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## Super Series (5-7)

Hello! This document includes a brief outline of our new Super Series workshop, as well as relevant BC ADST curriculum connections. In this workshop, students will learn about problem decomposition & how to build a computer program by breaking it down into smaller sections. They will then explore and use different AI softwares, to create their own machine that recognizes body poses.

<p><b>BC Curriculum Ties</b> (In addition to satisfying multiple core competencies)</p>	<p><u>BC Applied Design, Skills, and Technologies Curriculum Links 5-7:</u></p> <p>Designs can be improved with prototyping and testing &amp; The choice of technology and tools depends on the task.</p> <ul style="list-style-type: none"><li>• <b>Applied Design:</b><ul style="list-style-type: none"><li>○ <i>Defining – Identify the main objective for the design and any constraints</i></li><li>○ <i>Ideating – Generating potential ideas and add to others' ideas, Screen ideas against criteria and constraints, &amp; choosing an idea to pursue.</i></li><li>○ <i>Testing – Develop an appropriate test of the prototype</i></li><li>○ <i>Making – Identify use of appropriate tools, technologies, and materials for production, &amp; Making a plan for production and carrying it out, making changes as needed.</i></li><li>○ <i>Sharing – Demonstrate their process, using appropriate terminology and providing reasons for methodology, Reflect on their design thinking and processes.</i></li></ul></li><li>• <b>Applied Skills:</b><ul style="list-style-type: none"><li>○ <i>Use materials, tools, and technologies in a safe manner, and with an awareness of the safety of others, in both physical and digital environments</i></li><li>○ <i>Identify and evaluate the skills and skill levels needed, individually or as a group, in relation to a specific task, and develop them as needed</i></li></ul></li></ul>
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	<p><i>Computational Thinking</i></p> <ul style="list-style-type: none"> <li>• <i>simple algorithms that reflect computational thinking</i></li> <li>• <i>visual representations of problems and data</i></li> <li>• <i>evolution of programming languages</i></li> <li>• <i>visual programming</i></li> </ul>
<b>Grade Levels</b>	5-7
<b>Time</b>	1~1.5 Hours
<b>Goals of the Workshop</b>	<ol style="list-style-type: none"> <li>1. Expose students to computational thinking – being able to understand and express problems in terms that a computer can understand.</li> <li>2. Introduce how code and games can be built piece by piece and improved upon using scratch</li> <li>3. Understand machine learning processes</li> <li>4. Use machine learning to make predictions and decisions</li> <li>5. Application of machine learning to solve engineering problems</li> </ol>

## Activity Descriptions

### If/Then Game

Objective: To explain to students the basics of programming & a common conditional coding statement through an interactive game.

Participants will:

- Learn about how an if/then/else statement works by having students complete tasks & move around if a conditional statement applies to them. We'll start simple, then have students move on to kookier tasks!

### Instruct & Build – Make your Own Video Game!

Objective: To teach students how to build a functional Scratch game, where students will learn how to use Sprites to create a game of their own!

Participants will:

- Learn about Problem Decomposition & how computer games and programs can be built piece-by-piece to simplify the project.
- Learn the basics of Scratch & how to use conditional statements and other coding ideas to build this game up from scratch.
- Be given opportunities to focus on and improve specific parts of the game based on what they find interesting (Focusing on game aesthetics, focusing on improving current game systems, implementing new game systems, ETC).

### Google Drawing Guesser

Objective: To learn about how machine learning algorithms recognize and categorize information as well as the limitations of machine learning

Participants will:

- Learn how machine learning differs from traditional computer programs
- Understand how humans learn using classical and operant conditioning
- Use Google Quickdraw to see a computer program guess drawings
- Learn about the applications and limitations of machine learning including biases and its impact on social media

### Pose Emojis

Objective: To train a machine learning program with photos and to use the algorithm to code emojis

Participants will:

- Learn more details about machine learning such as training vs testing sets, the importance of quality data, false positives, and confidence intervals
- Train a machine learning algorithm to recognize certain poses
- Learn basic JavaScript coding
- Code emojis/filters to only appear when certain poses are performed



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**We can't wait to connect with your school & expose your students to the STEM field with our exciting, hands-on STEM activities!**

