

Akshay Madan

CONTACT	Email: akm88@pitt.edu	Webpage	LinkedIn	Google Scholar
RESEARCH INTERESTS	Agentic AI, Large Language Models (LLM), Generative AI, Deep Learning for Healthcare, AI for Signal Processing, Internet of Things (IoT)			
EDUCATION	University of Pittsburgh, School of Computing and Information, USA			
	Doctor of Philosophy (Ph.D.), Information Science			2024
	Birla Institute of Technology and Science, Pilani Campus, India			
	M.Eng., Communication Engineering			2018
	B.Eng., Electrical and Electronics Engineering			2016
KEY PROJECTS	Agentic AI for Strategic Tool Invocation in LLM Reasoning Workflows			
	Context-Aware Proactive AI Multi-Agent for Personalized Smart Home and Smart Healthcare Applications			
	AI-based Signal Processing for Hand Hygiene Monitoring in Healthcare Facilities			
ONGOING RESEARCH	Akshay Madan , Dhruv Gupta, “CAPA-Agent: A Context-Aware Proactive AI Agent for Personalized Smart Home and Healthcare Applications using Reasoning LLMs”			
	Akshay Madan , Murari Mandal, “Reinforcement Learning-Based Strategic Tool Invocation for Enhanced LLM Reasoning Workflows”			
PUBLICATIONS	Akshay Madan , Siva Sai, Vinay Chamola, David Tipper, “IoT Environment Sensing using Wi-Fi CSI and Deep Learning for Hand Hygiene Monitoring,” <i>IEEE Transactions on Consumer Electronics</i> , 2024 (Accepted; IF - 4.3)			
	V. Chamola, E. P. Gummana, A. Madan , B. K. Rout, and J. J. Rodrigues, “Advancements in yoga pose estimation using artificial intelligence: A survey,” <i>Current Bioinformatics (Journal)</i> , Bentham Science, 2023 (IF - 2.1)			
	Akshay Madan , Gaurang Bansal, Vinay Chamola, David Tipper, “Enhancing Infectious Disease Outbreak Surveillance via Bidirectional Contact Tracing,” <i>IEEE Sensors Journal</i> , 2024 (IF - 4.3)			
	Akshay Madan , D. Tipper, B. Palanisamy, M. Abdelhakim, et al “BLE-based Sensors for Privacy-Enabled Contagious Disease Monitoring with Zero Trust Architecture,” <i>Ad Hoc Networks</i> (2024) (IF - 4.4) (Pitt Cyber Accelerator Grant 2020)			
	A. Madan , D. Tipper, B. Palanisamy, et. al., “BECT: BEacon-based Contact Tracing for detecting direct & indirect contacts,” in 2022 IEEE 19th Intl. Conf. on Mobile Ad Hoc and Smart Systems (IEEE MASS), (Pitt Cyber Accelerator Grant 2020)			
	F. Alotibi, A. Velagapudi, A. Madan , et. al., “The impact of covid-19 on communication network outages,” in 2022 IEEE 18th International Conference on the Design of Reliable Communication Networks (IEEE DRCN)			
INDUSTRY EXPERIENCE	American Express India Private Limited, Gurugram, India - Intern Jun 2017 - Jul 2017 Study of the Implementation of Virtualization at American Express			
	KPMG Advisory Services Private Limited, New Delhi, India - Intern May 2015 - Jul 2015 Prototype for Android App “Where is my Bus?”			

Vihaan Networks Limited, Gurugram, India - Intern

May 2013 - Jun 2013

HLR Subscriber Data Synchronization for GSM

**ACHIEVEMENTS
AND AWARDS**

- Provost's Dissertation Completion Fellowship for 2024 at the University of Pitt.
- Pitt Cyber Accelerator Grant 2020 for COVID-19-related research
- Teaching Fellowship at the University of Pittsburgh (2021)
- Prototype Presentation - 1st prize in APOGEE 2018, Technical Festival of BITS Pilani

**TECHNICAL
SKILLS**

- **Programming Languages:** Python, MATLAB, R, Java, C
- **Libraries:** Smolagents, LangChain, Numpy, Pandas, PyTorch, Keras
- **Misc. Software:** Docker, Git, LaTeX, Adobe Photoshop & After Effects

**SOCIAL
OUTREACH**

SADET: Security Assured Data Science Education & Training

- Developed Educational Resources explaining wireless network concepts to high school students from minority groups
- Supported by the National Science Foundation (NSF)

National Service Scheme, India

- Volunteered for Youth Conference 2014, organized by the National Service Scheme
- Conducted by Department of Youth Affairs of Indian Government, for primary education among the underprivileged

REFERENCES

Dr. David Tipper

Professor, Dept. of Informatics and Networked Syst., University of Pittsburgh

Ph.D. Advisor (Aug 2018 - Dec 2024)

Email - dtipper@pitt.edu Phone +1 4126249421

Dr. Balaji Palanisamy

Associate Professor, Dept. of Informatics and Networked Syst., University of Pittsburgh

Ph.D. Committee Member

Email - bpalan@pitt.edu Phone +1 4126240232

Dr. Vinay Chamola

Associate Professor, Birla Institute of Technology and Science (Pilani Campus)

Master's Thesis Advisor (Jan 2018 - May 2018)

Email - vinay.chamola@pilani.bits-pilani.ac.in Phone +91 1596255869