Rui Geng

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EDUCATION

Northeastern University

Bachelor of Science, Mechanical Engineering ***GPA: 3.65***

Relevant Coursework: Physics 1&2, Calculus I-III, Differential Equations & Linear Algebra, Modern Physics, Thermodynamics, General Biology I, and General Chemistry.

RELEVANT EXPERIENCE

Northeastern University Combat Robotics, London England **October 2025 – April 2026**

Team Lead, Design Engineer

- Organized mechanical and electrical responsibilities for three ant weight combat robots.
- Designed, machined, and 3D-printed robot spinners, frame, and motor mounts on SolidWorks.
- Built and debugged electrical subsystems; soldering connections, tracing faults with a multimeter, and confirming correct voltages/signals from radio receivers.
- Competed in Rock & Robots and BEES 2026.

FIRST Robotics Competition Team 199, Belmont CA **July 2023 – June 2025**

Design Engineer

- Coordinated lead design for rookie robot. Received the Creativity Award at an off-season competition.
- Designed FRC robot outtake and computer vision systems on Onshape. Gained operation skills on 3D printing, CNC machines, drill presses, bandsaws, etc.
- Coordinated Game Strategy at East Bay Regionals and Sacramento Regionals.

KEY PROJECTS

Robotic Arm – 5 Degrees of Freedom **December 2024 - January 2025**

- Designed and simulated arm movement on Onshape. Used FEA to simulate external forces, verifying rigidity. Used 3d-printing to produce arm and programmed the ESP32 processor in C++.
- Solved inverse kinematics calculations to maneuver end effector to given coordinates in 3D space.
- Capable of pick-and-place tasks for small objects up to 100 grams.

NerveSense **January 2026 - May 2026**

- Developed a proof-of-concept surgical proximity device that helps surgeons detect and avoid peripheral nerves during incision by stimulating nerves and detecting their eCAP with a probe.
- Designed a custom INA333 amplifier/bandpass-filter PCB in Altium as a lower-noise front end.
- Contributed to hardware and firmware development, including the stimulation circuit, sensing electrodes, retractable probe, and calibrating a voltage-to-distance model in Python.
- Validated on tissue phantoms to ±0.5 cm accuracy over a 0–5 cm range with a live LCD readout.

SKILLS

Programming languages: C++, Python, Java, and MATLAB.

Computer Software/Applications: KiCAD, Altium Designer, Simscale, and Excel.

CAD: SolidWorks, Onshape, AutoCAD, Inventor, and slicing software for 3D printing.