

Chaeson Sears II

Fresno, CA

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EDUCATION

Boston University, Boston, CA 05/2026
M.S., Robotics and Autonomous Systems

California State University, Fresno (Fresno State), Fresno, CA 05/2025
Bachelor of Science, Mechanical Engineering
Minor, Mathematics

Relevant coursework: Introduction to Principles of Machine Learning, Dynamic Systems Theory, Soft Robotic Technologies, Engineering Statistics and Experimentation, Product Development, Computer Applications in Mechanical Engineering, Engineering Graphics, Instrumentation and Measurements Lab, Design Machine Elements, Elemental Differential Equations with Linear Algebra, Numerical Analysis I, Advanced Engineering Analysis, Kinematic Machinery

SKILLS

- Problem-Solving, Critical Thinking, Quick Learner, Adaptability
- Leadership, Teamwork, Effective Communication, and Customer Service
- **Devices and Equipment:** Soldering Station, Lathe, Milling Machine, 3D Printer, Arduino, Raspberry Pi
- **Software:** SolidWorks, Fusion360, AutoCAD, Microsoft (Word, Excel, Teams), C++, MATLAB, Open Sim, Python, Ansys

RESEARCH INTERESTS

- Robotics
- Bio-Inspired Robotics
- Soft Robotics
- Medical Robotics
- Mechatronics
- Autonomous Systems

EXPERIENCE

iCode Robotics Instructor 09/2025–Current
Wellesley, MA

- Deliver hands-on instruction in robotics and programming to K–12 students using modern hardware and software tools.
- Coach two VEX Robotics teams (10 students in total) through mechanical design, programming, and competition strategy.
- Lead robotics and programming workshops for partner schools to support STEM curriculum integration.

UM Star/Adapt Undergraduate Research Intern 06/2024 – 08/2024
University of Maryland, College Park, MD
PI: Ross Miller, PhD

- Fine tuning Open Cap software to compare the results of its motion capture, capabilities in a standardized lab setting to outside environments.
- Conducted human data collection and analysis to compare results using ground force reactions and knee angles gathered from Open Sim and Python software.

Undergraduate Research Assistant 06/2023 – 05/2025
Nguyen Lab – Fresno State, Fresno, CA
PI: The Nguyen, Ph.D.

- Conducted research on affordable prosthetic hands with a team of 5 other undergraduate students under Dr. Nguyen's guidance.

- Designed and optimized finger joint parts in SolidWorks to produce a 3D print model.
- Assembled the design and developed a system of motors to allow for proper function.
- Developed a joy-stick controller using Arduino to control motors.

PROJECT EXPERIENCE

Lead

Team Lead, Voice Controlled Prosthetic Hand, Fresno, CA 08/2024 – 05/2025

- Led a multidisciplinary team to design and prototype an affordable (<\$500) transradial prosthetic featuring 14 degrees of freedom, including finger abduction/adduction and wrist/forearm rotation.
- Designed a prosthetic hand with 9 degrees of actuation and a planetary gear system, increasing torque and enabling dexterous movements that mimic human hand functions.
- Programmed the device in **Python** to convert voice commands into actuator control, enhancing usability and accessibility for users
- Lead this project by implementing frameworks to keep track of project progression (Gantt Chart, HOQ) and resolving team disputes by using quantitative evaluations of design effectiveness.

Team Lead, Wall-E Kinematic System, Fresno, CA 08/2024 – 12/2024

- Lead a team to design a project that produces 4 different kinematic outputs based on 1 motor input at 100 rpm.
- The design was developed using **SolidWorks** and the kinematics of this machine were developed in **MATLAB**.
- The design features a system of gear trains, linkages and a cam/follower to fulfill the project requirements.
- I was able to ensure a successful project by organizing our 5-person team by each members strengths and assured that we met our deadlines by setting weekly milestones.

Team Associate, Speed Reduction Gear Box, Fresno, CA 01/2024 - 05/2024

- Developed a speed reduction gear box using Shigley's Mechanical Engineering Design.
- Created code in **MATLAB** to make efficient calculations for stress on gears, bearings, screws, step shafts and plates.
- Created gear box in SolidWorks to perform FEA on aforementioned components and compare results to **FEA** calculations from **ANSYS** and results from **MATLAB**.

