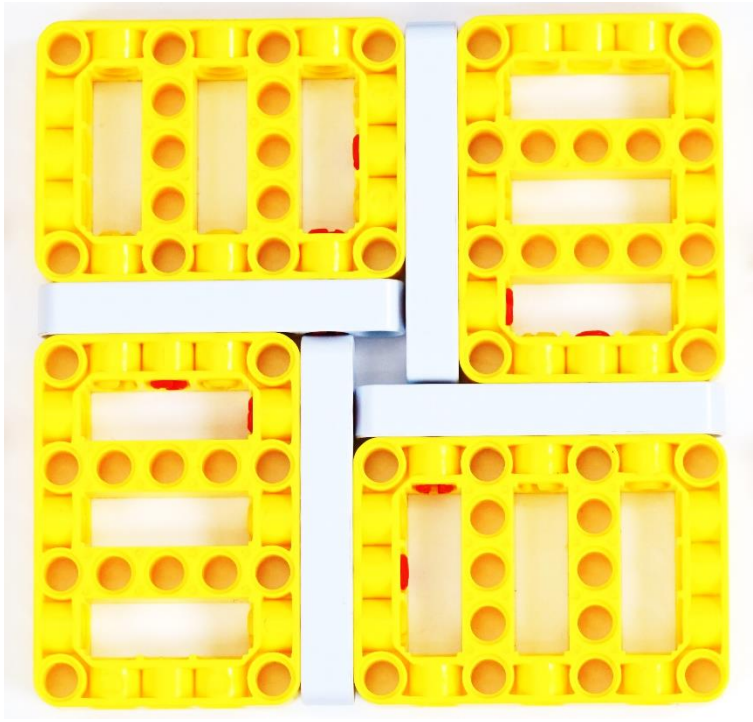
4

PART

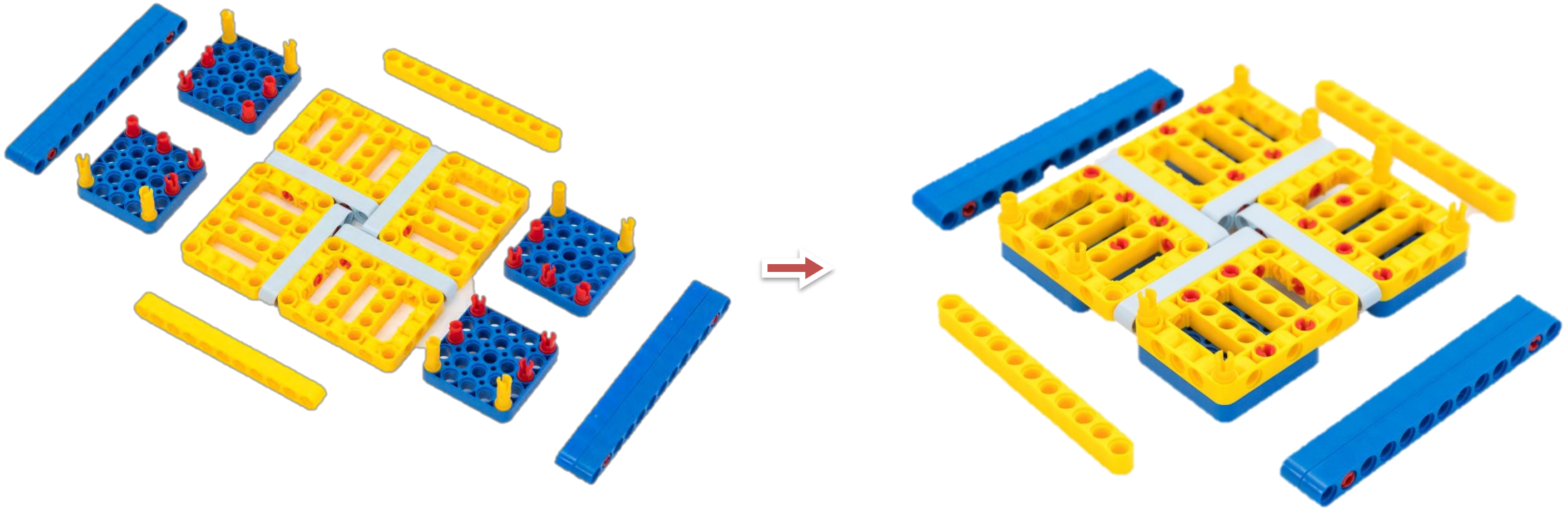


Building step 1

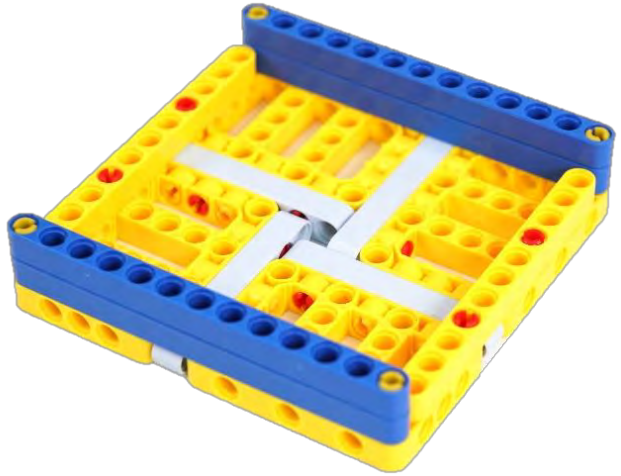




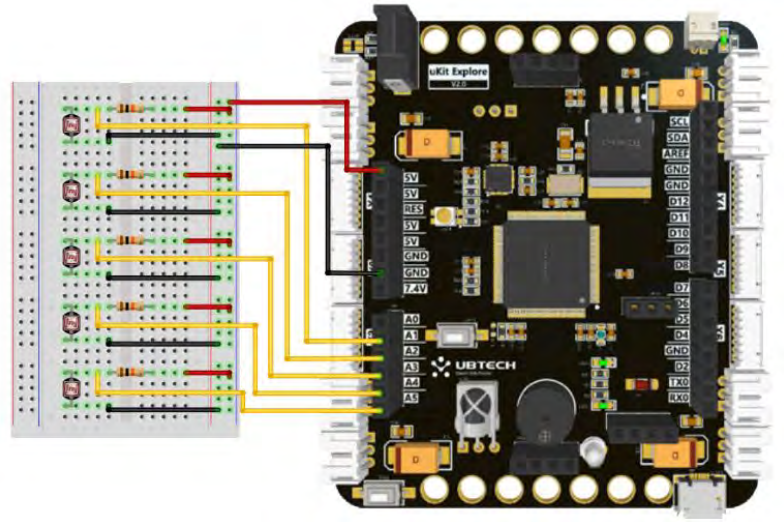
Attention to the position of pin



Attention to the position of pin



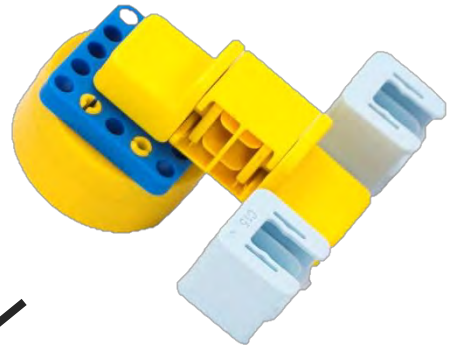
Don’t connect the battery!



Attention: connect the mainboard to PC via USB cable, upload the program, make sure the wire connection is correct, then connect to the battery.

