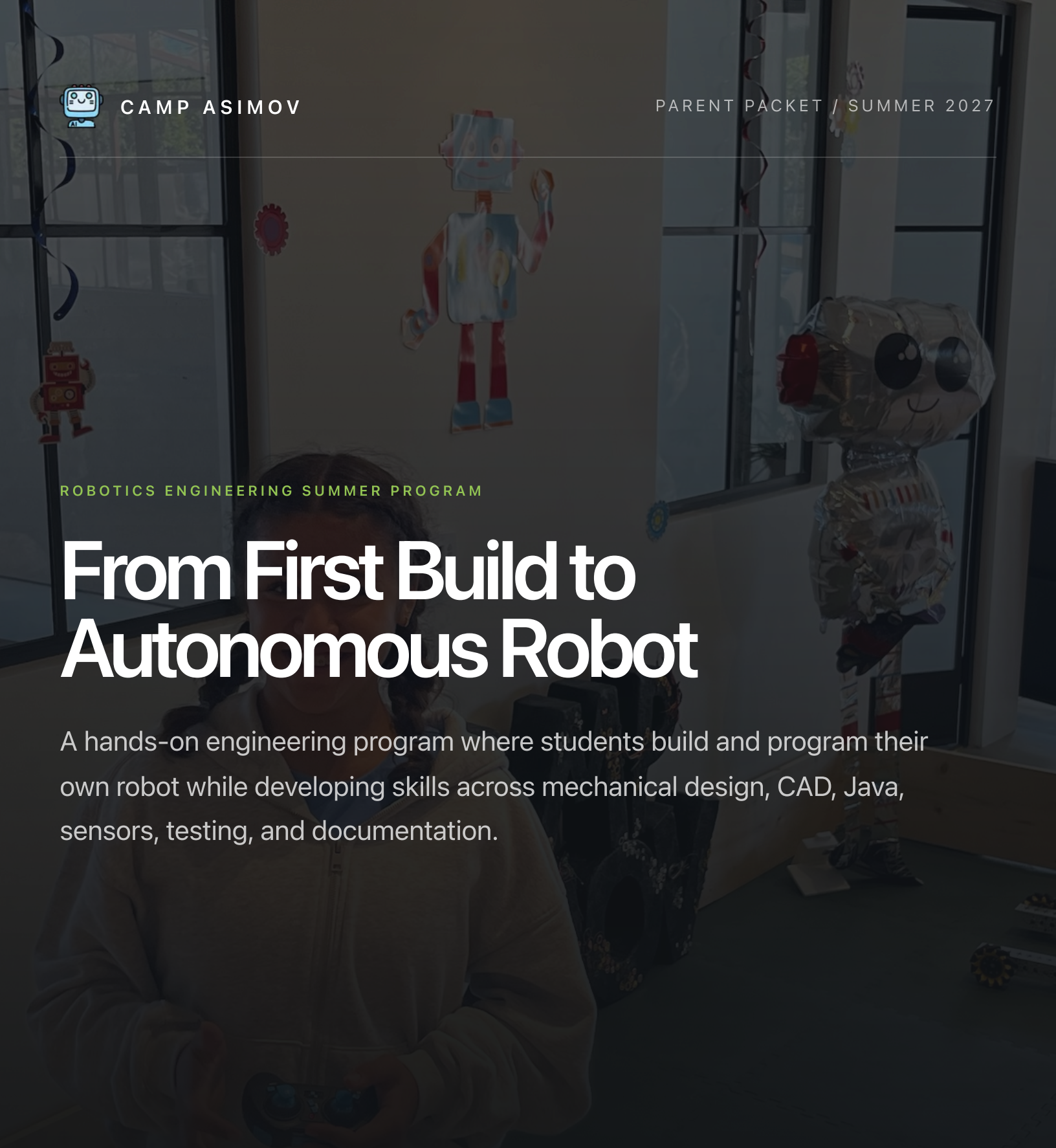


ROBOTICS ENGINEERING SUMMER PROGRAM

From First Build to Autonomous Robot

A hands-on engineering program where students build and program their own robot while developing skills across mechanical design, CAD, Java, sensors, testing, and documentation.

