Brian Chu

Chemical Engineer

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Summary

Graduate student in Chemical Engineering at the University of California, San Diego, with strong expertise in industrial chemical processes, process optimization, and thermochemical energy storage. Experienced in polymer properties, reaction engineering, and machine learning applications in chemical analysis. Proven ability to work under pressure and execute research-driven solutions.

Education

University of California, San Diego *Sept. 2024 - Jun. 2025*

Master of Science in Chemical Engineering

- Focus: Thermal Processes and Nanoengineering

University of California, San Diego *Sept. 2020 - Jun. 2024*

Bachelor of Science in Chemical Engineering and Cognitive Science w/ ML

- Organizations: ACM, AIChE, Pi Alpha Phi, Chem-E-Car

Work Experience

Vulcan Engineering Solutions *Dec. 2024 - Present*

ML Operations Engineer *Irvine*

- Incorporated AI in streamlining operations and improving user workflow.
- Developed and deployed scalable R-CNN models using OpenCV and PyTorch, improving image analysis accuracy by 35% and reducing inference time by 40% for enterprise-level visual data workflows.
- Collaborated with full-stack teams to engineer a modular data preprocessing pipeline, reducing data preparation time by 50% and increasing deployment efficiency.
- Developed and deployed a Groq LLM tool that automated ASCE 7 compliance checks, reducing manual review time by 60% and increasing engineering throughput across 3+ teams
  Technologies: *Python, Microsoft Azure, LangChain, Hugging Face Transformers, PyTorch*

UC San Diego (Summer Battery Camp) *Jun. 2022 - Aug. 2022*

Battery Engineering Technician *San Diego*

- Independently conducted over 50 performance tests, authored detailed technical analyses, and delivered weekly reports, accelerating R&D feedback cycles by 30%
- Collaborated with a 5-person lab team to improve experimental procedures, reducing test iteration time by 25% while maintaining 100% safety compliance
- Drove 25% faster test iterations through improved procedures and risk-assessed workflow refinements

Chemical Engineering Laboratory Experience (UCSD) *Jan. 2023 - Jun. 2023*

Presenter and Lab Groupmate *San Diego*

- Hands-on engineering laboratory experience that incorporated teamwork, data analysis, laboratory reports, and presentations
- Topics: Hydrogen Fuel Cell, Low Pressure Chemical Vapor Deposition Reactor, Plate Heat Exchanger, Liposome Nanoparticle Synthesis, Photocatalytic Reactor, and Solid Oxide Fuel Cell Simulation
  Technologies: COMSOL, Aspen, MATLAB, Excel

UC San Diego *Jan. 2023 - Jun. 2023*

Thermal Process Engineer *San Diego*

- Led the design and installation of a $10K Dimethylamine reactor simulation with heat exchanger optimization by 30%
- Formulated piping layout via P&IDs and compliance documents for a pilot facility upgrade, aligning with SEMI safety standards
- Authored RFPs and change controls to support process improvements and ensure regulatory compliance for a $2K facility upgrade

Skills

Technologies	Excel, MATLAB, GoLang, NoSQL, Python, C++, Java, Bash
Frameworks	ASPEN, COMSOL, Arduino, JMP
Specializations	Process Optimization, Thermochemical Energy Storage, Nanoengineering, Safety Analysis
Interests	Soccer, Formula 1, Cars, ML/AI, Control Systems, Battery Technology, Plasma Physics