Mridu Prashanth

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Education

Purdue University, West Lafayette, Indiana, USA — Aug 2022 – Present
Bachelor of Science in Computer Science (Honors) & Mathematics — Graduation: May 2026
Specializations: Computer Graphics & Machine Learning
GPA: overall 3.83/4.0, CS-only 3.84/4.0

On-Going Research

[Honors Thesis] *VECMA-3SV: Virtual Environment on-device Complexity Management Algorithm through Stochastic Single Shot Visibility.* To be submitted as a short paper to Eurographics 2026.

Research Experience

[Graphics/VR] Purdue CS XR Lab with Dr. Voicu Popescu — May 2025 – Present
Working on *VECMA-3SV* as lead researcher and first author.

- 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:** accomplished low errors 0.05%, SSIM scores 0.99, PSNR scores 40 dB (averages)
- Used Visual Studio C++ Graphics Solution & OpenGL, Fast Light Tool Kit (FLTK), Python, Unity, Meta Quest 3

[Vision] Purdue Institute for Digital Forestry Summer Research Program — Summer 2024
Worked on *UFZs* as lead researcher, advised by Dr. Daniel Aliaga & Dr. Aniket Bera.

- Modeled urban layouts using Open Street Maps, U-Tree datasets, simulated fires in 10+ hot spot zones on Blender, evaluating 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
- Funded by the USDA NIFA PERSEUS project.
- Results led to a successful funding proposal submission for NSF Fire Science Innovations through Research and Education (FIRE).

[Machine Learning] IDEAS Lab at Purdue with Dr. Aniket Bera — Jun 2023 – May 2024
Worked on *AffectEcho* and on *ARTEMIS* as the second author.

- **Achieved improved accuracy:** evaluated Support Vector Machine, Multi-Layer Perceptron, Random Forest, and Gaussian Naive Bayes models 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
- Demonstrated a 5.4% decrease in the Mel-Cepstral Distortion (MCD) score compared to speech generated by state-of-the-art by building a visualization tool using Jupyter, Matplotlib, t-SNE

Presentations

VECMA-3SV: Virtual Environment on-device Complexity Management Algorithm through Stochastic Single Shot Visibility. Purdue Summer Undergraduate Research Symposium, 2025.

ARTEMIS: AI-driven Robotic Triage Labeling and Emergency Medical Information System. [Co-presented]. Purdue Spring Undergraduate Research Conference, 2024. Awarded 2nd place.

Papers

R. K. Senthilkumaran, **M. Prashanth**, H. Viswanath, S. Kotha, K. Tiwari, and A. Bera. *ARTEMIS: AI-driven Robotic Triage Labeling and Emergency Medical Information System.* Submitted to IEEE-ICRA (2025).

H. Viswanath, A. Bhattacharya, P. Jutras-Dubé, P. Gupta, **M. Prashanth**, Y. Khaitan, A. Bera. *AffectEcho: Speaker Independent and Language-Agnostic Emotion and Affect Transfer for Speech Synthesis.* Submitted to AAAI (2023).

Posters

UFZs: A Novel Method to Identify Urban Fire Zones for Urban Planning. Purdue Fall Research Expo (2024) and IDiF (Institute for Digital Forestry) Summer Research Symposium (2024).

Teaching Experience

Department of Computer Science at Purdue Aug 2023 – Present

Undergraduate Teaching Assistant for CS 381: Analysis of Algorithms, CS 252: Systems Programming, CS 240: Programming in C, CS 193: Tools

- Developed course material for three semesters for *Programming in C* and *Systems Programming* by designing ∼12 programming assignments in a Git-based production system while delineating data structure and feature specifications woven around a creative theme or story.
- Designed and maintained robust test cases in a custom C-based framework for each homework assignment, which was then used by ∼720 students.
- Led a 4-person team and ran daily stand-ups to ensure development was on track to meeting deliverables.
- Conducted weekly labs and office hours, created quizzes, supported ∼40 students weekly, and graded assignments biweekly.
- Helped students build intuition for pointers, memory allocation, threads, scripting languages, lex/yacc, algorithms, complexity, and graph theory through a mix of visual illustrations and proofs, also leading my own recitation session for a semester as a TA for CS 381: *Analysis of Algorithms*.

Girls Who Code (Purdue College Loop) Jan 2023 – May 2024

Officer & Mentor for High-School Programming & Outreach Workshops

- Led an introduction to web development workshop at Oakland Academy, instructing 30+ high-school girls in HTML/CSS/JavaScript by building a custom calculator app live on Code.org.
- Created C/C++ instructional materials for a workshop at Jefferson High School.
- Managed and grew the official GWC LinkedIn page.

Purdue Women in Engineering-Women in Science Program Aug 2023 – Dec 2023

Tutor for Physics, Calculus 1-3, Precalculus, Python, and C

- Reached ∼60 students across 1-on-1 and small-group sessions.

Awards

Dean's List & Semester Honors	2022 – Present
CS Corporate Partners Scholarship for Continuing Students – $1,500	2025
Purdue Undergraduate Research Conference (PURC) award for 2nd place	2024
Sponsorship for travel to HackMIT hackathon	2023
ICPC AlgoQueen National Collegiate Hackathon, *Finalist*	2022

Relevant Coursework

CS 588: Randomized Algorithms [Grad Course] with Dr. Kent Quanrud

CS 334: Fundamentals Of Computer Graphics with Dr. Voicu Popescu

- Built a 3D rendering pipeline from the fundamentals (vectors, matrices, rasterization) in a C++/OpenGL graphics solution. Implemented light reflections, shadows, textures, ray tracing.

Other: Linear Algebra, Artificial Intelligence, Machine Learning, Probability, Analysis of Algorithms, Data Structures, Programming in C, Systems Programming, Operating Systems

Projects

SearchTracker: Chrome extension helping manage research papers and Google Scholar profiles. 2023
Pathways: Purdue CS course-planning tool; built at BoilerMakeX hackathon 2023.
NutritionAI: Volumteric estimation based nutrition calculator given food images; built at HackMIT 2023.
Bad Calculator 3000: Converts infix notation to postfix and evaluates it using a stack; built with JavaScript/HTML/CSS. 2022

Community Involvement

Purdue CS TA Reading Group, reading *What The Best College Teachers Do*	Jan 2025 – May 2025
InnovateHer Hackathon, *Volunteer*	2025
Dosa Outreach Student Association (DOSA), *Founder & President*	Oct 2022 – Oct 2025
TEDxPurdueU, *Chair/Member of the Design Committee*	Aug 2022 – Feb 2024
Hello World Hackathon, *Organizer in the Design Committee*	Aug 2022 – Aug 2023

References

Dr. Voicu Popescu
Associate Professor of Computer Science at Purdue University, **Email:** popescu@purdue.edu.

Dr. Jeffrey A. Turkstra
Associate Teaching Professor of Computer Science at Purdue University, **Email:** jeff@cs.purdue.edu.

Dr. Christopher K. May
Assistant Teaching Professor at Purdue University, **Email:** may5@purdue.edu.

Dr. Brandon Rdzak
Assistant Teaching Professor at Purdue University, **Email:** brdzak@purdue.edu.