Location

2341 Michigan Ave
Santa Monica, CA 90404

Enrollment Timing

Rolling applications open October 1, 2026.

Dates

Official 2027 dates release December 1, 2026.

PROGRAM OVERVIEW

A real engineering arc, not a loose set of activities.

Camp Asimov is organized around a clear progression. Students start with the physical robot, then add code, controls, CAD, mechanisms, sensing, computer vision, and systems integration.

The goal is not simply to finish a robot. The goal is for students to become more capable builders: students who can troubleshoot, explain decisions, test ideas, and improve their work with increasing independence.

CAD

Plan the next improvement

Build

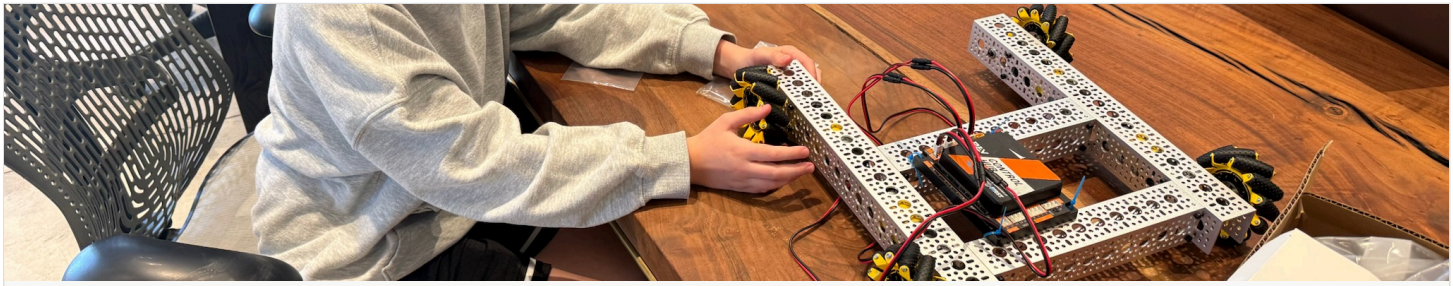
Make the idea physical

Code

Give the robot behavior

Test

Let the robot answer

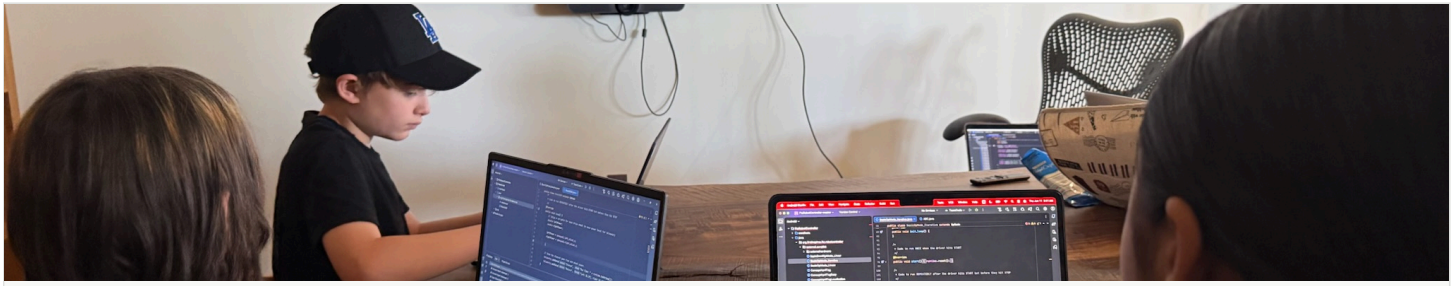


01

Build

Students assemble and study the robot as a physical system: structure, wiring, motors, drivetrain, tools, and serviceability.

