

Skyrock

T Y P A

PRESENTS:

Summer Tech Camps

for ages
4 - 14





Summer Tech Camp

Welcome

In the Skyrock Tech Summer Camp students will split their time 50:50 between our STEAM and Coding Bootcamps.

Every week they will complete new projects and move through our carefully designed curriculum by following the Skyrock Workbook made especially for each bootcamp.

The curriculum will cover the entire 6 weeks of the summer camp.

Students can join any time throughout the summer. All resources are built from the ground up by full-time Skyrock teachers, and they are designed so students can work through the course at their own pace, module by module. Our teachers will be always on hand to teach concepts and guide students through the course.

None of the material we will use has been used at any of Skyrock's camps or classes at TYPA.

Our curriculum consists of 5–10-hour modules. In the unlikely case of a student has extensively used a tool, they can simply do a different module in that program that uses a different tool.

Please review the curriculum pages that follow.

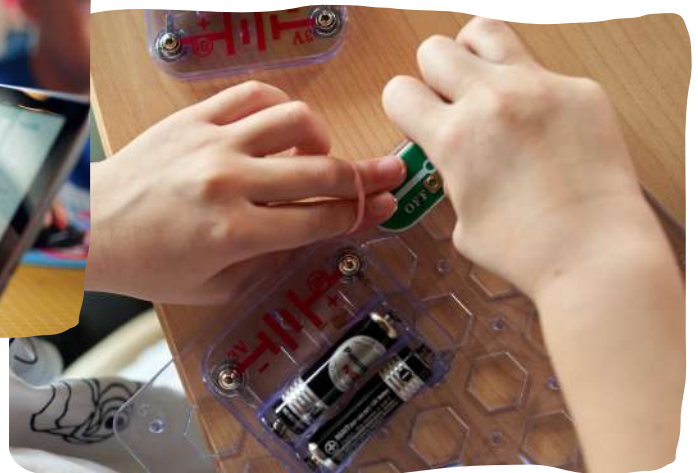


Skyrock Milli

Grades 1&2

"Every time I teach I think about myself as that curious child, dreaming up crazy ideas- and I want to give those children the tools to make their ideas a reality while building up their general knowledge and creative confidence."

Josh, Curriculum Developer



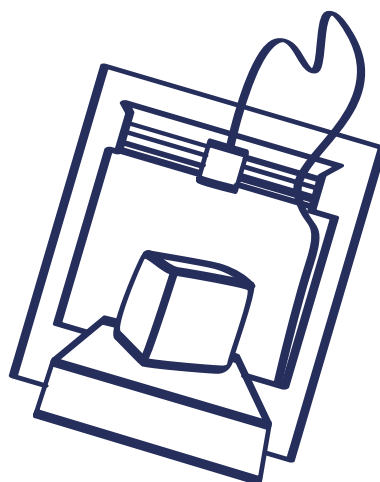
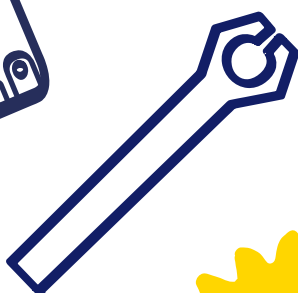
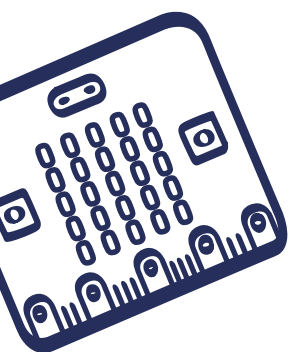


STEAM Bootcamp

INVENTING WITH ELECTRONICS

This camp is great for kids who enjoy making things with their hands and tinkering with materials to build amazing creations. Together with skilled instructors your child will learn how to use maker tools, electrical components, and their creativity to complete fun science and engineering projects and challenges.

With a range of electronics that move, sense, light up, and make noise – kids gain STEAM skills by learning how technology is built. In addition, kids learn how to combine technology with DIY tools and materials to invent something awesome.





