

Josh Gregory

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EDUCATION

University of Colorado Boulder

Summer 2025

M.S., Mechanical Engineering

Thesis: *Predicting Blood Clot Permeability via Computational Fluid Dynamics and Deep Learning*

under Dr. Debanjan Mukherjee

GPA: 4.0

University of Colorado Boulder

Spring 2024

B.S., Mechanical Engineering, Concentrations in Computer Science and Biomedical Engineering

Cumulative GPA: 3.73

TECHNICAL SKILLS

Software: Python, Java, MATLAB, R, LaTeX, Inventor, SolidWorks, NX, Fusion 360, 3DS Max, Blender, Star CCM+, OpenFOAM, Wolfram Mathematica, SageMath, SimVascular, XFLR5, OpenRocket, Bash, Slurm, Linux

Libraries: PyTorch, PyTorch Lightning, TensorFlow, Ray Tune, Keras, Scikit-Learn, Pandas, NumPy, Matplotlib, OpenCV

Foreign Languages: Mandarin Chinese (Limited Working Proficiency)

EXPERIENCE

FLOWLab (CU Boulder)

August 2022 – Present

Research Assistant and Software Developer

Boulder, CO

- Designed and managed a full machine learning pipeline for predicting blood clot permeability, from dataset creation to model evaluation.
- Developed and trained deep learning models using PyTorch Lightning, enabling model scale from laptops to multi-GPU clusters, with dynamic hardware adaptation.
- Optimized model performance using Ray Tune for distributed hyperparameter tuning, improving model accuracy and generalization.

Senior Design Project—Children's Hospital Colorado

August 2023 – May 2024

Systems and Test Engineer

Boulder, CO

- Worked alongside a pediatric surgeon to design a miniaturized surgical port for use in infant and neonatal laparoscopic surgery.
- Project supervised by Andy Goldstein, former Medtronic VP of Engineering, Surgical Navigation and Imaging Division.
- Translated the surgeon's requirements into engineering-specific requirements.
- Led investigations of material selection and manufacturing processes, specifically 3D printing with FormLabs SLA printers.
- Created and executed test plans to characterize the operating window of our port designs during laparoscopic procedures.
- Provisional patent 63/634,162** filed April 2024, utility patent filed April 2025.
- Secured additional funding from University of Colorado School of Medicine to pursue further development.

National Renewable Energy Laboratory (NREL) Internship

June 2023 – August 2023

Science Undergraduate Laboratory Internship (SULI) Intern

Golden, CO

- Performed fundamental materials science research to additively manufacture heat exchangers with microencapsulated phase-change materials.
- Designed and 3D-printed test articles to assess their thermodynamic and heat transfer characteristics.
- Used thermal characterization techniques (differential scanning calorimeter, thermogravimetric analysis) to analyze heat exchanger performance.

Sounding Rocket Laboratory (CU Boulder)

July 2021 – July 2022

Liquid Engine Development Sub-team

Boulder, CO

- Created in-depth documentation to make computational fluid dynamics (CFD) decisions more repeatable and informed, allowing for full utilization of CFD tools.
- Used Siemens Star CCM+ CFD suite to investigate multi-phase flow throughout the rocket injector.
- Ran multi-phase simulations of the rocket injector to increase simulation accuracy and validate injector design.