SIDDHANT PRADHAN

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SUMMARY

Computer Engineering junior with experience building and analyzing complex hardware and software systems. Proven collaborator with strong communication skills developed through technical projects and campus-facing roles.

EDUCATION

University of Massachusetts Amherst Anticipated Spring 2027
Candidate for Bachelor of Science, Computer Engineering, **Minor:** Engineering Management, **GPA:** 3.67
Awards: Chancellor's Award
Relevant coursework: Embedded Systems, Applied ML for IoT, Systems Programming, Security Engineering, Hardware Organization & Digital Design, Information & Project Management

PROJECTS

CNN Digit Recognition Deployment on DE1-SoC Spring 2026

- Deployed a convolutional neural network for handwritten digit recognition on the ARM processor of the DE1-SoC board, connecting Python-based model training and weight export to embedded real-time inference on resource-constrained hardware
- Implemented im2col and GEMM convolution to reformulate convolution as matrix multiplication, compiled and ran the inference project on the DE1-SoC, and displayed predicted digits on the seven-segment display

Microgrid Energy Consumption Prediction Spring 2026

- Developed a regression-based machine learning pipeline to predict smart microgrid energy consumption using a 3,449-sample real-world dataset combining weather variables with power generation and consumption readings
- Engineered time-of-day and cloud coverage features, trained and compared Linear Regression, Random Forest, and SVM regressors using Scikit-Learn, and applied GridSearchCV with 5-fold cross-validation for hyperparameter tuning

Secure Communication System using RSA and DES Fall 2025

- Implemented a secure end-to-end communication system on Raspberry Pi 5 combining asymmetric and symmetric cryptography for message and image transfer
- Coordinated RSA/DES workflows with socket communication and GPIO hardware feedback to ensure reliable key exchange and encrypted data transfer

Open-source Retro PC | ECE 287 Design Project Fall 2024

- Designed and prototyped a Raspberry Pi-based embedded system involving circuit development, PCB design, soldering, and microcontroller-based sensor integration for an open-source Retro PC project
- Evaluated design tradeoffs and modified system architecture to modernize legacy hardware demonstrating strong hardware–software integration and problem-solving skills

WORK EXPERIENCE

Human Performance Laboratory, University of Massachusetts Amherst Spring 2026 – Present
Undergraduate Research Assistant

- Developing virtual reality experiments to study truck drivers' responses to automated vehicle technology by integrating VR hardware with experimental software, troubleshooting technical issues, and supporting data collection

Minds With Purpose Foundation, Boston, MA Spring 2026 – Present
AI Software Engineer Fellow

- Building user-facing features and scalable UI architecture for a social accountability platform using modern web frameworks, resulting in streamlined navigation and measurable increases in community engagement through strategic UX improvements

Residential Life, University of Massachusetts Amherst Spring 2025 – Present
Peer Mentor

- Serving as a live-in Peer Mentor in first-year residence halls, supporting students' transition to college by facilitating Residential Curriculum initiatives and organizing events and mentoring to promote academic success and engagement

LEADERSHIP

Executive Board Member of the ECE Student Advisory Council (ESAC) Spring 2025 – Present

- Serving as a liaison between ECE students and faculty, addressing concerns and refining courses based on student feedback
- Assisting in creating a comprehensive semester-based ECE course guide to support students with course and elective selection

SKILLS AND INTERESTS

Skills: Python, C, MATLAB, MySQL, Unix/Linux Systems Programming, Arduino, Raspberry Pi, Altera DE1-SoC, KiCad, LTspice, Soldering, 3D Modeling, Measurement Equipment, Data Structures & Algorithms, Applied Cryptography, MS Excel
Interests: Guitar, Cricket, Soccer, Public Speaking, LEGO building