SPIKE PRIME CHALLENGE COMPETITION

RoboCup Junior Australia

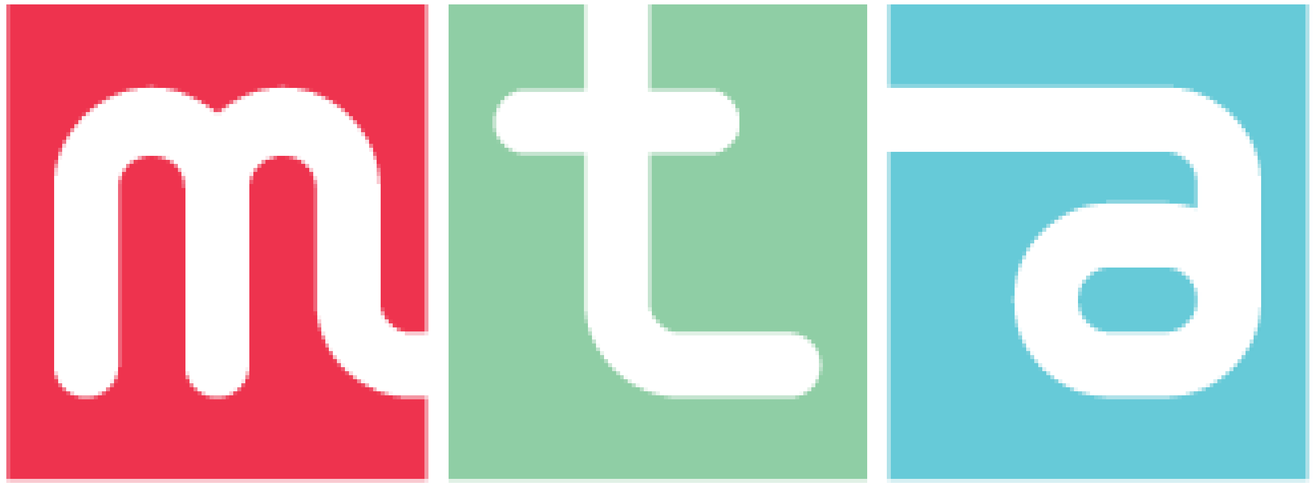
Acknowledgement of Country

We would like to acknowledge the traditional owners of the various lands on which we meet.

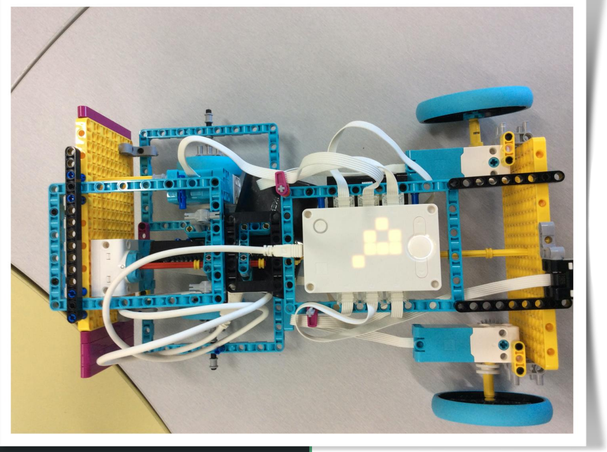
We would like to pay respect to the elders and leaders, past, present and future and extend this respect to other Aboriginal people present.