ASSEMBLY · WIRING · DRIVETRAIN · TOOLS

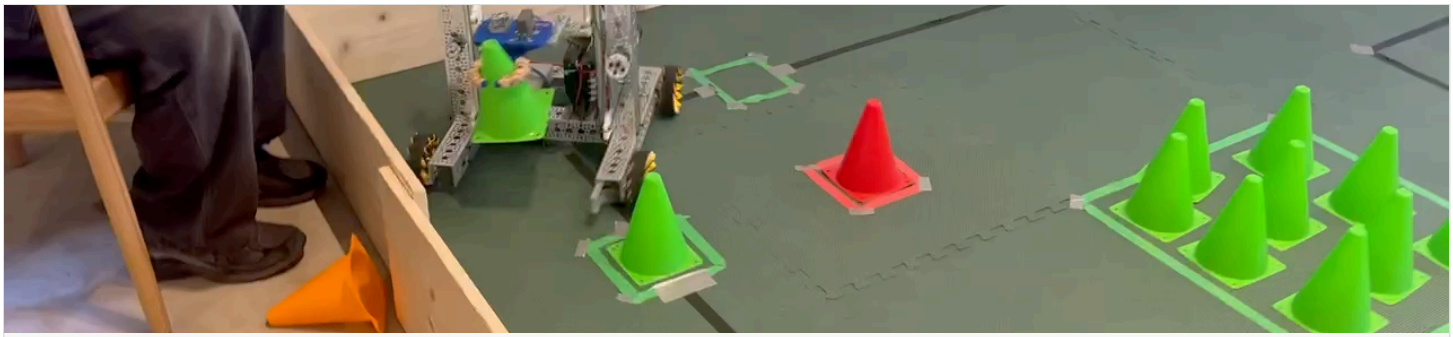


02

Program

Students write Java code that turns controller input into robot behavior they can see, test, and debug.

JAVA · TELEOP · LOGIC · DEBUGGING

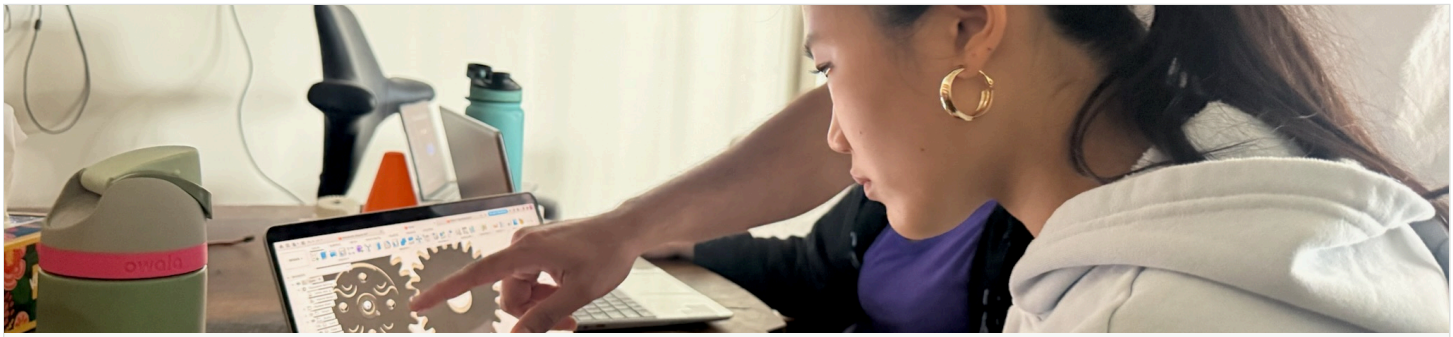


03

Control

Students move from timed motion to measured motion using encoders, IMU heading, autonomous movement, and repeatable testing.

