CALEB KUSUMO

System Architecture // Mechanical Design // 2026

ENGINEERING

ENGINEERING PROFILE

Hi there! My name is Caleb Kusumo and I am a second-year Mechanical Engineering student at Boston University with a deep interest in applying the creative process to the intersection of mechatronics, industrial design, and manufacturing systems. Covering numerous areas, I have a strong background in robotics, electronics, manufacturing, and mechanical systems that stem from my experiences as the founder of a film business, CalebColor, where I primarily focus on camera repair and film sale, the captain and manufacturing lead of FIRST Robotics team 6560, and the steering lead for Terrier Motorsport at Boston University. Outside of my work, you can find me with camera in-hand or amidst a new project along the lines of those displayed here.



SYSTEM INDEX // [TOTAL UNITS: 9]

PROJECT ARCHIVE



2025 ROBOT

Ref_6560-25 / MECHATRONICS

Reefscape: Advanced vision-tracking and specialized intake for high-precision coral manipulation.

Solidworks / CNC / CAN Bus / Laser Cutting



2024 ROBOT

Ref_6560-24 / MECHATRONICS

Crescendo: High-speed swerve drivetrain with vision-aligned note delivery systems.

SolidWorks / Swerve / CNC

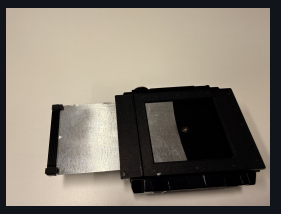


2023 ROBOT

Ref_6560-23 / MECHATRONICS

Charged Up: Features a piston-actuated arm and motorized gripper geometry capturing conical and square shapes.

Java / SolidWorks / Pneumatics / CNC



RB67 DARKSLIDE

Ref_CK-01 / MECHANICAL DESIGN

High-precision linear motion sub-assembly utilizing specialized coatings for low-friction operation.

SolidWorks / Waterjet / 3D Printing



4X5 RAIL CAMERA

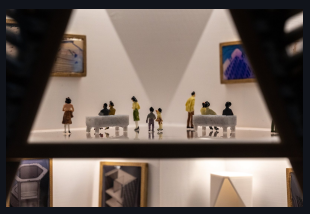
Ref_CK-04 / OPTOMECHANICAL DESIGN

Large-format modular camera system featuring 4-axis standard movements and high-extension bellows.

SolidWorks / 3D Printing / Camera / Laser Cutting

SYSTEM INDEX // [TOTAL UNITS: 9]

PROJECT ARCHIVE



LUTRON LIGHTING

Ref_CK-05 / ARCHITECTURAL SYSTEMS

Award-winning (3rd out of 40) lighting display for a 1:100 scale gallery space focusing on seamless design.

Fusion360 / Lighting Control / Circuits / Laser Cutting / 3D Printing / Water Jet



WAIST LEVEL FINDER

Ref_CK-06 / OPTOMECHANICAL DESIGN

A custom EF mount 1:1 ground glass waist-level finder, designed for through-the-lens viewing.

3d Printing / Optics / Solidworks



MAMIYA LENS HOOD

Ref_CK-07 / INDUSTRIAL DESIGN

A specialized 3D printed hood for the C330 TLR system, optimized for the 80mm f/2.8 lens.

3D Printing / Cameras / CAD / Solidworks



CAMERA REPAIR

Ref_CK-08 / MECHANICAL SERVICE

Shutter timing, film transport, light seal replacement, and lens service across a range of film and digital bodies.