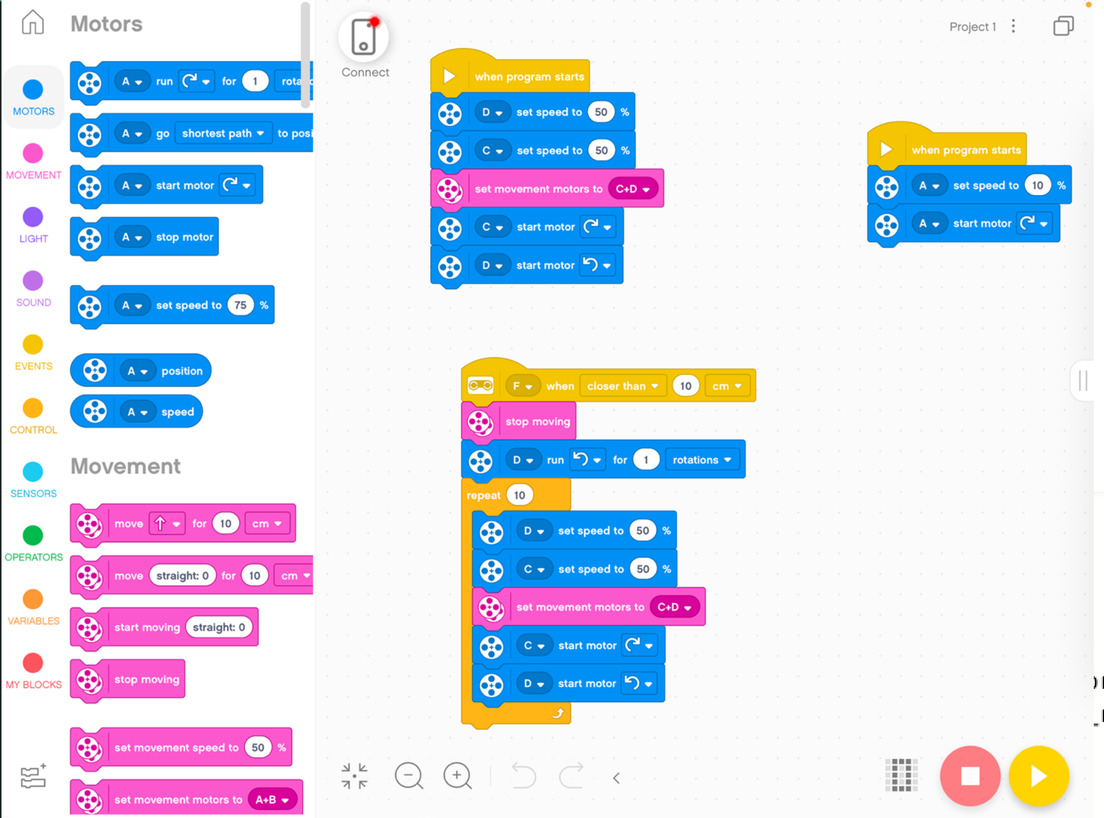
We come together in peace and harmony with all those who share this land.

Thank you…….



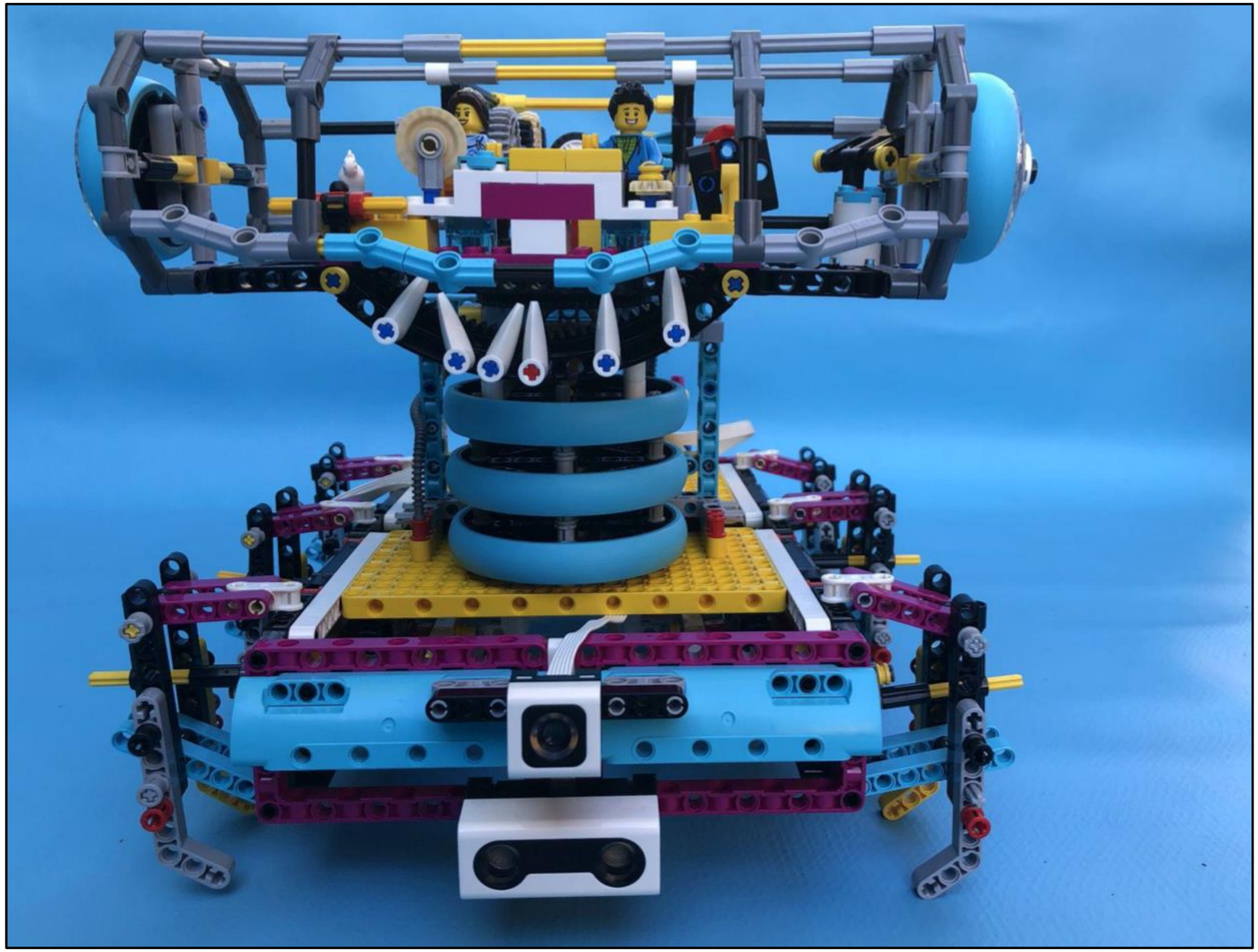
- 73 teams
- 262 students
- 43% female
- 57% male
- 1000’s of lines of code and one robot






```
39  motorPair.set_default_speed(30)
40
41  colour = colourSense.get_color()
42
43  if not(colour == None):
44      print(colour)
45
46  #print(distance)
47
48  if (colour=='red'): #detects crystals
49      motorPair.move(8.5 * math.pi / 4, 'cm', steering=100)
50
51  if (distance == None)or(distance > 10): #detects for nothing
52      motorPair.start()
53
54  elif (distance2 == None) or (distance2 < 6):
55      turning = 1
56      motorPair.move(8.5 * math.pi / 4, 'cm', steering=-100)
```

