Moukthika Nellutla

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Education

University of Illinois Urbana-Champaign — Champaign, IL
*Grainger College of Engineering, B.S. in **Computer Science** & **Bioengineering*** — *2024 – 2027*

Relevant Coursework: Data Structures & Algorithms, Linear Algebra, Differential Equations, Molecular & Cellular Biology, Organic Chemistry

Experience

Undergraduate Research Assistant — Champaign, IL
Sweedler Research Group @ UIUC — *Sept 2025 – Present*
- Quantifying individual peptides in rat dorsal root ganglia to study neuropathic pain using LC–MS/MS data.
- Developed **Python/R** scripts to group overlapping peptides by sequence position, sum signals, and differentiate unique vs. shared peptides.
- Planned statistical comparisons across three animal groups (D, H, J) during acute pain stage to identify biomarkers.

Software Engineer — Champaign, IL
Disruption Lab @ Gies College of Business — *Sept 2025 – Present*
- Developing **LLM inference platform** enabling professors to test large language models; built secure **APIs**, scalable backends, and interactive dashboards.
- Optimized backend inference pipeline for speed and resource efficiency; improved reliability by **30%**.
- Integrated **retrieval-augmented generation (RAG)** to let faculty run custom scenarios on LLMs, including automated logging and usage analytics.

Course Assistant — Champaign, IL
UIUC Department of Bioengineering — *Aug 2025 – Present*
- Support intro bioengineering course (100–200 students) by grading, leading discussions, introducing career fields, organizing **MATLAB** projects, and tracking attendance.
- Collaborate with the professor and a teaching team to streamline course delivery, coordinate project deadlines, and improve student engagement.

Machine Learning Intern — Tampa, FL
Moffitt Cancer Center — *May 2025 – Aug 2025*
- Applied **NLP & ML** to improve clinical trial matching for **20k+ oncology patients** using Deep6 AI and Jupyter.
- Evaluated models (Gini, Permutation, MLP, Logistic Regression, Gradient Boosting, KNN, Vector Machine) using confusion matrices; aligned pipelines with oncology workflows to determine better patient-trial matching tools and algorithms.
- Developed preprocessing pipelines, enabling scalable **patient–trial matching** and downstream ML model training.

Project Manager — Champaign, IL
NeuroTech @ UIUC — *Sept 2024 – Present*
- Built **NeuroBot**, merging **EEG preprocessing** with **transformer-based NLP prompt pipelines** to generate personalized dashboards; led a 10–15 member team.
- Implemented real-time EEG data acquisition modules with artifact rejection and visualization dashboards to better understand emotion using the **EI Goleman Model**.

Projects

Book Recommendation System — GitHub
Python, React, Flask, Machine Learning — *2025*
- Built **hybrid recommendation engine** (collaborative, content-based, NLP) with **React frontend** and **Flask REST API.**
- Implemented **collaborative** and **context-based filtering** to generate recommendations from GoodReads **API**.
- Deployed typing animations throughout **Frontend** for **UI/UX** streamlining.

Brain Tumor Classifier — GitHub
Python, TensorFlow, CNN — *2025*
- Developed **CNN model** achieving **91% accuracy** on **1,311 MRI scans** with data augmentation to improve generalization.
- Created **automated training/evaluation pipeline** with TensorBoard integration for hyperparameter tuning and model comparison.
- Implemented **Grad-CAM visualizations** and model interpretability tools to highlight tumor regions and support clinical decision-making.

Skills & Certifications

Certifications & Honors: AWS Machine Learning Foundations (Udacity), Generative AI w/ AWS (Udacity), New Venture Development 2025
Programming Languages: Python, Java, C/C++, JavaScript, HTML/CSS, R, MATLAB
Frameworks/ Developer Tools: React, Flask, Git, API Development, Colab, Jupyter, VS Code, Docker, RAG
Libraries: NumPy, pandas, scikit-learn, TensorFlow, PyTorch, Keras, Matplotlib