ENCODERS | IMU | HEADING | REPEATABILITY

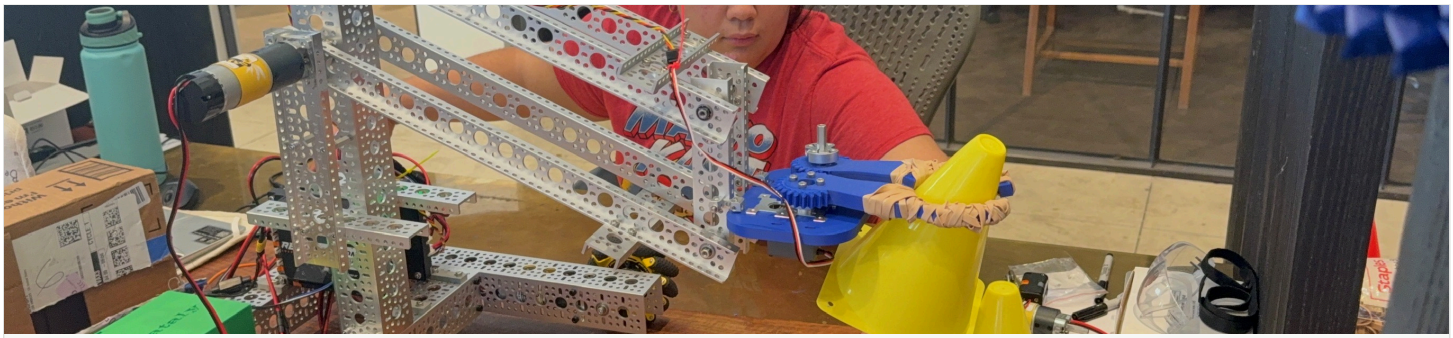


04

Design

Students use Fusion 360 to model parts, reason about dimensions, and prototype improvements that can become physical robot components.

FUSION 360 | CONSTRAINTS | 3D PRINTING | PROTOTYPING

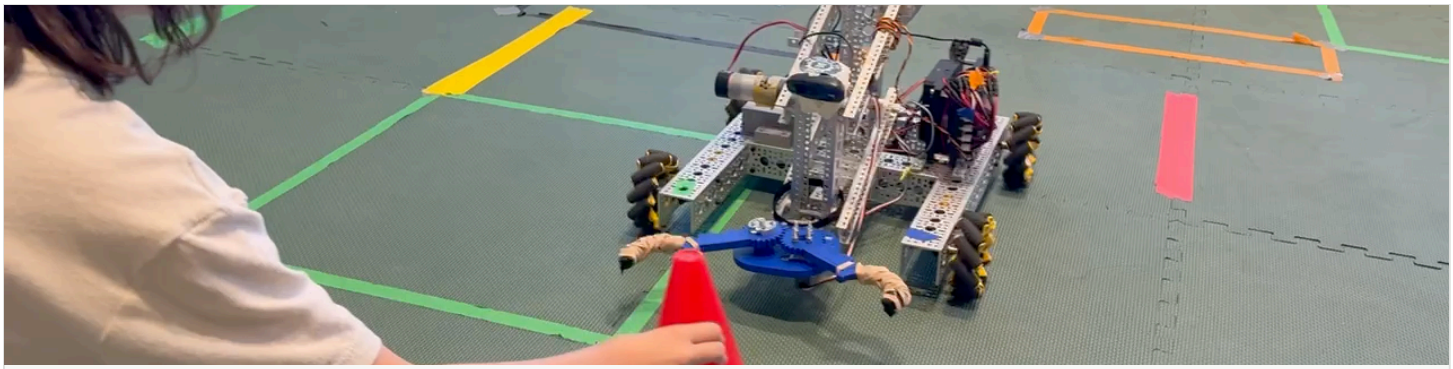


05

Mechanisms

Students explore claws, arms, servos, linkages, torque, mechanical advantage, and how mechanisms solve different robot tasks.