Team Lead, Model Dump Truck, Fresno, CA 01/2024 - 05/2024

- Led a team in order to create a functional small-scale model dump truck.
- This design utilizes SolidWorks, **Arduino (C++)**, and the Creality K1 Speedy **3D printer**.
- Delegated tasks, along with soldering and creating the circuit, while also modeling the design.

Team Member, Refrigeration System, Fresno, CA 08/2023 - 12/2023

- Partnered with a classmate while managing meeting times and locations, worked on the project outside of meeting times to boost project efficiency, and kept track of progress.
- Developed an automatic system to calculate data using user inputs, used Excel to sort through data, configured a user interface, and developed a system of equations to assist data calculations.

Team Leader, Rubik's Cube Design, Fresno, CA 01/2022 - 05/2022

- Managed a team of 3 peers by scheduling meetings, delegated tasks based on team member strengths, established project timeline, monitored tasks' progress, and completed weekly status updates and reports to the professor.
- Achieved a successful project design assembly by planning the rough dimensions of the overall design using SolidWorks, adjusted team members' parts to fit into specific parameters, and conducted independent research on how to develop each part of the design.

PRESENTATIONS

Sears II, C., Teran, D., Altstatt, I., [Poster Presentation]. Voice Controlled/ Dexterous Prosthetic Hand. *Fresno State, Lyles College of Engineering, 18th Annual Projects Day.* (April 30, 2025). Fresno, CA.

Sears II, C., Moe, A., [Poster Presentation]. Testing Open Cap's Data-Capturing to Assess Biomechanics of Human Movement. *UM STAR/ADAPT End of Summer Poster Session.* (August 8, 2024). College Park, MD.

Sears II, C., Macias, N. [Poster Presentation]. Accessibility: Affordable Prosthetic Arms. *Annual California Central Research Symposium* (April 3, 2024). Fresno, CA.

Sears II, C., Rivera, S., Macias, N. [Poster Presentation]. Accessibility: Affordable Prosthetic Arm. *College of the Sequoias Open House.* (September 8, 2023). Fresno, CA.

Sears II, C., Rivera, S., Macias, N. [Poster Presentation]. Accessibility: Affordable Prosthetic Arm. *RISE/LSAMP End of Summer Poster Session.* (August 10, 2023). Fresno, CA.

CERTIFICATIONS

Responsible Conduct of Research for Engineers, CITI Program (ID # [56269299](#)) 06/2023 - 06/2027
Biomedical Responsible Conduct of Research, CITI Program (ID # [59929580](#)) 12/2023 - 12/2027

STEM OUTREACH / COMMUNITY SERVICE

Vice President, National Society of Black Engineers (NSBE), Fresno, CA 08/2024 – 05/2025

- Organized resume workshops for our students to be adequately prepared for career development conferences.
- Assisted in developing Fresno States NSBE into a national chapter.
- Handle leadership requirements when the president is unavailable.

President, Black Excellence in Science and Technology (B.E.S.T) Club, Fresno, CA 05/2024 – 05/2025

- Developed a constitution for the club to help establish a structure and promote longevity in the club.
- Implemented feedback from students into the club for more engaging activities to grow our on-campus community.
- Meetings with various schools and organizations to create events that showcase black excellence in the Fresno community.

Vice President, Black Excellence in Science and Technology (B.E.S.T) Club, Fresno, CA 08/2023 - 05/2024

- Participated in outreach events to encourage K-12 students to participate in STEM.
- Organized club events (tabling, engineering and science outreach activities)
- Presented about the club to incoming freshman and transfer students.

PROFESSIONAL MEMBERSHIPS

National Society of Black Engineers (NSBE) 10/2023 - Present
 Fresno State - Research Training Initiative for Scientific Enhancement (RISE) 12/2023 – 05/2025
 CSU Fresno- Louis Stokes Alliance for Minority Participation (LSAMP) 06/2023 – 05/2025
 Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) 06/2024 – 06/2025

REFERENCES

The ‘Leo’ Nguyen, Ph.D. (Principal Investigator)
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