Some of the things we will make:

A color changing LED night light

A moving poster that makes objects move with motors and sensors

A movie maker to animate amazing pixel art

Your own board game that works with electricity

... and more!



Some of the things we will learn:

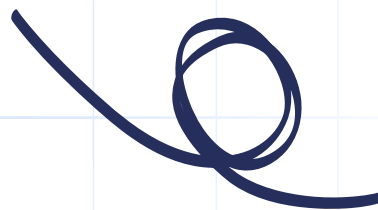
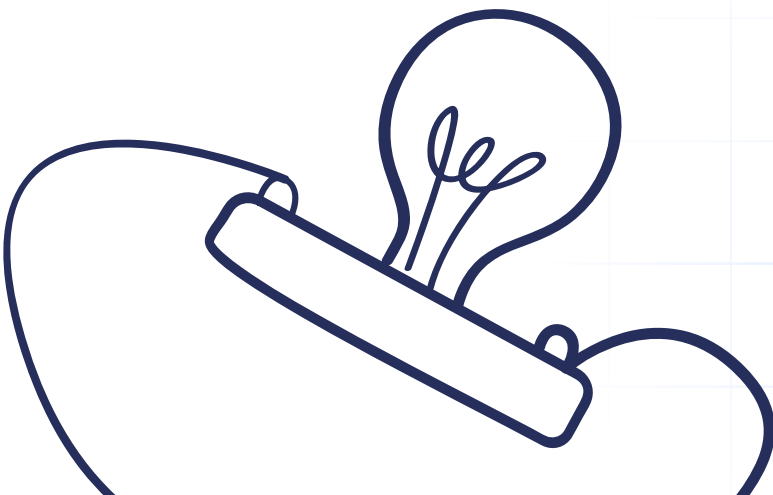
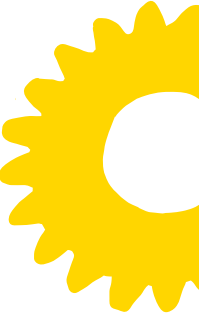
How to use craft materials and maker tools

How to think like an inventor

Engineering and physics concepts around light, magnetism and motion

How circuits work and how to connect electrical components

... and more!





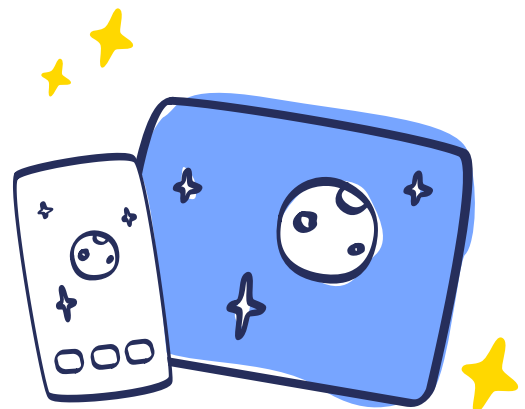
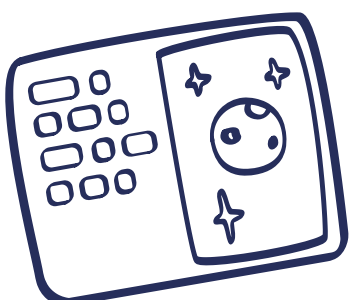
Coding Bootcamp

AN INTRODUCTION TO CODING THROUGH GAME DEVELOPMENT

If your child is interested in learning how to code, or if you would like for them to learn coding in a creative and interesting way, then this coding camp is a fantastic choice.

Together with skilled coding instructors your child will get some logic training, learn about loops, and conditionals while making games and solving puzzles that were built with code. We won't just solve the puzzles; we will think about the code that was used to make them! Then we will be ready to make our own using Scratch.

This is a great starting point for children with limited digital literacy skills but would like to improve them so they can use a computer like a pro!





Some of the things we will code:

Interactive games that keep the score

Mazes that are tricky to navigate

Logic puzzles with surprises

Image and video recognition demonstrations

... and more!