SERVOS | CLAWS | ARMS | ITERATION

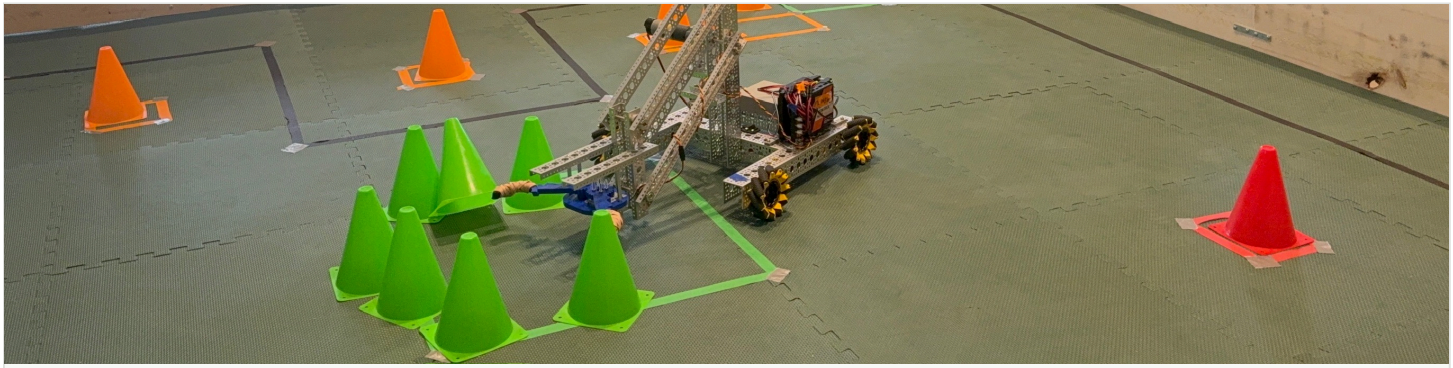


06

See

Students use color sensors, distance sensors, RGB, HSV, thresholds, webcams, computer vision, and object detection to help a robot respond to its environment.

RGB HSV VISION SENSORS



07

Integrate

Students combine mechanical, electrical, and software systems, test what happened, and decide what to improve next.

SYSTEMS TESTING DOCUMENTATION JUDGMENT

JOURNEY TAKEAWAY

A camp day is built around iteration.

Students move through a repeatable cycle: plan the next improvement, build it into the robot, code the behavior, test the result, and decide what to revise.

DAILY FLOW

A camp day is built around iteration.

9:00	**Mission briefing**	Technical goal, safety expectations, and build priorities.
9:30	**Engineering block**	CAD, fabrication, wiring, programming, or mechanism work.
11:00	**Test loop**	Run the robot, find failure points, and revise the plan.
12:00	**Lunch**	Recharge before integration work.
12:30	**Integration block**	Connect hardware, software, and mechanisms into working behavior.
3:15	**Demo + build log**	Show progress and capture evidence for the Engineer Profile.

THREE LEVELS

The pathway gets more capable as the systems get more connected.

Foundations

The core program: students build the fundamentals needed to design, assemble, wire, program, and troubleshoot their own working robot.

25 TRACKED SKILLS

Intermediate

For returning and advancing students: more advanced code, sensor-driven decisions, more precise autonomous movement, and higher-quality mechanisms.

15 TRACKED SKILLS

Advanced

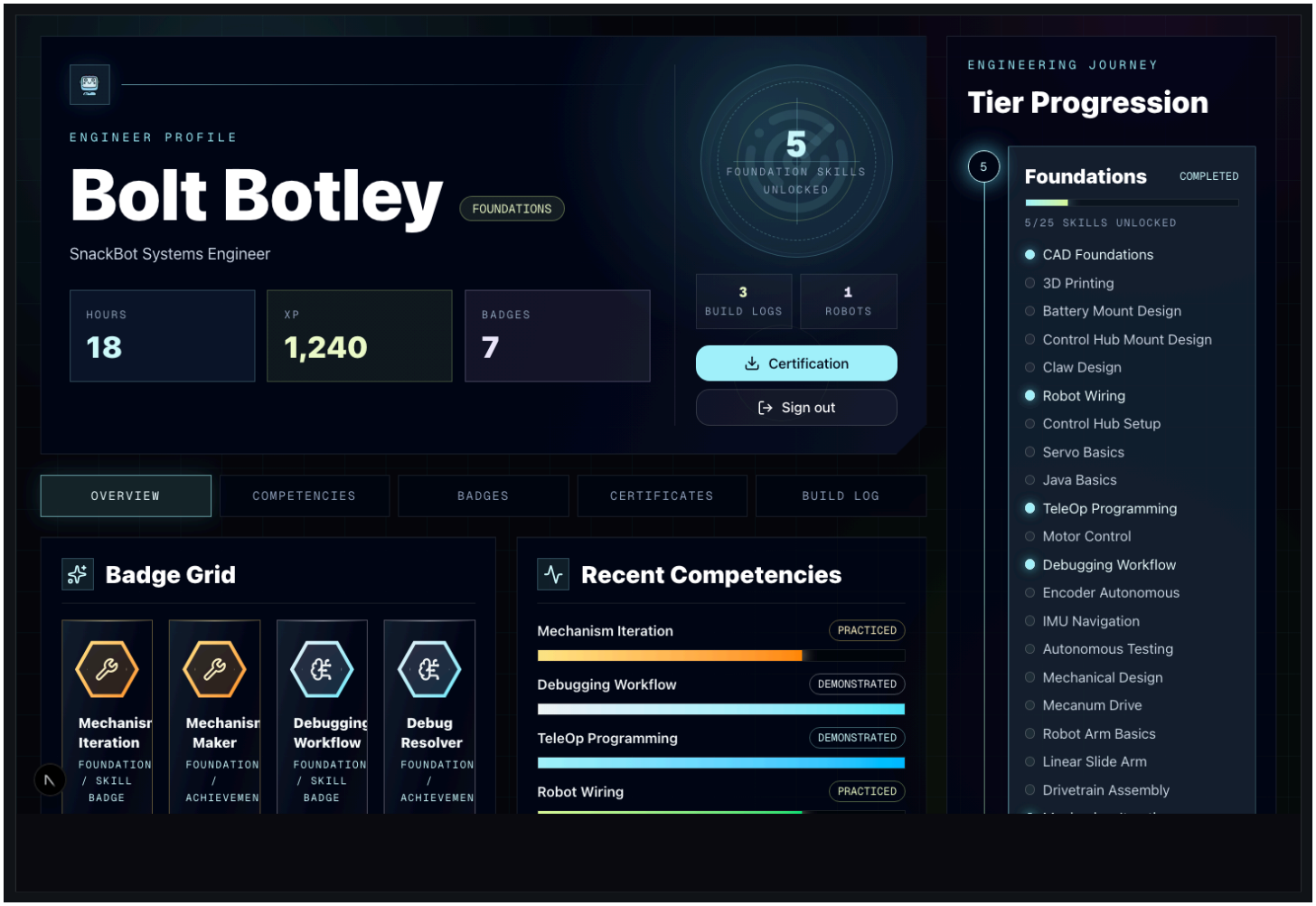
The long-term pathway: deeper robotics work for students who continue across multiple sessions.