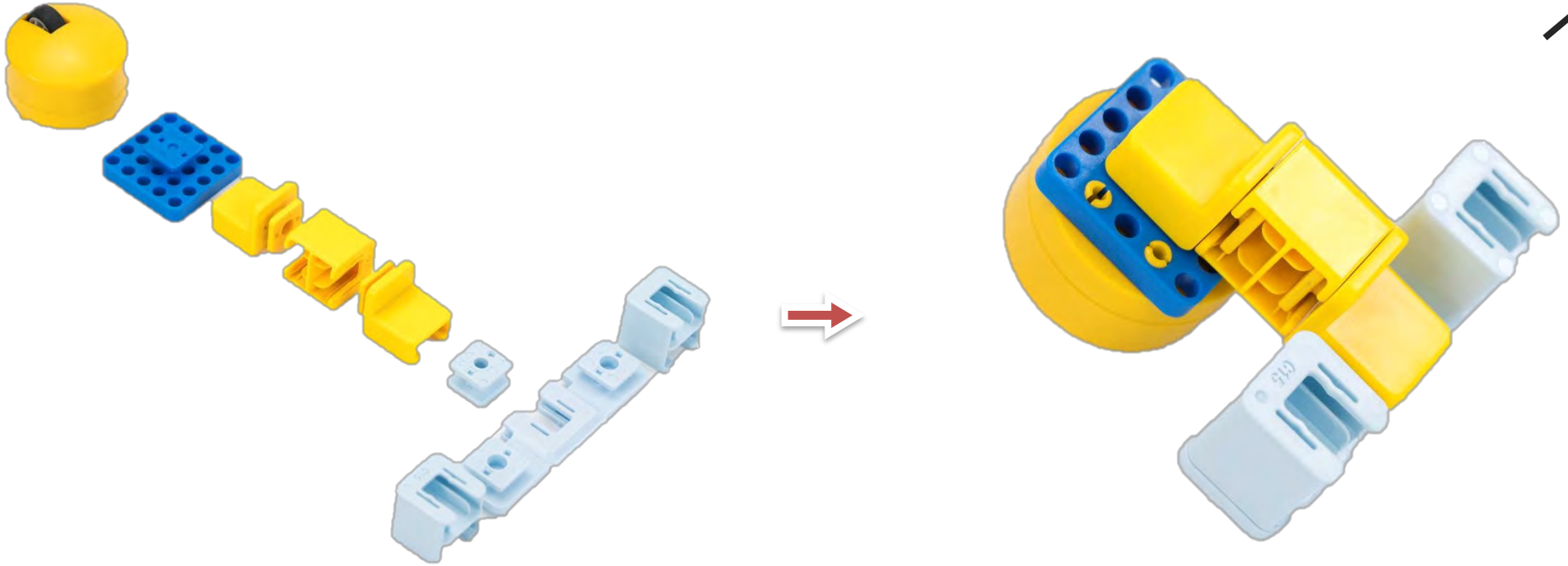
5

PART



Building step 2

5 Building step 2

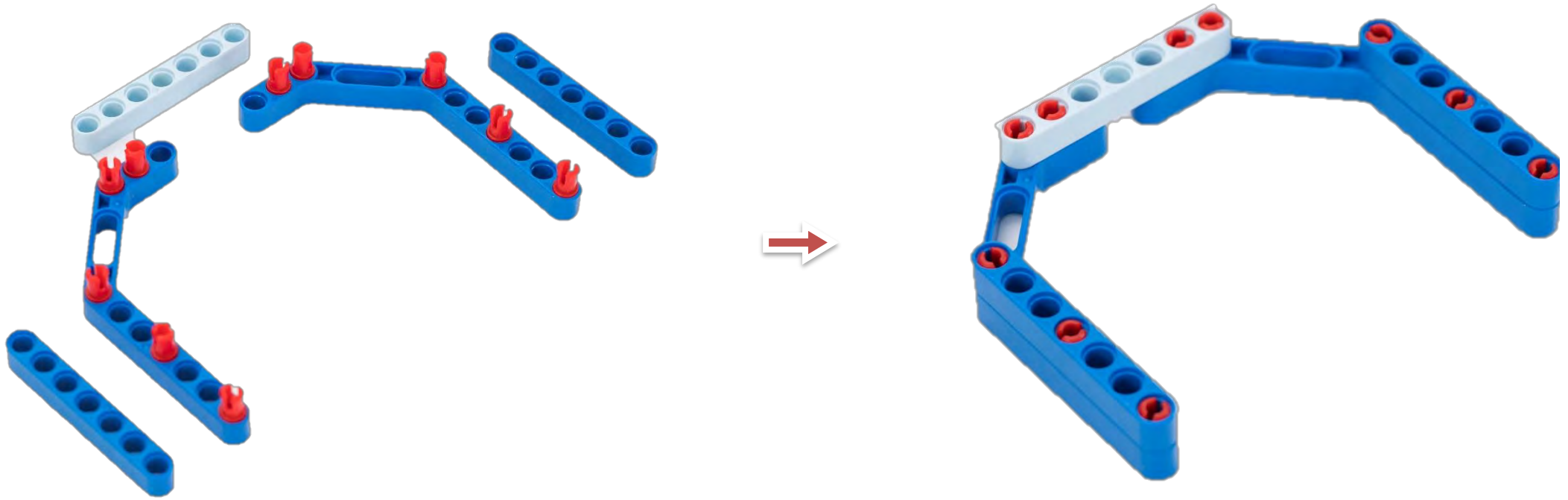


Part 2 completed

6

PART

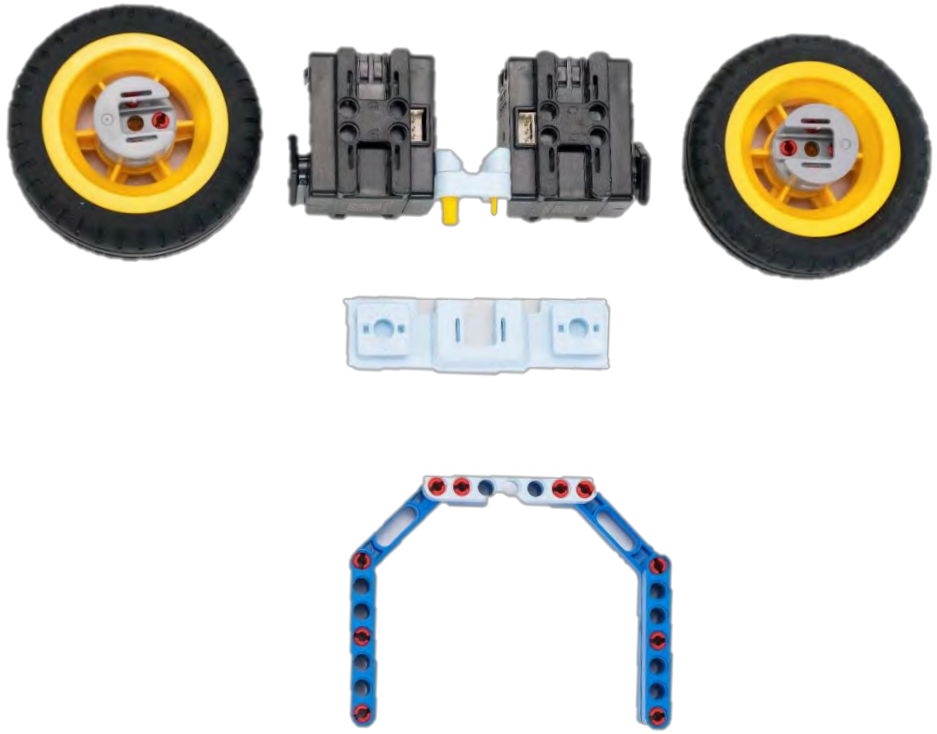
Building step 3



Attention to the position of pin

Use servos with ID 1&2
