

CHARMAINE GUO

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EDUCATION

Northwestern University B.S. in Materials Science & Engineering B.S. in Data Science	June 2028
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SKILLS

Computer Languages	Python, Java, MATLAB, HTML, CSS
Soft Skills	Project Management, Teamwork, Time-Management, Adaptability
Hard Skills	Research Methods, Data Collection, 3D Printing, SolidWorks
Organizational Tools	Microsoft Excel, Google Drive

EXPERIENCE

Undergraduate Researcher — Schuh Group <i>Northwestern University</i>	Jan 2026 - Current <i>Evanston, IL</i>
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- Synthesizing zircon ($ZrSiO_4$) coatings on micron-scale sand particles using the Pechini method, leveraging polymerizable precursors to ensure precise stoichiometric control and chemical homogeneity.
- Refining sol-gel processing routes by adjusting citric acid to ethylene glycol ratios, improving the stability of the resin precursor for more consistent particle encapsulation.

Student Tech Aide <i>The Garage</i>	September 2025 – Present <i>Evanston, IL</i>
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- Manage makerspace operations and inventory for 3D printers, CNC, and woodworking tools, utilizing data-informed logistics to ensure equipment uptime and optimal material stock levels.
- Facilitate resident fabrication by translating complex project requirements into technical workflows, providing expert guidance on additive and subtractive manufacturing techniques and safety.

Quality Intern <i>Littelfuse</i>	June 2025 - August 2025 <i>Beverly, MA</i>
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- Engineered a centralized data repository using Power Query to automate the ETL process for 300+ legacy quality reports, standardizing disparate data formats into a relational structure.
- Architected a multi-parameter search engine by indexing part numbers, package types, and leadframe variables, enabling instantaneous data retrieval and cross-functional visibility.
- Optimized data retrieval latency, reducing mean search time from several hours to under 60 seconds (a ~95%

PROJECTS

Purrfect Care <i>Python, PyQt5, Gemini API</i>	Desktop (WildHacks) March 2025
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- Built a PyQt5 desktop app with wellness reminders, to-do list, and animated notifications.
- Integrated Gemini API for contextual chat with a virtual assistant cat.

Skynet System <i>Onshape, Arduino IDE, ESP32</i>	Team Project (Design Thinking & Communication) January - March 2025
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- Designed solutions for remote zoo access, with 3d printed prototypes including an interactive online tour prototype built with web technologies and a Hexbug like design.
- Final deliverable: a zipline-mounted camera system enabling live video feed controlled remotely by users.

EXTRACURRICULAR ACTIVITIES

Low Voltage Team <i>Northwestern Formula SAE (NUFSAE)</i>	October 2024 – Present
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- Engineered the vehicle's Power Distribution Module (PDM) using Altium Designer, overseeing the full schematic capture and PCB layout process.
- Developing comprehensive wiring harness specifications, including connector selection, pinout mapping, and signal integrity routing.
- Leading technical onboarding for new members by delegating design tasks and conducting training sessions on RapidHarness and industry-standard documentation.