Some of the things we will learn:

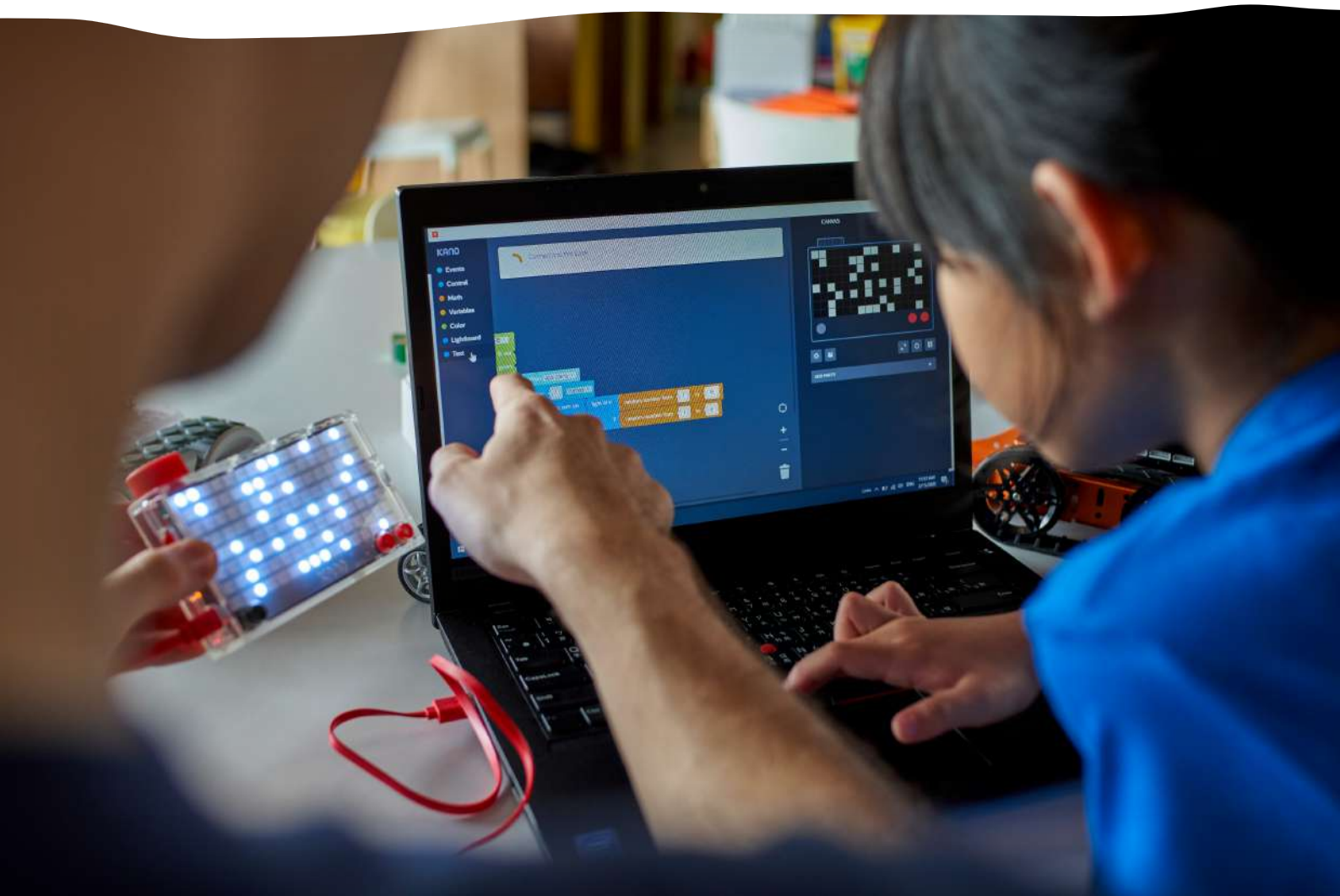
How to decompose and recognize patterns

Functions and loops

Sequencing and conditional logic

Game design principles

... and more!



