Bishnu Bhusal

✉ *bhusalb@missouri.edu*
bishnubhusal.com.np
bhusalb

Education

2022–Present **Ph.D. in Computer Science**, *University of Missouri*, Columbia MO, USA.
GPA – 4.0 / 4.0
Advisor: Prof. Rohit Chadha

2022–2024 **M.S. in Computer Science**, *University of Missouri*, Columbia MO, USA.
GPA – 4.0 / 4.0
Minor: Statistics, Graduate Certificate in Cybersecurity

2013–2017 **B.Eng. in Computer Engineering**, *Tribhuvan University*, Kathmandu, Nepal.

Experience

Oct 2024 – Jan 2025 **Research Intern**, *SRI International*, Menlo Park, CA.
- Designed and implemented a novel privacy-preserving in-context learning framework for LLMs, outperforming state-of-the-art methods on most benchmarks.

June 2024 – Sept 2024 **Applied Scientist Intern**, *Amazon*, Santa Clara, CA.
- Developed techniques to prevent copyright violations in LLM responses within retrieval-augmented generation systems

Jan 2022 – Present **Graduate Research Assistant**, *University of Missouri*, Columbia.
- Developed and implemented an algorithm for determining the differential privacy of online randomized algorithms, leading to a precise characterization of the class of differentially private DiP automata, with successful implementation and experimentation to validate its effectiveness.
- Developed and implemented techniques for integrating real function handling capabilities into δ-decision procedures, creating $\int$dReal, a novel tool built upon dReal. This advancement enables the resolution of synthesis and verification problems concerning formulas over real numbers with integral constraints.
- Researched Blockchain-based insurance claims processing, verifying chaincodes' integrity via linear temporal logic (LTL). Ensured secure transactions through formal modeling, simulation, and model checking, enhancing efficiency and reliability.
- Conducted innovative cybersecurity research on ransomware defense, developed a game theoretic model using deception strategies, and demonstrated their effectiveness in protecting critical societal infrastructures.

Jan 2023 – Present **Graduate Teaching Assistant**, *University of Missouri*, Columbia.
- Currently assisting in CS 7420 Software Security; responsible for redesigning some of seed lab exercises and grading student submissions.
- Conducted weekly labs for CS 1050 Algorithm Design and Programming I, guiding students in C programming and responsible for lab grading.

Nov 2020 – Jan 2022 **Software Engineer**, *Geoedge*, Tel Aviv, Israel.

- Built innovative and highly scalable microservices for handling 1.5 billion requests per day and managing petabytes of data in Elasticsearch.
- Moved existing microservices to auto-scaling using kubernetes with custom scaling metrics.
- Efficiently deployed and integrated software engineered by the team and updated integration/deployment scripts to improve continuous integration practices.
- Maintained maximum uninterrupted flow of business-critical ops. Cut downtime by 25% and lower cloud infra cost by 35%.

Jan 2020 – Nov 2020 **Software Engineer**, *Furitech*, Tel Aviv, Israel.

- Excelled in rapid application development and management of technological issues for assigned projects, earning the highest customer satisfaction.
- Contributed software engineering expertise in product development through the software lifecycle, from requirements definition to successful deployment.
- Developed a comprehensive information management system for venture capital, utilizing Django (backend) and Angular (frontend) to efficiently aggregate startup data, including founder and C-level officer profiles, from sources such as LinkedIn and Y Combinator.

Dec 2018 – Jan 2020 **Software Engineer**, *Hashunited*, Tel Aviv, Israel.

- Developed and monitored platform for mining 70+ cryptocurrencies using micro-service architecture with nearly zero-downtime.
- Worked with a time-series database (InfluxDB) and created a dashboard to monitor critical metrics using Grafana.
- Developed a platform for auto-trading cryptocurrencies in different exchanges with sophisticated algorithm to get the best selling price.
- Developed an algorithm to predict the future difficulty of cryptocurrencies.

Oct 2017 – Dec 2018 **Software Engineer**, *Sustainable Technological Solutions*, Kathmandu, Nepal.

- Developed an Exam Management System (EMS) utilizing Java (Spring Boot), Vue.js, and Postgres.
- Effectively managing records for 1 million students and generating comprehensive reports. Adopted by 20+ government bodies in Nepal, demonstrating significant impact.

Publications

Drafts and Preprints

Privacy Preserving In-Context-Learning Framework for Large Language Models. Submitted to Conference

Secure Insurance Claims Processing using Formal Modeling and Reliable Threat Mitigation. Submitted to Journal

arxiv Adhikari, S., Bhusal B., Ghimire, P., and Shrestha, A. Vton-it: Virtual try-on using image translation.

