Prachotan Reddy Bathi

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EDUCATION

University of Southern California (Honors Expected) — Los Angeles, California
MS in Computer Science **GPA: 4.00/4.00** — *January 2023 − December 2024*
- Coursework: **Multimedia Systems**, **Autonomous Cyber-Physical Systems**, **Operating Systems**, Requirements Engineering, Analysis of Algorithms, Database Systems

Manipal Academy of Higher Education (Merit Scholarship) — Manipal, India
Bachelors of Technology in Computer Science and Engineering **GPA: 9.3/10** — *August 2018 − July 2022*
- **Honors credits:** Adv. Cryptography, Cryptanalysis, Adv. Database Systems. Computer Networks, **Embedded Systems**

CURRENT PROJECTS

Weenix Operating System | *Link*
- Engineered a UNIX-based OS kernel in C, showcasing expertise in fundamental operating system components, including processes, threads, virtual file systems, and virtual memory.
- Boosted efficiency through custom system calls, demonstrating ability to tailor functionalities for optimized performance.
- Implemented a cutting-edge copy-on-write mechanism via shadow objects, showcasing a commitment to resource optimization and contemporary OS design principles.

Adaptive Cruise Controller | *Link*
- Developed and implemented a PID controller for adaptive cruise control (ACC) in a simulated CARLA environment
- Implemented multilayered Deep Neural Network (DNN) with YOLOv3 for image segmentation and distance prediction with a 98% accuracy on test dataset.
- Leveraged high-performance computing nodes to accelerate development and simulation of the system

Autonomous Stormwater Controls with Real-Time Pollutant Control | *Link*
- Leveraged deep reinforcement learning (DDPG) and control systems to seamlessly integrate stormwater models, enabling autonomous controls that prioritize real-time pollutant handling (decrease by 56% compared to rule-based control) and minimize flooding risks.
- Conducted rigorous testing and evaluation, including STL requirements and reachability analysis, to ensure the system's robustness, safety, and reliability.

WORK EXPERIENCE

University of Southern California — Los Angeles
Course Producer (Graduate Teaching Assistant) — *January 2024 − Present*
- Aided Prof. Saty Raghavachary in delivering CSCI 572: Information Retrieval & Web Search Engines, a challenging graduate course exploring the theoretical and practical underpinnings of search engine design and implementation.

Webmaster & Technology Consultant — *February 2023 − Present*
- Revolutionized web apps for Rossier School of Education's research teams, driving functionality and user experience.
- Led interdisciplinary collaborations, employed advanced product management tools(roadmaps, feature prioritization, cost-benefit analysis) for strategic planning, and liaised with external providers to optimize technology solutions.
- **Key Achievement:** Migrated the Pullias site, boosting search-driven traffic by 33% and accessibility satisfaction by 24%.

Wells Fargo — India
Program Associate (Software Engineering) — *January 2022 − December 2022*
- Engineered market risk software tools within the Vasara project, leveraging micro-services architecture for heightened scalability and efficiency in capital markets' risk management.
- Monitored and Managed containers (Docker, Kubernetes) on hybrid cloud, ensuring peak-hour reliability.
- Pioneered integration of Mockito framework, optimizing testing for transformer classes and reducing build blockers by 40%.
- Proposed a "6S" strategy (Skills, Scalability, Security, Speed, Stability, Success) to tech leadership, catalyzing a transformative journey to boost performance and effectiveness of internal applications.

Rady Faculty of Health Sciences, University of Manitoba — Winnipeg, Canada
Research Engineer & Technical Lead (Globalink Research Intern Award) — *May 2021 − January 2022*
- Led a team of four engineers in developing a web app that processes video data, associating tags to deliver empathy scores.
- Conducted usability studies and refined the "In Your Shoes" project (React, Django, MongoDB, AWS S3) based on user video feedback, achieving a highly usable minimum marketable product.