Skyrock Micro

Grades 3&4

"After studying engineering and working as a software engineer I wanted to show students that talking to robots and electronics isn't so difficult and can be really awesome."

Stephan, Curriculum Developer



Micro

Grade 3-4



STEAM Bootcamp

INVENTING WITH THE NINTENDO SWITCH

In this camp we'll invent novelty game controllers using engineering and design, hack the Nintendo Switch to make our own games, and explore creativity in VR and AR. We'll even learn how to use a laser cutter and combine this new skill with advanced origami and pro-level hot glue gun fun.

If your child likes to make things, to play with hands-on toys and puzzles, and they love Nintendo – then this Tech camp is for them. They will discover what it takes to be the kind of inventor that works at Nintendo!





Some of the things we will make:

Analogue game controllers

One big Super Friendship Arcade

Wearable tin foil controllers with Makey Makey

VR game controllers

... and more!



Some of the things we will learn:

Shapes and geometry

Material strength

Physics of optics and light

Laser-cutting skills ... and more!

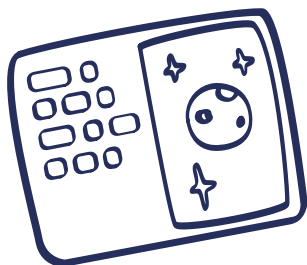


Coding Bootcamp

CODING INTERACTIVE INVENTIONS WITH MICROBIT

Learning how to build a game that you can play on an iPad is cool, but learning how to code a game with a computer AND using craft materials and electronics to make it playable in real life is the next level up.

However this camp is about so much more than making fun games or novelty toys. Kids will use the MicroBit microcontrollers and Microsoft's MakeCode software to explore all of the possibilities when you combine microcontrollers with some simple electronics and code. They will get to apply all of the coding skills they've learned through puzzles and challenges to their design briefs so they can practice constructing their own code structures and algorithms from the bottom up.



This Micro level program is a great extension of what kids learn in the Milli level program, since it moves on from the iPad and structured challenges to using the computer and electronics to implement their own code structures.



Some of the things we will code:

Interactive games that keep the score

A robot that can play games with you

A clone of an everyday item that uses code

Novelty game controllers

... and more!



Some of the things we will learn:

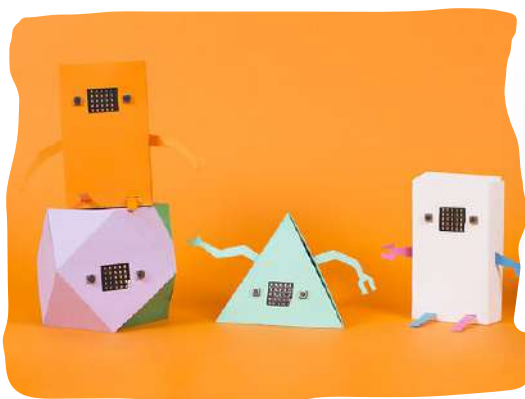
Coding functions that can make decisions

Algorithm design

Coding with inputs and outputs

If statements and conditional logic

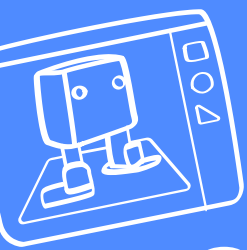
... and more!



When app starts

Set background color to





Skyrock Mega

Grades 5&6



"I was always fascinated by the presence of technology in our lives along with its potential to do good. This interest inspired me to learn how to code and discover how all these transformative things-of-awesomeness' come to existence so that I could learn how to create and partake in this revolution."

