Rand Abubakir

401-328-0267 | rand_abubakir@brown.edu | linkedin.com/in/rand-abubakir-129245296/

Education

B.S. in Electrical Engineering, GPA: 3.8 Expected May 2028
Brown University *Providence, RI*
Engineering Clubs: Brown Robotics, Brown Open Silicon

Work Experience

Undergraduate Student Researcher (UTRA) Jun 2026 – Present
Brown University School of Engineering *Providence, RI*

- Co-developed a hydration-monitoring sleeve for older adults to track fluid intake and deliver reminders; presented hardware design decisions and experimental results to an interdisciplinary research team
- Integrated an ESP32-S3, load cell, and inertial sensor; developed initial C++ logic to log stable weight changes and reject measurements during movement
- Designed an HX711 load-cell interface PCB in KiCad, including schematic, traces, and design-rule checks; explored sampling-rate and power-supply tradeoffs
- Co-conducted a validation study of 44 sips and 6 refills using a laboratory reference scale; analyzed discrepancies in MATLAB and identified mechanical instability as a likely source of measurement error

Technical Design Assistant Sept 2025 – May 2026
Brown University *Providence, RI*

- Fabricated theatrical props and scenery from technical drawings and visual references, measuring and cutting wood and metal with shop machinery and hand tools

Undergraduate Teaching Assistant – Logic Sept 2025 – Dec 2025
Brown University *Providence, RI*

- Evaluated coursework and exams, coordinated grading with other assistants, and supported undergraduate review sessions

Projects

INPO Automated Recycling Bin | *Arduino, Sensors, Servo Motors* 2023 – 2024

- Developed Arduino-based classification using inductive and optical sensors, coordinating 2 servos to rotate and push objects into 3 sorting compartments
- Replaced a noise-prone LDR with a BH1750 digital light sensor to improve detection consistency; earned Silver (2023) and Gold (2024) at the Iraq National Project Olympiad

EMG-Controlled Claw | *Arduino, MATLAB, SolidWorks, 3D Printing* Nov 2024

- Integrated an EMG sensor, Arduino, and servo-actuated claw; analyzed resting and muscle-activation readings in MATLAB to implement threshold-based control
- Designed and 3D printed a SolidWorks enclosure with a removable platform for the Arduino and breadboard to simplify prototyping and troubleshooting

Skills

Programming: C++, Python, Java, MATLAB, Git
Hardware: KiCad, PCB Design, ESP32-S3, Arduino, I^2C, SPI, UART, SMD Soldering and Rework
Design & Testing: SolidWorks, 3D Printing, Multimeter, Oscilloscope, Bench Power Supply