Uttkarsh Tewari

BACHELOR'S OF SCIENCE STUDENT · COMPUTER SCIENCE

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Education

University of California *Santa Cruz*
BS IN COMPUTER SCIENCE *Graduating in June 2026*

- GPA: 3.93
- Dean's Honors List

Research Experience

Tech4Good Research Lab *Santa Cruz, CA*
UNDERGRADUATE RESEARCH SOFTWARE ENGINEER *April 2025 – Present*

- Developed and maintained Timely, a scheduling and coordination platform deployed to 100+ active research users, by building scalable front-end and back-end components with Angular, TypeScript, HTML, SCSS, and Firebase, gaining experience in designing usable, reliable systems for real stakeholders.
- Worked with an interdisciplinary research team to translate human-centered design requirements into intuitive, accessible interfaces, aligning technical decisions with learning, equity, and usability goals.
- Applied software engineering best practices (code reviews, modular design, version control, and iterative refinement) in a research lab setting, preparing for collaborative, project-based graduate coursework and capstone work.
- Began transitioning from pure implementation toward more research-centric responsibilities, involving research in social computing.

Professional Experience

Softverse Systems *Lathrop, CA*
SOFTWARE ENGINEER INTERN *June 2025 – September 2025*

- Designed, implemented, and debugged backend services in C++, Java, and Python, improving service reliability and reducing authentication-related failures by 40%, demonstrating strengths in systems-level reasoning and performance optimization.
- Participated in the full software development lifecycle, including requirements definition, design, implementation, verification, and issue triage, gaining experience with industry-scale engineering practices directly relevant to large software and AI systems.
- Performed system-level debugging using logs, traces, and concurrency checks to resolve production issues, reducing mean-time-to-recovery for key components and reinforcing rigorous analytical and troubleshooting skills.
- Collaborated with cross-functional teams to refine technical requirements and address escalated issues, strengthening communication skills and the ability to integrate diverse constraints in complex system design.

Projects

Quizwhiz (AI-Powered Study Platform)
JAVASCRIPT, REACT, NEXT.JS, TAILWIND CSS, FIREBASE, STRIPE

- Built a full-stack flashcard platform enabling automated flashcard generation from user input, implementing real-time authentication, secure data storage, and subscription-based access with Stripe.
- Designed LLM-based prompt pipelines and basic user behavior signals to generate and adapt flashcards, exploring applied prompt engineering and personalization in an educational context.
- Gained experience with production-like security, billing, and user management workflows through Firebase Auth, Firestore, and Stripe integration.

Vibeshopper (AI-Assisted Product Recommendation Prototype)   *Hackathon Project*

REACT.JS, SHOPIFY SDK, VITE, FAL AI, FIGMA

- Developed a prototype AI recommendation interface generating personalized product suggestions from natural language descriptions, designing and evaluating interaction flows and UI variants in Figma.
- Implemented responsive React components to streamline browsing and improve perceived recommendation relevance through user-centered design iterations.
- Experimented with LLM-based prompt pipelines for product retrieval and ranking, strengthening understanding of applied generative AI in e-commerce user experiences.

Machine Learning Models Without scikit-learn

PYTHON, NUMPY

- Implemented core supervised learning algorithms (linear regression, k-nearest neighbors, logistic regression, decision tree, and random forest classifiers) using only Python and NumPy to understand algorithmic internals.
- Evaluated models on standard datasets, tuning hyperparameters and applying feature preprocessing to improve mean squared error and classification accuracy.
- Gained hands-on experience with optimization, bias-variance tradeoffs, and feature scaling, reinforcing theoretical coursework in machine learning.

Brain Tumor MRI Scan Image Classification

PYTHON, PYTORCH, CNN

- Implemented a brain tumor classification pipeline on MRI images using deep learning, including data preprocessing, model training, and evaluation to distinguish tumor vs. non-tumor cases.
- Explored convolutional neural network architectures and regularization techniques to improve generalization on limited medical imaging data, addressing challenges in robustness for clinical use.
- Analyzed performance metrics and misclassifications to understand failure modes, connecting model behavior to real-world implications in computer-aided diagnosis.

MediChain (Healthcare Data Management / Trustworthy AI)   *Hackathon Project*

WEB TECHNOLOGIES, BACKEND SERVICES

- Contributed to the design and implementation of MediChain, a system focused on secure and reliable handling of medical data, combining web technologies with backend services to support healthcare workflows.
- Worked on features related to data integrity, access control, and auditability, gaining insight into building trustworthy, safety-aware systems for sensitive domains like medicine.
- Rapidly prototyped and iterated on architecture and UX decisions under hackathon time constraints, strengthening skills in requirements gathering, team communication, and applied problem solving in health-tech.

Extracurricular Activities

Santa Cruz AI (SCAI)

ACTIVE MEMBER

- Participated in technical workshops on neural networks, PyTorch, and data preprocessing, developing proficiency in deep learning frameworks and model implementation.
- Competed in SCAI is No Limit competition, collaborating with teammates to design and optimize a CNN classifier for brain tumor identification, strengthening skills in research collaboration, model evaluation, and iterative experimentation.

Google Developer Group on Campus (GDGC)

MEMBER

- Engaged in professional development workshops focused on technical interview preparation, software project management, and industry best practices.
- Built communication skills, technical presentation abilities, and collaborative problem-solving approaches critical for research teamwork and academic discourse.

Shopify MCP Hackathon

PARTICIPANT

- Developed a Shopify mini-application using the Shopify SDK under tight time constraints, implementing efficient database queries and responsive UI components.
- Gained experience in rapid prototyping, requirements analysis, and balancing technical constraints with user needs

AI Agents + Hardware MCP Hackathon

Participant

- Built an end-to-end agentic workflow system with medical diagnosis and risk detection capabilities, exploring multi-agent systems and reasoning architectures.
- Developed skills in system design for safety-critical applications, experimental validation, and bridging theoretical AI concepts with practical implementation.