Seb, Curriculum Developer

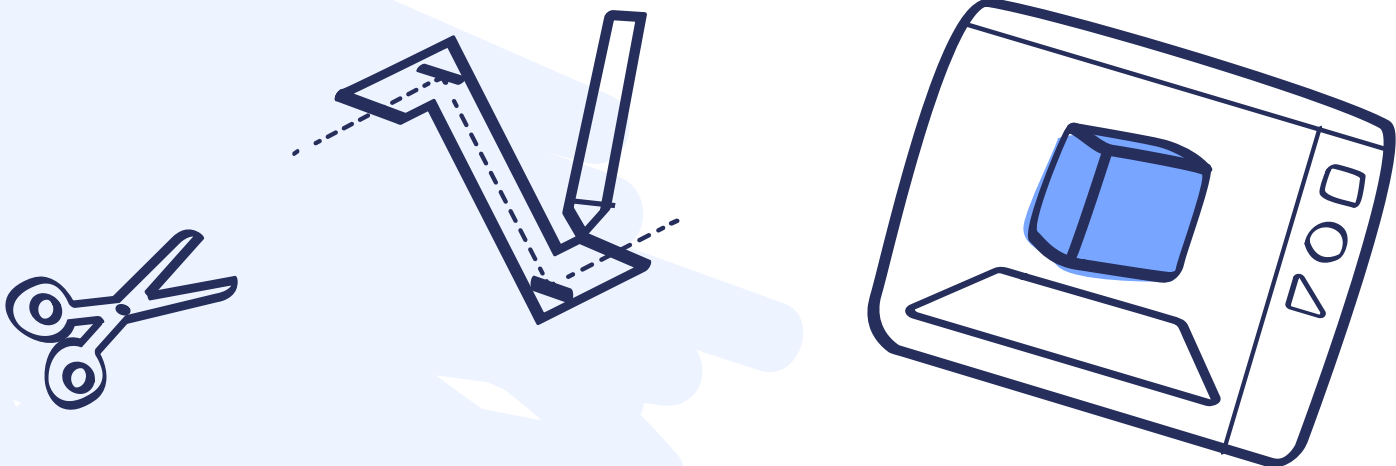


STEAM Bootcamp

INVENTING WITH 2D AND 3D DIGITAL FABRICATION TOOLS

In this camp we'll learn about the power of tools that are powered by code, electricity, and mechanical engineering to make the parts we need in order to invent amazing things. We will design cardboard structures and create them with a laser cutter, 3D model figures and print using a 3D printer, and create 3D AR and VR simulations by designing our own worlds.

When we truly understand the power of these tools and have the confidence to use them, we can design and prototype models of almost anything we can imagine.



At the end of this camp, your child will understand what it truly means to be a maker as they learn how to make the most of everything in a maker space!



Some of the things we will make:

A toy design out of cardboard

A 3D scanned and printed model of ourselves

Custom parts for our electronic inventions

An AR and VR universe

... and more!



Some of the things we will learn:

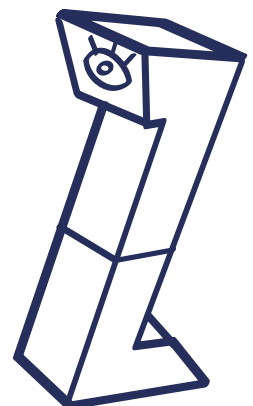
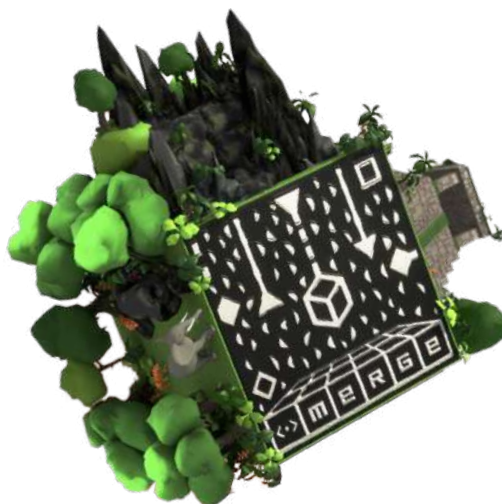
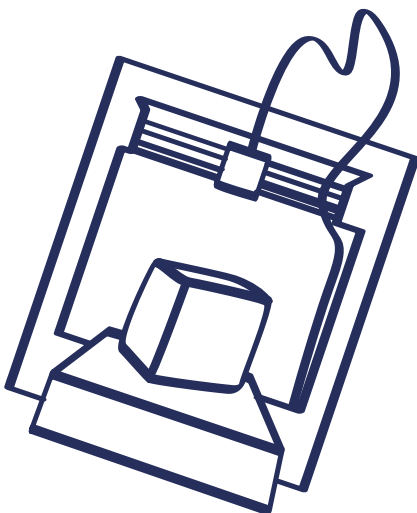
Drawing and cutting 2D schematics

Managing assets in 3D worlds

3D design and geometry

Creating and testing simulations with electronics

... and more!



