UNSW COMPETITIVE ROBOTICS GROUP

Building the future of automation

2017 MBZIRC team - Now 2020 mentors

OUR VISION

A SIMPLER WORLD

At UCRG we envision a world empowered by automation. We design and build unmanned ground and aerial vehicles for research and competition purposes. Our current mission is the 2020 Mohamed Bin Zayed International Robotics Competition (MBZIRC) .

MBZIRC 2020

INSPIRE INNOVATION

A biennial international robotics competition aiming to inspire future robotics through innovative solutions and technological excellence. With a prize pool of $5m (USD), MBZIRC attracts worlds best teams from the best universities around the world.

CHALLENGE 1

CONSTRUCTION

A team of aerial and ground robots must collaborate autonomously to locate, pick, transport and assemble different types of bricks into a pre-defined structure.

CHALLENGE 2

FIREFIGHTING

A team of aerial and ground robots will collaborate autonomously to extinguish simulated fires in an urban high rise building.

THE TEAM

MENTORS

Alumni

Harry Dudley-Bestow
Baraja

Stanley Lam
Baraja

William Andrew
Zoox

UNSW Staff

Dr Mark Whitty
School of Mechanical and Manufacturing Engineering

Dr Arash Khatamianfar
School of Electrical Engineering and Telecommunications

Dr Chris Lu
School of Electrical Engineering and Telecommunications

STUDENTS

Hideyoshi Cheong
Electrical Engineering

Dylan Sanusi-Goh
Mechatronics Engineering/Comp Sci

James Horsley
Mechanical Engineering/Finance

Dominik Daners
Mechatronics Engineering

Adam Tizzone
Mechatronics Engineering/Comp Sci

Sharif Issa
Mechatronics Engineering

Michael Xu
Aerospace Engineering/Mat Sci

Scott Fraser
Mechatronics Engineering/Comp Sci

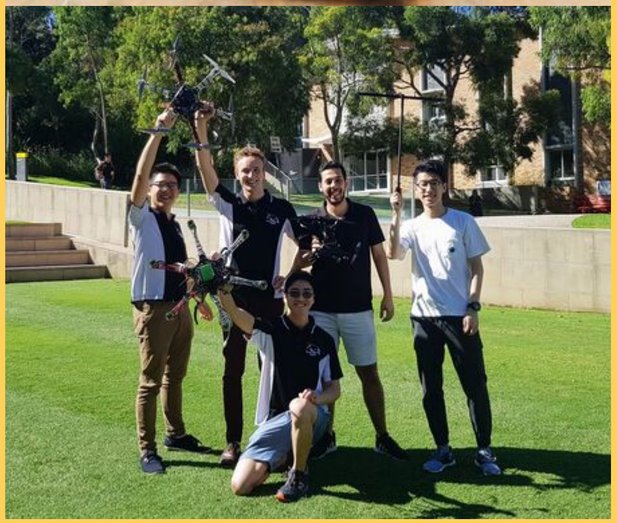
Taha Ahmed
Electrical Engineering

Kevin Luo
Electrical Engineering

Michael Salem
Electrical Engineering

Henry Phung
Mechatronics Engineering/Comp Sci

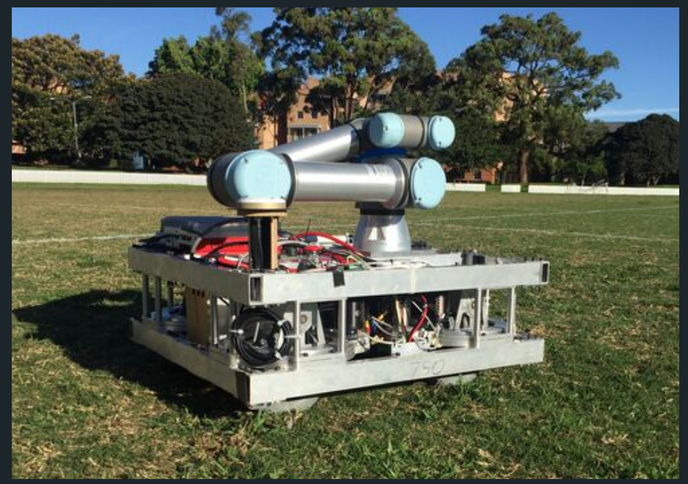
Lancelot Chen
Mechatronics Engineering/Comp Sci



THE ROBOTS

RUBY

- 3 identical UAVs
- Multi-vision system for improved location accuracy
- Servo-actuated magnetic gripper



DAISY

- Custom built frame allows for 3-degrees of simultaneous motion - Can move in any direction at any time

THE SOFTWARE

SIMULATION PLATFORMS

Used to test software for instant feedback and rapid iterative design

NETWORKING SYSTEM

Custom web interface for deploying and controlling software packages. Minimises risk of compatibility failures

UGV CONTROLLER

In-house developed controller that maximises command authority for fast and precise control of UGV

GRAPH-BASED SLAM

High-degree localisation accuracy to cm level even when flying indoors

PAYLOAD CONTROL

Autonomously predicts and accounts for, in real time, the effects of wind, changes in payload and unbalanced loads

ASKING

CURRENT FUNDING

To date, we have received $90K in funding from MBZIRC and UNSW that has been spent on components for the robots. The largest costs were the custom built frame and the arm of the ground robot which have both drastically increased the functionality of the robot

ADDITIONAL FUNDING

We are seeking additional funding to help us get over the line. This money will be used for Abu Dhabi logistics such as flights, accommodation, tools, testing, and spare parts for the robots

ADDITIONAL FUNDING MILESTONES

10K

UNDER-STAFFED TEAM

With an extra $10K we will focus on flights for a skeleton, 9 person team as well as essential spare parts such as an extra Tarot 680 Drone and batteries

20K

SPARE PARTS

An extra $20K of funding will also allow us to purchase more costly spare components such as an Intel SSD card, and a Roboteq controller and driver

30K

FULL TEAM

With $30K extra funding we will be able to field a full team in Abu Dhabi along with all necessary spare components

BENEFITS TO YOU

LOGO PLACEMENT

Have your logo represented on our merchandise, robots, posters, videos or websites

RECRUITMENT OPPORTUNITIES

We can provide greater access to the talented students within UCRG and the wider UNSW Engineering community. Partnership with us will also grant you advertisement of job opportunities in weekly newsletters and workshops with UNSW students

TAILORED SPONSORSHIP PACKAGES

We will work with you to tailor sponsorship packages to the needs of your company

REACH OUT

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UCRG AFFILIATIONS