7 TRACKED SKILLS

PROGRESS RECORD

Engineer Profile

Student work is documented through competencies, badges, build logs, robot history, and approved family-facing media.



FOUNDATIONS SKILLS

The core program skill map.

The core program: students build the fundamentals needed to design, assemble, wire, program, and troubleshoot their own working robot.

CAD Foundations	3D Printing	Battery Mount Design
Control Hub Mount Design	Claw Design	Robot Wiring
Control Hub Setup	Servo Basics	Java Basics
TeleOp Programming	Motor Control	Debugging Workflow
Encoder Autonomous	IMU Navigation	Autonomous Testing
Mechanical Design	Mecanum Drive	Robot Arm Basics
Linear Slide Arm	Drivetrain Assembly	Mechanism Iteration
Cone Manipulation	Robot Ethics & Safety	Competition Prep
Final Challenge		

INTERMEDIATE SKILLS

Intermediate

For returning and advancing students: more advanced code, sensor-driven decisions, more precise autonomous movement, and higher-quality mechanisms.

- Advanced Java
- Sensors
- Color Sensor Integration
- RGB Thresholding
- Conditional Logic
- Loop Control
- Sensor-Based Autonomous
- Line Detection
- Odometry
- Computer Vision
- Color Blob Detection
- PID
- Motion Planning
- Advanced CAD
- Gear Ratios

ADVANCED SKILLS

Advanced

The long-term pathway: deeper robotics work for students who continue across multiple sessions.

- ROS
- AI Vision
- SLAM
- CNC
- Custom Electronics
- Custom PCBs
- Robotics Research

SAFETY + SUPERVISION

Clear routines for serious hands-on work.

- Small cohorts with direct instructor oversight.
- Clear expectations for tools, electronics, robot testing, and workspace movement.
- Students are coached to slow down, communicate, and test deliberately around moving mechanisms.
- Parents receive clear communication about logistics, preparation, and next steps before camp begins.

ENROLLMENT

Summer 2027 planning timeline.

Rolling applications open October 1, 2026. Families on the enrollment updates list hear first as sessions, dates, and availability are released.

Official 2027 session dates release December 1, 2026. Camp Asimov uses small cohorts, so enrollment is reviewed on a rolling basis once applications open.

Questions: info@campasimov.com