Calibration / Repair / Optics / Cameras

EXPERIENCE

EXPERIENCE & BACKGROUND

EDUCATION

Expected May 2029 - Boston, MA

B.S. MECHANICAL ENGINEERING; MINOR: ELECTRICAL ENGINEERING

BOSTON UNIVERSITY, COLLEGE OF ENGINEERING

GPA: 3.81 | Dean’s List, Fall 2025

ENGINEERING EXPERIENCE

Sep 2025 - Present

STEERING LEAD & AERO TEAM MEMBER

TERRIER MOTORSPORT FORMULA SAE

Lead 3+ designers developing TM02 steering: custom rack-and-pinion assembly and right-angle gearbox integration.
Iterate Ackermann geometry and verify chassis fit in Fusion 360; size 4130 steering tubing for 100 N·m torque.
Size tie-rod tubing using analytical buckling and SolidWorks Simulation; factor of safety 1.47 at 2,000 N.
Fabricate fiberglass aerodynamic components and integrate bodywork into the team’s formula-style electric race car.
Contribute to the team’s seventh-place finish in the Formula Hybrid + Electric EV class in 2026.

Sep 2022 - Apr 2025

CAPTAIN & MANUFACTURING LEAD

FIRST ROBOTICS TEAM 6560 — CHARGING CHAMPIONS

Led fabrication group of 15+ students in milling, turning, CNC machining, and laser cutting.
Coordinated design, fabrication, and assembly across a 30+ member team to deliver a robot in under four weeks.
Served on the drive team; earned Arizona North second place, OC Regional finalist honors, and Innovation in Control, Autonomous, and Creativity awards.

EXPERIENCE

EXPERIENCE & BACKGROUND

PROJECTS & ENTREPRENEURSHIP

Sep 2023 - Present

FOUNDER & LEAD TECHNICIAN

CALEBCOLOR FILM

Founded and operate a film sales and processing business; developed 200+ rolls and sold 400+ rolls within one year.
Diagnose and repair film/digital cameras: shutter timing, film advance, screens, mainboards, shutters, and light seals.

Feb 2026

THIRD PLACE

LUTRON LIGHTING COMPETITION

Designed, built, wired, and presented a 1:100 modular gallery lighting model; placed third among 40 entries.
Modeled components in Fusion 360 and fabricated them using 3D printing, waterjet cutting, and laser cutting.
Integrated custom Hall-effect circuitry to trigger LED strips powered by an onboard battery.

Sep 2026

PERSONAL PROJECT

4X5 MONORAIL CAMERA

Designed and fabricated a 4×5 monorail camera in SolidWorks with a Graflok film-back interface, spring-loaded retention, and dual-purpose bellows clamps to reduce part count.

LEADERSHIP & SERVICE

Sep 2026 - Present

MEMBER

ENGINEERING PRODUCT INNOVATION CENTER STUDENT ADVISORY BOARD

Organize machine-shop workshops and community events.

Sep 2026 - Present

DARKROOM MANAGER

BOSTON UNIVERSITY PHOTOGRAPHY CLUB

Manage darkroom facilities and chemical inventory; host public photography, film processing, and printing workshops.

Sep 2026 - Present

MENTOR

BOSTON UNIVERSITY TECHNOLOGY INNOVATION SCHOLARS PROGRAM

Design "Intro to MechE" course for middle school students to build on prior $25K revenue to double outreach capacity.

CERTIFICATIONS

Apr 2026

CERTIFIED PROFESSIONAL IN DESIGN FOR MANUFACTURING

AUTODESK

TECHNICAL SKILLS

TECHNICAL SKILLS

DESIGN & SOFTWARE

SolidWorks
Fusion 360
Adobe Lightroom
Photoshop
Illustrator

MANUFACTURING

CNC Machining
Lathe & Milling
Waterjet
Laser Cutting
3D Printing (SLA/FDM)
TIG Welding
Vacuum Forming
Vinyl Cutting

ELECTRONICS

Soldering
Arduino
Raspberry Pi
Oscilloscope
General Circuitry

DEVELOPMENT

Python
C++
Java
Next.js

CONTACT

CONTACT ME

Available for technical consultation

DIRECT_COMM	NETWORK_LINKS
Email Me	**LinkedIn**
calebk@bu.edu	**GitHub**