

The **BRAINWAVES** Club

Term 2 2021: Junior TechnoKids – Years 1 and 2

Venue: Alphington Grammar School

Term Fee: \$285.00

Animate Me!

In this term, Junior TechnoKids will explore the exciting areas of Animatronics and Mechatronics. Mechatronics is an interdisciplinary area that combines mechanical and electrical engineering with computer science. Animatronics is all about the creation of machines with the life-like qualities of animals, plants and even mythical creatures. Each meeting we will utilise engineering design processes and apply creativity, maths and science knowledge to our designs. We will use a variety of technologies and combine different materials, programs and structures to design and build programmable models of various creatures. Junior TechnoKids will practise observing and modelling animal behaviour and function. Throughout the term we will aim to answer a big science question: why do animals look and act the way they do, and how can we study and explain their looks and actions?

1 May

Meeting 5: Who Ya Gonna Code?

Focus: Coding : Scratch

Step into the boots of a ghostbuster as you create a game with the aim of catching some sneaky spirits! You'll have to consider how to set up your game in Scratch, so the stylistic elements and effects are programmed to be appropriately spooky. Then comes the tricky bit – first coding the ghost to move predictably using the x and y coordinates, then making it harder to catch by randomising its movements. Once your game is done, you'll have a chance to give feedback on others' games and receive feedback on yours to improve its design and functionality.

15 May

Meeting 6: Adaptation

Focus: Coding : Scratch

Using Scratch, club members will design an interactive environment for a particular species of animal. Using the focus question "What makes a place a *habitat*?", the Junior TechnoKids will gather as much information about a species as they can including what they eat or what they need to survive. They will then create a scrolling game to portray how the animal scavenges in its created environment. They will share their game with others in the group and consider whether each animal is a good match for its habitat.

29 May

Meeting 7: Animatronics

Focus: Physics and locomotion

How do scientists study animals? They often have to go out into their environments to make carefully observations. In this session the Junior TechnoKids will use books and videos to study the physical structure and behaviours of animals and record observations through writing and drawing. Guided by the focus question "Why do animals look the way they do?" the members will carefully study structures, determine animal functions and examine the structures used for locomotion of one animal in detail. Then using appropriate LEGO® pieces, they will create a model of this structure.

19 June

Meeting 8: Program sensors, actions and emotions

Focus: Robotics

Will robots ever feel human emotions like happiness or sadness, anger or even amazement? Pepper is a [humanoid robot](#) designed by [Alderman Robotics](#) which can display emotions. Pepper's 'emotions' come from the ability to analyse facial expressions and voice tones. How do animals communicate their emotions and their needs? Can you tell if your cat is happy or sad or frightened? How do you know if your dog is hungry or cold? In this session, the Junior TechnoKids will design and program their robotic animal to 'express' emotions and needs.

What to Bring:

Each week please bring a blank A4 notebook and a well-stocked pencil case including;

- Pens and pencils
- Scissors
- Sticky Tape
- Good Textas
- Glue Stick

About the club leader: Mark Maxwell

Mark is an artist and workshop presenter. His practice encompasses marques, woodwork, building, animation, set design and lighting. When creating miniature models, he explores engineering principles and tries to design projects that promote open-ended creativity. Mark has completed an Art and Design degree and has worked as technical engineer in many theatres. He presents workshops for Regional Arts Victoria, which bring professional art practitioners to schools, community groups, art galleries, libraries and art festivals.