Coding Bootcamp

CODING INTERACTIVE INVENTIONS WITH MIRCOBIT

This Mega level camp is where kids move beyond block code and independent projects and move onto writing script code with Python. We will make a Future City with multiple code-based inventions that can interact and connect with each other.

Every day, we will work on building some basic Python programming skills through practice challenges. Afterwards, we will learn how to bring Python coding to life and into the real world by using it to code everyday inventions that you might find in a Future City.



Why do we love this program so much? Because it combines learning something complex like learning to write Python code with something accessible like the Mircobit that has lots of practice projects available. Also, because seeing the code in action through every day items is the clearest way possible for kids to understand how code works and when it is used to solve problems.



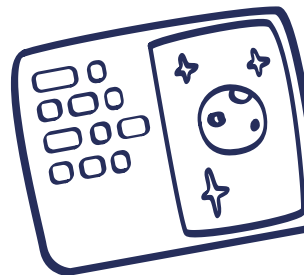
Some of the things we will code:

Python scripts for controlling lights, buzzers, motors, and sensors

Python scripts for wirelessly controlling interactive inventions

Python scripts for a traffic light, a smart billboard for advertising

Solutions to Python logic problems ... and more!



Some of the things we will learn:

How to hack and reprogram microcontrollers using Python

How to code interactive projects with electronics and sensors

How to build electronic circuits that connect with microcontrollers

How to configure and connect wireless inventions ... and more!

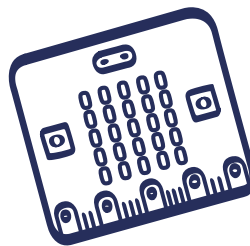
Skyrock Giga

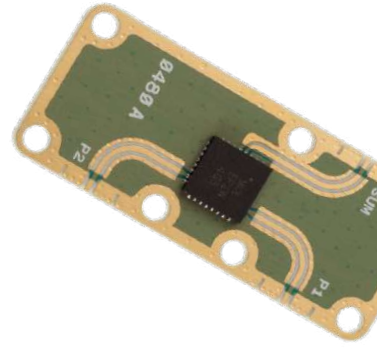
Grades 6+

JS

"Before Skyrock Camp I could only do block code. I learnt this week how to write script!"

Avery, 13



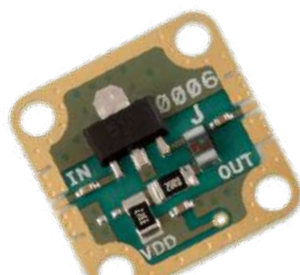


STEAM Bootcamp

INVENTING 'INTERNET-OF-THINGS' SYSTEMS

In this camp we will learn to apply code, electrical engineering, interface design, and even some robotics to invent devices that can collect data, process it, and perform a set of instructions autonomously.

The Internet of Things (IoT) is the network of physical devices embedded with electronics, software, sensors, actuators, and connectivity which enables these objects to connect and exchange data. Learning how to invent and prototype IoT devices will be the superpower that will unlock an understanding of the power of technology in the real and physical world for your child.





Some of the things we will make:

Smart devices for a connected city

Smart devices for understanding our climate

Smart devices for automating everyday tasks

Tools for connecting devices to one another

... and more!



Some of the things we will learn:

How to design and configure automated systems that manage inputs and outputs

How to collect data using sensors

How to store and process data using an API

How to design a smart system using electronics

... and more!