KEY PUBLICATIONS

1. Bathi, P. R., & Deepa, G. Health Data, Social Media, and Privacy Awareness: A Pilot Study. In ICICICV 2022 (pp. 635-646). Singapore: Springer Nature Singapore. (10.1007/978-981-99-2602-2_48)

2. Bathi, P. R., Ellis, R., Liang, Y., & Jejal, B. Cyber-Physical Robustness Assessment of Stormwater Controls with Real-Time Mechanism for Smart and Sustainable Urban Water Resources Management. In EWRI ASCE 2022 (10.1061/9780784484258.072)

3. Lobchuk, M., Bathi, P. R., Ademeyo, A., & Livingston, A. (2022). Remote moderator and observer experiences and decision-making during usability testing of a web-based empathy training portal: content analysis. JMIR Formative Research, 6(8), e35319.(10.2196/35319)

4. Lobchuk, M., Hoplock, L., Harder, N., Friesen, M., Rempel, J., & Bathi, P. R. (2023). Usability Testing of a Web-Based Empathy Training Portal: Mixed Methods Study. JMIR Formative Research, 7, e41222.(10.2196/41222)

SKILLS

Languages & Frameworks: C/C++, Python, Java, LaTeX, Bash, SQL, Django, React, Angular
Developer Tools: Git, Jenkins, Jira, Confluence, Figma, Postman, GDB, Putty, AWS (S3, E2), Azure, WireShark
Other: Arduino, pSoC, Network Simulation (GNS3), Formal Specifications, Kernel & Embedded (LPC1768), Project Management
Research: Usability and User Testing, Survey Design, Focus Groups, Heuristic Evaluation, Literature Review, Manuscript Writing

PAST RESEARCH PROJECTS

Cyber-Physical Systems Robustness Assessment

Collaboration with Dr. Yu Liang, University of Tennessee at Chattanooga   *August 2021 – November 2021*

- Assessed cyber-physical security and robustness of civil infrastructure.
- Identified 16 points of compromise in urban stormwater management involving real-time control based on literature review and components of planning project.

LEADERSHIP & INVOLVEMENT

- Led business development and strategy at **LISUS**, an LA based sustainable lithium mining startup, laying the roadmap for its growth and impact. Involved market analysis, product lifecycle management, sales, and pricing options research.
- Guided and inspired 8 graduate students as **Mentor** and **Orientation Leader** at USC's Viterbi School of Engineering.
- **HackSC'23**, Southern California's official hackathon. Designed and built *cFood*, a health-conscious social media for food.
- Steered cybersecurity and data privacy efforts as **Head of Research** and Treasurer at (**MIST**).
- Secured a top 10 position in the prestigious Cisco SecCon **CTF** 2020.
- Fueled Zolve's global growth through credit awareness, feedback, and dynamic marketing as a campus ambassador.
- Represented Coursera as a campus ambassador, fostering educational excellence within the university community.
- Contributed to child health and education as a volunteer for Yes We Can, a non-profit organization.
- Demonstrated leadership as a Corporal in the National Cadet Corps (NCC) while fostering discipline and teamwork.

TALKS & PRESENTATIONS

- Risk and Reporting Tools, a Story of How We Support the Risky Markets, presentation at Wells Fargo during Market Square 2022, showcasing expertise in financial regulatory insights and supporting technology solutions.
- Engaged in a thought-provoking Fireside Chat on 'Usable Security: An Important Dimension' at Manipal Information Security Team (MIST), illuminating key cybersecurity concerns and solutions.
- Took stage with 'Data Privacy 101,' an influential talk orienting students on critical aspects of privacy risks and necessities.
- Secured "Best Presentation" with 'Computers with a Cause' in the MyPCMyStory summit organized by Dell Inc., presenting a compelling vision for the role of technology in social impact initiatives.

ENTREPRENEURIAL EXPERIENCE

LinePine | *linepine.prachotanbathi.com*

- Founded and serve as the principal instructor at LinePine Tech, empowering young minds through Hour of Code events while spearheading course planning and syllabus design for computer literacy.

PurSeek Tech

- Established PurSeek Tech, dedicated to enhancing digital presence of 15 small and emerging businesses through cost-effective website solutions, fostering their growth and success
- Empowered 25 high-school youth in rural India by imparting essential web development skills through PurSeek Tech, enabling them to carry forward this noble mission and stimulate economic development within their communities.

CERTIFICATIONS

Azure AZ-900 Certification, Microsoft; **Project Management Certification**, Google; **Specialization in Big Data**, UC San Diego; **Interaction Design Specialization**, UC San Diego