Attention to the position of pin

Build two parts



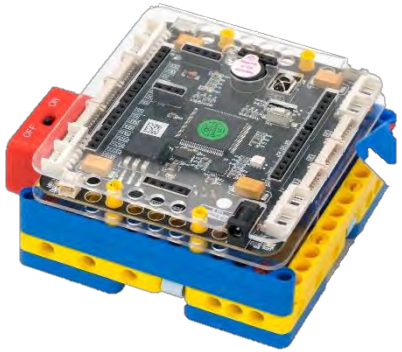
Part 3 completed

7

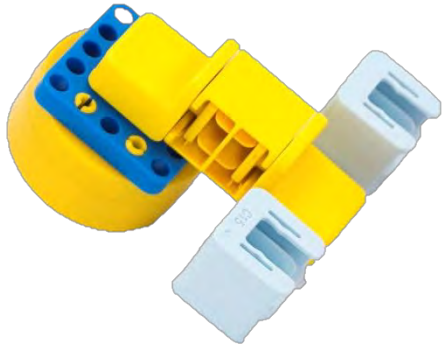
PART

Model assembly

7 Model assembly

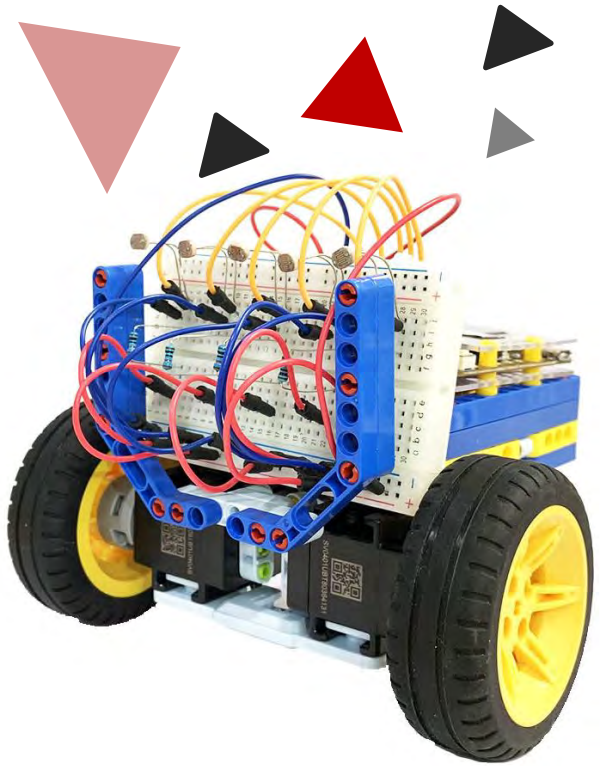


1



2

3



Model building completed