Cognitive Systems Academy™

ROBOTICS
Claw Pick & Place Machine Challenge

Ages 7–14 | LEGO Mindstorms Robotics Applied Science Hands-on

DSA Portfolio Boost | Duration: 2 hrs

Photo is for illustrative purposes, design varies according to actual product made by students.

A program of Applied Computational Intelligence Institute
Curriculum powered by the Explainable Intelligence™ Framework
with research support from the Cognitive Intelligence Lab

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Another World Class
Content by **Cognitive Intelligence Lab**

Robotic Arm Pick-and-Place Challenge

Build. Engineer. Control. Compete.

In this hands-on workshop, students design and build a LEGO Mindstorms robotic arm claw machine, then put their engineering skills to the test in an exciting time-based challenge.

Students will program their robot to pick, move, and place objects accurately — just like real automated systems used in factories, logistics, and smart warehouses.

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World Class Framework:

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Students learn to explain how their code and systems behave, like **Harvard (CS50) and MIT,** they don't start by memorizing syntax. Curiosity, reasoning, and understanding always come first.

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What They'll Learn

Applied Robotics Engineering

Understanding how real robotic arms operate in automation and manufacturing.

Mechanical Systems
- leverage and motion
- motor control
- stability and structure

Control & Programming

How code translates into real-world mechanical movement.

Problem Solving Under Constraints
Design → test → refine → compete.

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Key Takeaways

DSA PORTFOLIO BUILD UP

•Each student receives a Digital DSA Portfolio

•DSA write-up, Testimonial & Evidence

Skill Sets:

- Creativity
- Communication Skills
- Collaboration & Cooperation
- Goal Orientation
- Leadership Skills
- Analytical Reasoning
- Scientific, Robotics concepts
- 21st century skills competencies
- Robotic Technological application and concepts

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SHOW OFF!

Let's Show Off!
Present what you have built!
Student presentations to parents at Open House.

1)Introduce your team and name your design!
2)What does it do?
3)What are your roles?
4)How does it work?
5)Share one challenge you encountered during the build.
6)What is your solution?
7)Why Should we vote for you?

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14 Years of Pioneering STEM Education & Robotics in Singapore
By creators of FLL Grand Champion

Award-Winning Curriculum

Developed by FLL Grand Champion Master Trainers.

Curriculum developed by experienced, award-winning robotics and computing educators, and refined through the **Explainable Intelligence™ Curriculum Framework** with research support from the *Cognitive Intelligence Lab.*

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COGNITIVE SYSTEMS ACADEMY™

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CODING. REIMAGINED.

Building Intelligence Through Systems Thinking & Explainable AI

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