Conferences

CCS'25 Bhusal, B, Chadha, R., Sistla, A. P., and, Viswanathan, M. Approximate Algorithms for Verifying Differential Privacy with Gaussian Distributions.

HCII'25 Bhusal, B, Ma, Y, Chadha, R. Privacy Nutrition Labels: Promise, Practice, and Paradoxes in Communicating Privacy.

OOPSLA'25 Rivera C.,Bhusal, B, Chadha, R., Sistla, A. P., and, Viswanathan, M. . Checking δ-Satisfiability of Reals with Integrals.

CCS'23 Chadha, R., Sistla, A. P., Viswanathan, M., and Bhusal, B. Deciding differential privacy of online algorithms with multiple variables.

GameSec'24 Neupane, R. L., Bhusal, B., Neupane, K., Regmi, P., Dinh, T., Marrero, L., Saghaian N. E., S. M., Nadendla, V. S. S., and Calyam, P. On countering ransomware attacks using strategic deception. In Decision and Game Theory for Security (Cham, 2025), A. Sinha, J. Fu, Q. Zhu, and T. Zhang, Eds., Springer Nature Switzerland, pp. 149–176.

NOMS'24 Neupane Lal R., Bonnah E., Bhusal B., Neupane K., Hoque Anuarul K, Calyam P. Formal Verification for Blockchain-based Insurance Claims Processing. In Proceedings of the NOMS 2024 - 37th IEEE/IFIP Network Operations and Management Symposium

Book Chapters

CRC Press Osama, O. F., Bhusal B., Kshetri, N., and Pokharel, B. P. blockDADS: Blockchain Technology for Data Analytics and Data Security - Applications and Solutions. In Blockchain Technology for Cyber Defense, Cyber Security, and Countermeasures: Techniques, Solutions, and Applications. CRC Press, Routledge Taylor & Francis Group, 2024.

IGI Global Rahman, M. M., Hossain, S., Bhusal, B., & Kshetri, N. (2025). cyberAItrends: Future trends in AI for cyberbullying prevention. In K. K. Reddy C., M. Malhotra, M. Ouaissa, M. M. Hanafiah, & M. Shuaib (Eds.), Combating cyberbullying with generative AI. IGI Global.

Academic Service

2023 **Artifact Evaluation Committee Member**, *The ACM Conference on Computer and Communications Security*, CCS.

2025 **Artifact Evaluation Committee Member**, *The 25th Privacy Enhancing Technologies Symposium, 2025*, PETS.

2025 **Reviewer**, *The 6th AAAI Workshop on Privacy-Preserving Artificial Intelligence*, PPAI-25.

2025 **Artifact Evaluation Committee Member**, *The 37th International Conference on Computer Aided Verification*, CAV25.

2025 **Program Committee Member**, *The Fortieth AAAI Conference on Artificial Intelligence* , AAAI-26.

Leadership and Volunteering Activities

2023–2024 **Secretary**, *EECS Graduate Sudent Association*, University of Missouri, Columbia.

2024–2025 **President**, *EECS Graduate Sudent Association*, University of Missouri, Columbia.

Certifications

2023 **AWS Associate Solutions Architect (SAA-C03)**, *by AWS*.

2023 **Graduate Certificate in Cybersecurity**, *by University of Missouri*, Columbia.

2020 **Deep Learning Specialization**, *by deeplearning.ai*.

Awards

2024 **GameSec 2024 Best Paper Award**.

2024 **IEEE CSF Travel Grant**.

2024 **Winner**, *GPC Interdisciplinary Case Competition*, University of Missouri, Columbia.

2023 **EECS Excellence Travel Grant**, *University of Missouri*, Columbia.

2023 **IEEE SaTML Travel Grant**, *IEEE SaTML*.

2022 **EECS Excellence Fellowship**, *University of Misssouri*, Columbia.

2015 **Runner-up**, *KEC LITE Software Competition*, Kathmandu, Nepal.

Workshops and Summer Schools

2023 **Formal Techniques**, *SRI*, Atherton, CA.

References

Rohit Chadha
Associate Professor and Director of Cybersecurity Center
EECS, University of Missouri, Columbia
Email: chadhar@missouri.edu

Prasad Calyam
Professor and Director of the Center for Cyber Education, Research and Infrastructure
EECS, University of Missouri, Columbia
Email: calyamp@missouri.edu