Madhav (Juno) Tripathi

(217) 693-8850 madhavt2@illinois.edu github.com/juniper-halo linkedin.com/in/junotripathi

Education

- **University of Illinois at Urbana-Champaign (UIUC)** Urbana, IL
  B.S. in Computer Science GPA: 3.70/4.00 *Expected Dec 2027*
  - **Honors**: James Scholar (2024–Present); Dean's List (Fall 2024)
  - **Coursework**: Completed: Data Structures; Linear Algebra; Computer Architecture
    In Progress: Probability & Statistics; Systems Programming; Database Systems; Computer System Organization

Experience

- **Siebel School of Computing and Data Science** Urbana, IL
  Course Assistant, Introduction to Computer Science II (CS 128, C++) *Fall 2025 – Present*
  - **Student Support**: Led in-person and online help sessions; diagnosed bugs and strengthened conceptual understanding through structured debugging workflows.
  - **Instructional Support**: Supported discussion sections and coordinated with course staff to address recurring student pitfalls.
- **Siebel School of Computing and Data Science** Urbana, IL
  Course Assistant, Introduction to Computer Science I (CS 124, Java) *Spring 2025 – Present*
  - **Student Support**: Ran frequent office hours supporting MP debugging, Java fundamentals, and quiz preparation for cohorts of students.
  - **Quality Improvements**: Identified and documented 20+ recurring bugs/edge cases across course materials to improve student support.

Projects

- **Real-Time ASL Alphabet Translator (CLIP + Django REST)** UIUC
  CS 222 Project *Repo* / *Project Page* *Aug 2025 – Present*
  - **System**: Built a real-time ASL alphabet (24 classes; J/Z excluded due to motion) classifier: webcam capture → Django REST endpoint (/img_in/translate/) → letter prediction with confidence.
  - **Model**: Fine-tuned CLIP ViT-B/32 (openai/clip-vit-base-patch32) with prompt-based text tokens while optimizing the vision tower; exported best checkpoint for deployment.
  - **Evaluation & Reproducibility**: Implemented training/inference/eval pipeline with checkpointing, cached predictor, CI, and dashboards (confusion matrices, top-k, calibration/ECE); best recorded validation accuracy 98.46%.
- **Viral Protein Mutation Modeling** Birla Vidya Niketan / Ritsumeikan University
  Mentored Research Project (Conference/Fair Presentation) *Jan 2022 – Nov 2023*
  - **Scope**: Developed and presented a two-year mentored project (guided by the high school CS department head) on viral protein structure/function and mutation pathways.
  - **Modeling**: Organized a structured dataset pipeline and prototyped a CNN-based predictor on engineered representations; documented methodology, limitations, and findings for presentation.

Technical Skills

- **Languages:** Python, C++, Java, C, CSS, HTML
- **Engineering Tools:** Git/GitHub, Linux/CLI, Conda, CI workflows, Docker
- **Data & Vision:** OpenCV, NumPy, Pandas
- **Machine Learning:** PyTorch, Hugging Face, scikit-learn