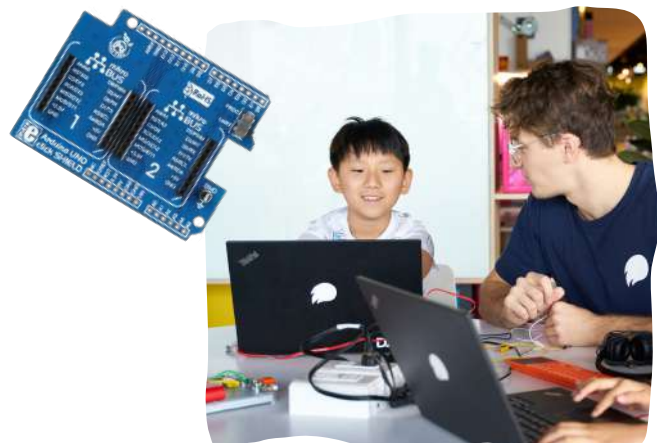
Coding Bootcamp

AI AND MACHINE LEARNING WITH JAVASCRIPT CODING

This Giga level program is a serious step up from our other coding bootcamps since it now goes beyond Python and the Microbit and moves onto using JavaScript (JS) and web-based tools for AI and Machine Learning.

Students will learn how to train a computer to recognize their own images, sounds, and poses. Together we will gather and group example data into the classes or categories that we want our computer to learn. Then we will train our models, test it to see if it can recognize other categories, and then train it again. And finally, we will export our model to an app and host it online for everyone to see and experiment with it.

JS





Some of the things we will code:

A model that can tell whether music is rock or not

A DIY sorting machine that connects with an Arduino microcontroller

A model that can tell whether a piece of fruit is ripe or not

Code structures for embedding Machine Learning models in apps

... and more!



Some of the things we will learn:

How to import data and configure/reconfigure Machine Learning training models

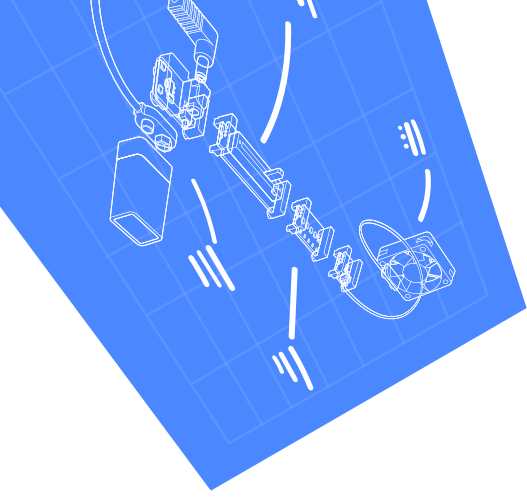
How to source and implement JavaScript code modules, structures, and libraries

How to use web-based tools to create machine learning models for apps

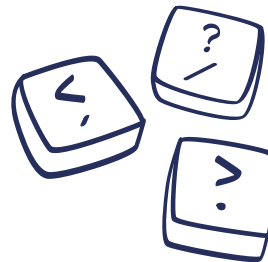
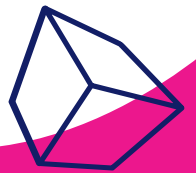
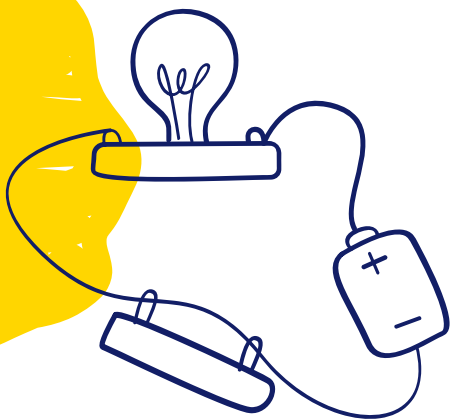
How Machine Learning works and how it can be used in the real world

... and more!





Unleash the creativity in your kid!



JOIN OUR FACEBOOK SUMMER CAMP 2020 COMMUNITY
GROUP TO SEE SOME STUDENT PROJECTS