Subash Neupane

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Current Position(s)

Assistant Professor of Computer Science & Data Science
School of Applied Computational Sciences
Meharry Medical College
Nashville, TN

Education

Ph.D., Mississippi State University, Starkville, MS	2021-2025
MSc., Tuskegee University, Tuskegee, AL	2019-2020
MSc., Swinburne University of Technology, Melbourne, VIC	2014-2016
B.E., Kathmandu University, Kathmandu, Nepal	2007-2011

Academic Appointments

Assistant Professor of Computer Science & Data Science — 2025-Present
Assistant Professor of Computer Science & Data Science
School of Applied Computational Sciences
Meharry Medical College
Nashville, TN

Graduate Research Assistant — 2021 - 2025
Department of Computer Science and Engineering
Mississippi State University
Starkville, Mississippi

Graduate Teaching Assistant — 2021 - 2022
Department of Computer Science and Engineering
Mississippi State University
Starkville, Mississippi

Graduate Research Assistant — 2019-2020
Department of Computer Science
Tuskegee University
Tuskegee. Alabama

Professional Positions and Experience

Generative AI Research Intern — May 2024- Dec 2024
Potentia Analytics Inc.
Carbondale, IL

HP Summer Scholar — Mar 2020 – Aug 2020
HP Inc.

Telecom Network Engineer — Nov 2017- Oct 2018
Tandem Corp
Melbourne, Victoria, Australia

Graduate Telecom Trainee — Feb 2017- Oct 2017
Rubix Solutions
Melbourne, Victoria, Australia

Automation Testing Intern — Jul 2015 – Dec 2015
Safecode
Melbourne, Victoria, Australia

Software Engineer — May 2012 – Feb 2014
Agricultural Development Bank Limited
Kathmandu, Nepal

Associate Software Engineer — Sep 2011 – Apr 2012
Deerwalk Inc.
Kathmandu, Nepal

Software Development Intern — Sep 2011 – Apr 2012
Javra Software
Kathmandu, Nepal

Educational Activities

Senior Project Mentor and Team Lead — Spring 2023- Fall 2024
Mississippi State University, Starkville, MS

- Supervised a senior design team of four graduate students in the development of the chatbot (BarkPlug)

Lead Mentor — Spring 2024
Mississippi State University, Starkville, MS

- Provided mentorship to a high school scholar on integrating generative AI and Stable Diffusion, designing experiments, developing evaluation methods, and writing reports, culminating in a successful research paper.

Lead JROTC Cyber Academy Mentor — Summer 2022
Mississippi State University, Starkville, MS

- Represented Mississippi State University (MSU) as a mentor, providing academic and technical assistance to camp students in virtual lab environments.
- Facilitated breakout sessions, supporting students with team projects and individual activities, ensuring a collaborative and productive learning atmosphere.
- Assisted in running review sessions for the CompTIA IT (A+) Fundamentals, offering guidance on technical concepts and problem-solving strategies.

Graduate Teaching Assistant — Jan 2021 – May 2022
Mississippi State University, Starkville, MS

Courses Taught:

- Operating Systems (CSE 4733)
- Systems Programming (CSE 3183)
- Assisted with office hours, grading, and lab lectures.

Graduate Teaching Assistant — Fall 2019 – Spring 2020

Courses Taught:

- Intro to Computer Concepts (CSCI 100)
- Assisted with office hours, grading, and lab lectures.

Honors and Awards

AAAI/SIGAI Doctoral Consortium (Best Poster Award)	Spring 2025
Foundations & Practice of Security (FPS – 2024) (Best Paper Award)	Fall 2024
Inducted into Phi Kappa Phi Honor Society	Spring 2022

Grants and Contract Awards

Assisted PI and Co-PI in writing successful grant proposals.

SaTC: EDU: Navigating AI Security and Data Governance in a Multi-Cloud Environment (Under Review)

- Principal Investigator: Dr. Sudip Mittal
- Role: Assisted in drafting key sections of grant proposals, with a focus on the introduction of MLOps pipelines, cloud computing fundamentals, standards for Tactics, Techniques, and Procedures (TTPs), as well as risk, threat, and vulnerability assessments.