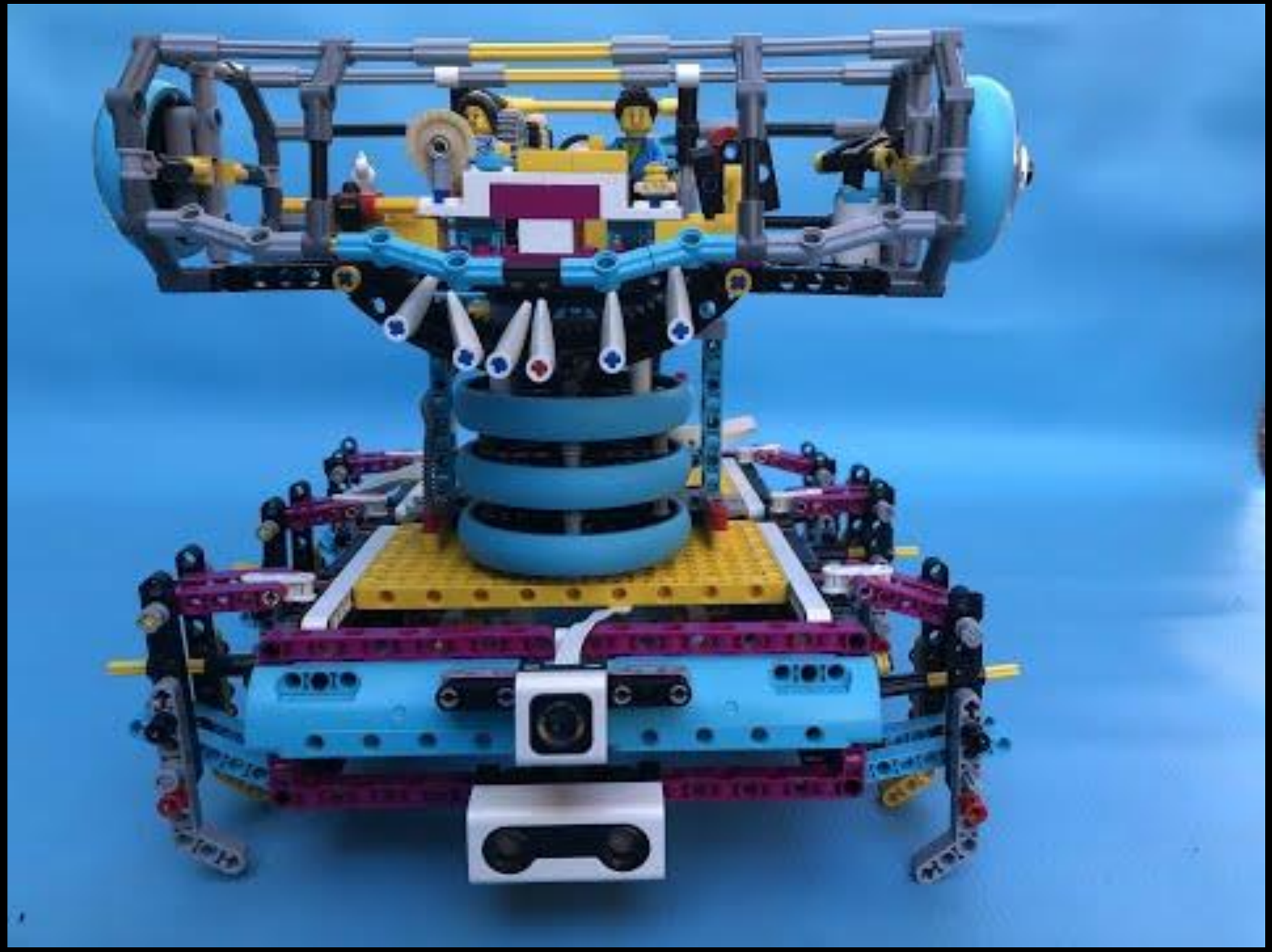
2022 Spike Challenge Awardees



1ST PLACE

Aussie Crawler

Independent Entry

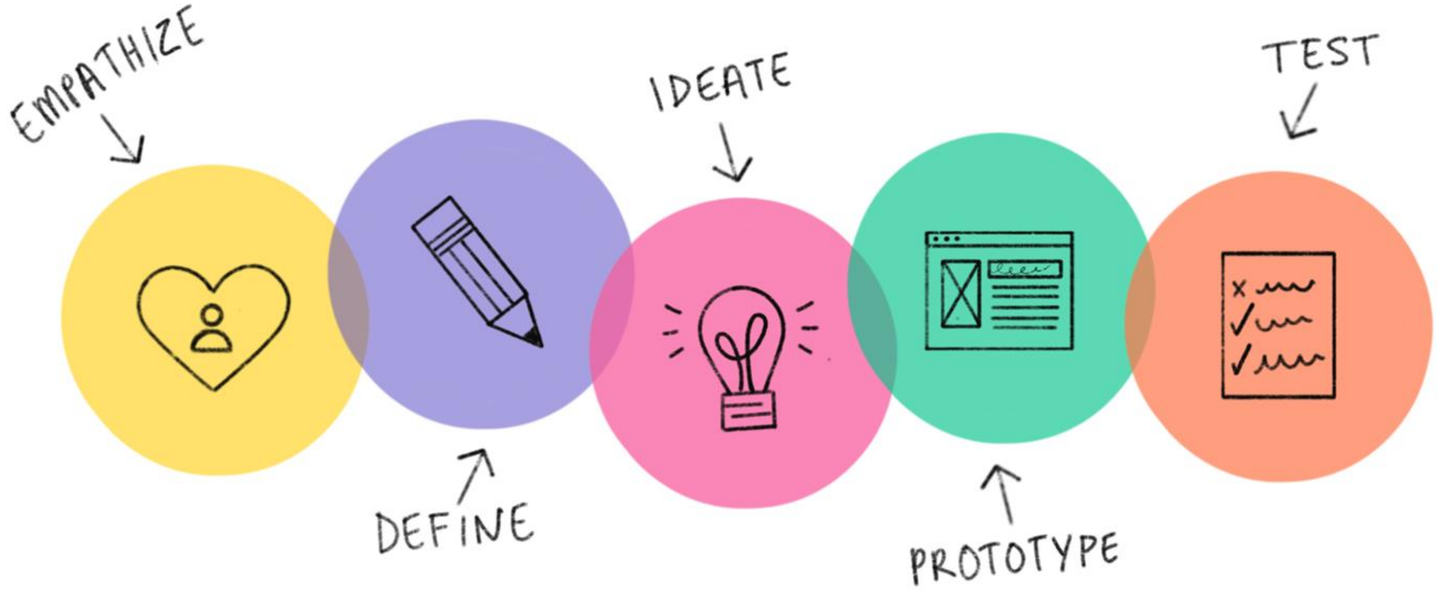


Brief:

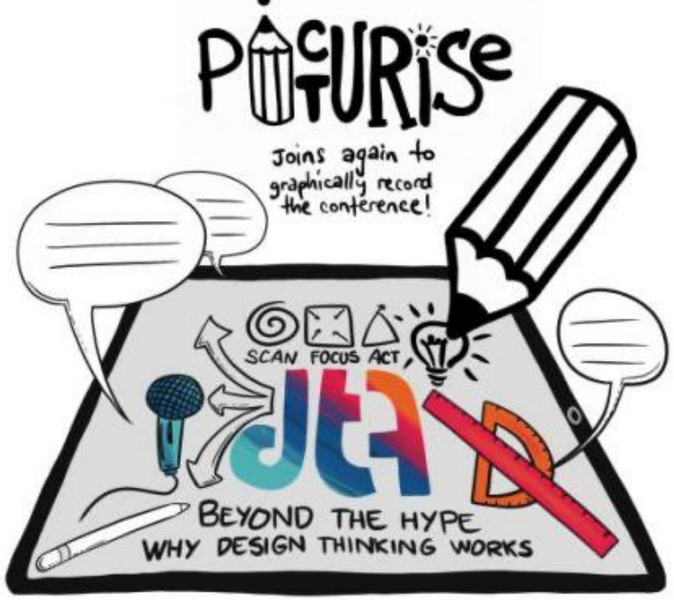
As an engineer in one of Australia’s top robotics laboratories, you are told about a new and exciting research opportunity to develop a new robotic creature. To be part of the research team you have to present the prototype of your idea, via video and technical paper, to showcase how it works and the special features it has.

Specifications:

This needs to be your own design. You are encouraged to research and find examples of what others have already done, but your final product should be your own: not a copy of someone else’s idea.



Specifications:



You will create a diary to show evidence of:

1. The research you did,
2. How you came up with the idea for your design (try brainstorms, flowcharts, drawings, etc),
3. Planning your design and program (justify why you made the decisions you made),
4. Pictures of your build along the way,
5. Anything else you want to share about your design.

Your robot will not be remote controlled, you should use hardware and write a program that enables it to be autonomous.

Specifications:

4. The robot should have features that can be found in the animal(s) that you are imitating (eg the way it moves, the skills it has).
5. You're absolutely welcome to decorate your robot to make it look more like the animal(s) you're trying to imitate. Just make sure that you don't spend all your time on decorating and forget about the programming!
6. You need to use a Spike Prime kit for the base model of your robot. You can use other Lego parts to build your robot however all sensors need to be from the Spike Prime kit.
7. Don't forget to have fun and be creative!!

Submission

This should include:

1. a video (max 5 minutes) of you demonstrating your robot as it shows off its animalistic features.
    1. Include an introduction where each team member discusses their role in the team,
    2. A discussion about why you think you robot is a good example of a biorobot,
    3. Describe the features that you built/programmed into the robot, and why they're special
    4. Each team member should discuss what they found the hardest, and what they enjoyed the most about this challenge.
    5. Your robot in action.
2. A document (.pdf is best) with all your supporting evidence, outlined in (2.) in the specifications. It is helpful for us if you include photos of the robot in this document so we can see how well it has been built.

Resources:

Example LEGO builds:

https://bit.ly/puppy_ev3

https://bit.ly/robot_arm_ev3

https://bit.ly/eleph_ev3

https://bit.ly/insect_ev3

https://bit.ly/gorilla_ev3

https://bit.ly/turtle_ev3

Youtube videos on Biorobotics:

https://bit.ly/biorobotics_harvard - Biorobotic overview

https://bit.ly/biorobots_tested - Interviews of biomechanical engineers

https://bit.ly/salamander_ted - TED Talks on the salamander robot

https://bit.ly/spot_mini_ted - TED Talks on ‘Spot’ the robot dog

Boston Dynamics - A company that is very involved in bio robotics: check out their website and some of the videos they have on the robots they have developed.

https://www.bostondynamics.com/

Hatch website: https://sites.google.com/view/biobots/home

Spike
Challenge
Let your
imagination fly