Mridu Prashanth

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Education

Purdue University West Lafayette, IN
BS in Computer Science Honors and Mathematics, MS in Computer Science; GPA: 3.83 *Aug 2022 – May 2027*

- **Relevant Courses**: Computer Graphics, Linear Algebra, Artificial Intelligence, Machine Learning, Probability, Analysis of Algorithms, Data Structures, Programming in C, Operating Systems, Compilers, Data Communication & Networking
- Research/Teaching Assistant, President (DOSA), Hackathon/TEDx Organizer, CS Corporate Partners Scholarship awardee, Dean's List & Semester Honors

Research

VECMA-3SV: VE Complexity Management via Stochastic Single Shot Visibility West Lafayette, IN
Advisor: Prof. Voicu Popescu, CS XR Lab, Computer Graphics & Visualization Lab, Purdue University *May 2025 - Present*

- **Compressed virtual environments (VEs) by 80%**: Developed a novel aggressive visible set computation algorithm with better field of view during real-time on-device navigation compared to state-of-the-art
- **Indistinguishable from ground truth**: Produced average errors 0.05%, SSIM scores 0.99, PSNR scores 40 dB
- Used Visual Studio C++ Graphics Solution & OpenGL, Fast Light Tool Kit (FLTK), Python, Unity, Meta Quest 3
- Delivered a research talk at the Purdue Summer Research Symposium

UFZs: A Novel Method to Identify Urban Fire Zones for Urban Planning West Lafayette, IN
Advisors: Prof. Daniel Aliaga & Prof. Aniket Bera, Purdue University *Jun 2024 - Oct 2024*

- Modeled urban layouts using Open Street Maps, U-Tree datasets, simulated fires on Blender, evaluated aggravating factors like wind and humidity, classified zones using clustering methods (K-Means, Graph clustering, Convex hull in Python), identifying 3 key hot spot zone types in Los Angeles & Indianapolis
- Presented at the Purdue Fall Research Expo

AI-driven Robotic Triage Labeling & Emergency Medical Information System West Lafayette, IN
Advisor: Prof. Aniket Bera, IDEAS Lab, Purdue University *Jan 2024 - May 2024*

- **Improved accuracy**: Evaluated Neural Network, Multi-Layer Perceptron, Random Forest, Gaussian Naive Bayes in PyTorch for patient's acuity classification given vital measurements, classifying acuity level 1 (most critical) with 99% accuracy
- **Trained on MIMIC-IV & Yale EMD datasets**: Synthetically augmented using SMOTE, Google API embeddings
- **Purdue Spring Research Conference Research Talk**: 2nd place in College of Science, showcased at the Robotics Expo

AffectEcho: Emotion & Affect Transfer for Speech Synthesis West Lafayette, IN
Advisor: Prof. Aniket Bera, IDEAS Lab, Purdue University *Jun 2023 - Dec 2023*

- **AAAI 2024 Submission**: Used Jupyter, Matplotlib, t-SNE to build a visualization tool

Skills

Languages: C, C++, Python, Java, Assembly, R, Bash **Technologies**: Linux, Git, Windows, Unity

Mentorship

Undergraduate Teaching Assistant (Department of Computer Science, Purdue) Aug 2023 - Present
Courses: Analysis of Algorithms (CS 381), Systems Programming/Programming in C (CS 252/240), Tools (CS 193)

- Led weekly labs/recitations & multiple office hours, answered public discussion posts, created and coordinated in-class quizzes, impacted ∼40 students per week, graded assignments biweekly
- Explained pointers, memory allocation, scripting languages, threads, grammar & parsing (lex & yacc), data structures and designing algorithms, complexity theory (P vs NP), graph algorithms & techniques (greedy, dynamic programming, divide & conquer, etc) to students using pseudocode and visual aids
- **Lead developer**: Designed homeworks/solutions, developed and tested test modules within a custom file generation framework in C through git, used by ∼720 students

Tutor (WIE-WISP Program, College of Science, Purdue) Aug 2023 - Dec 2023

- Tutored physics, calc 1, 2, 3, precalc, intro to python & C for science & engineering, reached ∼60 students

Officer & Mentor (Girls Who Code, Purdue College Loop) Jan 2023 - May 2024

- **Oakland Academy Workshop**: Taught 30+ high school girls HTML/CSS/JS live on Code.org, troubleshooting as needed.
- **Jefferson High School Workshop**: Developed C/C++ material. Created & handled GWC LinkedIn page.

Projects

- **Bad Calculator 3000**: Converts infix expression to postfix and evaluates using stack, used JavaScript/HTML/CSS
- **SearchTracker**: Chrome extension (deployed) to save papers and google scholar profiles, aiding paper review process
- **NutritionAI**: Calculates nutritional breakdown of food in picture uploaded by user using volume estimation machine learning model, for HackMIT hackathon
- **Pathways**: Computer Science course planner, for BoilerMakeX hackathon
- **Finalist at ICPC AlgoQueen National Collegiate Hackathon (2022)**: Used C++ to solve ∼30 programming tasks