SBIR/STTR: MyDocSaid: Deep Learning for Patient-Centric Record, Summarization, and Analysis of Medical Conversations

- Grant Number: R41NR021089
- Funding Agency: National Institutes of Health
- Principal Investigator: Dr. Nina Marhamati
- Year Awarded: July 2024
- Role: Collaborated in drafting architecture of MyDocSaid app. Conducted a literature review of knowledge representation techniques. Formalized methods for summarization, and question and answering tasks. Participated in meetings with the research team to refine proposal goals and strategies. Resulted in successful funding of $284,317.

SaTC: EDU: Inculcate a culture of preparedness against AI security threats to pervasive robotic systems

- Grant Number: 2246920
- Funding Agency: National Science Foundation
- Principal Investigator: Dr. Sudip Mittal
- Year Awarded: June 2021
- Role: Assisted in literature review, and drafting methodology. Contributed to shaping research objectives and preparing the final proposal for submission. This resulted in successful funding of $399,978.00.

Publications

Refereed Journal Papers

1. **Neupane, S**., Mitra, S., Mittal, S., Golilarz, N. A., Rahimi, S., Amirlatifi, A. , & Gaur, M MedInsight: A Multi-Source Context Augmentation Framework for Generating Patient-Centric Medical Responses using Large Language Models, ACM Transactions on Computing for Healthcare, 2024.

2. Khatib, H. S. A., **Neupane, S**., Manchukonda, H. K., Golilarz, N. A., Mittal, S., Amirlatifi, A., & Rahimi, S., Patient-Centric Knowledge Graphs: A Survey of Current Methods, Challenges, and Applications, Frontiers in Artificial Intelligence, 2024.

3. **Neupane, S.**, Mitra, S., Fernandez, I. A., Saha, S., Mittal, S., Chen, J.,& Rahimi, S, Security Considerations in AI-Robotics: A Survey of Current Methods, Challenges, and Opportunities, IEEE Access, 2024.

4. **Neupane, S.**, Ables, J., Anderson, W., Mittal, S., Rahimi, S., Banicescu, I., & Seale, M., Explainable intrusion detection systems (x-ids): A survey of current methods, challenges, and opportuni-

ties, IEEE Access, 10, 112392-112415, 2022.

5. Baba, A. I., **Neupane, S.**, Wu, F., & Yaroh, F. F., Blockchain in accounting: challenges and future prospects. International Journal of Blockchains and Cryptocurrencies, 2(1), 44-67, 2021.

Refereed Conference Papers:

6. Pham, K., Penchala, S., Al Khatib, H. S., Golilarz, N. A., **Neupane, S.**, Mittal, S., ... & Bozorgzad, S. A Knowledge Graph for Geriatric Patient Journeys, IEEE EMBS BHI, 2025 (Poster).

7. **Neupane, S**. "Intelligent Clinical Assistant for Personalized Responses and Clinical Summaries." Proceedings of the AAAI Conference on Artificial Intelligence. Vol. 39. No. 28. 2025. (Doctoral Consortium) **(Best Poster Award)**

8. **Neupane, S**., Mitra, S., Mittal, S., & Rahimi, S., Towards a HIPAA Compliant Agentic AI System in Healthcare, ACM Symposium on Access Control Models and Technologies, 2025. (Under Review)

9. **Neupane, S.**, Mitra, S., Fernandez, I. A., Mittal, S., & Rahimi, S., TwinExplainer: Explaining predictions of an automotive digital twin., IEEE CAI, 2025.

10. **Neupane, S.**, Tripathi, H., Mitra, S., Bozorgzad, S., Mittal, S., Rahimi, S., & Amirlatifi, A, CLINICSUM: Utilizing Language Models for Generating Clinical Summaries from Patient-Doctor Conversations., IEEE International Conference on Big Data, 2024.

11. Mitra, S., **Neupane, S.**, Chakraborty, T., Mittal, S., Piplai, A., Gaur, M., & Rahimi, S.,Localintel: Generating organizational threat intelligence from global and local cyber knowledge., International Symposium on Foundations & Practice of Security (FPS), 2024. **(Best Paper Award)**

12. Panigrahi, D., Mitra, S., **Neupane, S.**, Mittal, S., & Blakely, B. A., IRSKG: Unified Intrusion Response System Knowledge Graph Ontology for Cyber Defense. IEEE International Conference on Big Data, 2024.

13. Mitra, S., **Neupane, S.**, Chakraborty, T., Tripathi, H., Piplai, A., Gaur, M., Mittal, S., & Rahimi, S. Find before you fine-tune (FiT): How to identify small-scale LLM suitable for cybersecurity question-answering tasks. (Under Review)

14. **Neupane, S.**, Hossain, E., Keith, J., Tripathi, H., Ghiasi, F., Golilarz, N. A.,& Rahimi, S., From Questions to Insightful Answers: Building an Informed Chatbot for University Resources, Frontiers in Education, ASEE, 2024.

15. Rosas, S. R., **Neupane, S.**, Mitra, S., & Mittal, S., ReVisE: Emulated Visual Outfit Generation from User Reviews using Generative-AI, SEDE Conference: Software & Data Engineering, 2024.

16. Fernandez, I. A., **Neupane, S.**, Chakraborty, T., Mitra, S., Mittal, S., Pillai, N.,& Rahimi, S., A Survey on Privacy Attacks Against Digital Twin Systems in AI-Robotics, IEEE International CIC, 2024.

17. Keith, J. M., Amirlatifi, A., Rahimi, S., **Neupane, S.**, & Mittal, S., Bark Plug: The ChatGPT of the Bagley College of Engineering at Mississippi State University, ASEE Annual Conference & Exposition, 2024.

18. **Neupane, S.**, Fernandez, I. A., Patterson, W., Mittal, S., & Rahimi, S., A temporal anomaly detection system for vehicles utilizing functional working groups and sensor channels, IEEE CIC, 2022.

Pre-prints:

19. Al Khatib, H. S., **Neupane, S**., Mittal, S., Rahimi, S., Marhamati, N., & Bozorgzad, S. Patient Journey Ontology: Representing Medical Encounters for Enhanced Patient-Centric Applications,

2025.

20. Mitra, S., Chakraborty, T., **Neupane, S**., Piplai, A., & Mittal, S. (2024). Use of Graph Neural Networks in Aiding Defensive Cyber Operations. arXiv preprint arXiv:2401.05680.

21. **Neupane, S**., Fernandez, I. A., Mittal, S., & Rahimi, S. (2023). Impacts and risk of generative AI technology on cyber defense. arXiv preprint arXiv:2306.13033.

Published Abstracts and Presentations

- *"*Intelligent Clinical Assistant for Personalized Responses and Clinical Summaries", AAAI, (February 2025)

Oral Presentations

- "Medinsight: A multi-source context augmentation framework for generating patient-centric medical responses using large language models." IEEE/ACM CHASE (June 2025)
- "Twinexplainer: Explaining predictions of an automotive digital twin.", IEEE CAI (May, 2025)
- "CLINICSUM: Utilizing Language Models for Generating Clinical Summaries from Patient-Doctor Conversations", IEEE Big Data, (December, 2024)
- "IRSKG: Unified Intrusion Response System Knowledge Graph Ontology for Cyber Defense", IEEE Big Data, (December, 2024)
- "Large Language Models for Engineering Patient Journey Knowledge Graphs", AAAI Fall Symposium Series, (November, 2024)
- "A Survey on Privacy Attacks Against Digital Twin Systems in AI-Robotics", IEEE CIC (October, 2024)
- "Generative AI for Chatbots", The Office of the Provost and Executive Vice President, Mississippi State University (September, 2023)
- "A temporal anomaly detection system for vehicles utilizing functional working groups and sensor channels," IEEE CIC (December, 2022)

Poster Presentations

- "Poison attacks and adversarial prompts against an informed university virtual assistant.", ACM ACSAC, (December, 2024)
- "A white-box adversarial attack against a digital twin.", ACM ACSAC, (December, 2022)

Professional Affiliation

- Association for the Advancement of Artificial Intelligence (AAAI)
- Association for Computing Machinery (ACM)
- Institute of Electrical and Electronics Engineers (IEEE)
- AI Club Committee Member, Mississippi State University

Professional Service

Contributed as reviewer in following conferences:

- 39th Annual AAAI Conference on Artificial Intelligence (Sub-reviewer) 2025
- ASEE Annual Conference & Exposition 2025
- ACM Transactions on Computing for Healthcare- Special Issue 2024
- KDD 2024 - ACM KDD 2024
- American Society for Engineering Education Conference 2024
- Frontiers in Artificial Intelligence 2024
- ACM CODASPY 2023

- IEEE International Conference on Big Data 2022-2023