

Akshay Madan

CONTACT INFORMATION	akm88@pitt.edu +91 8233351558
RESEARCH INTERESTS	AI Agents, Large Language Models (LLM), Generative AI, Deep Learning and AI 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
MAJOR PROJECTS	Context-Aware Proactive AI Multi-Agent for Personalized Smart Home and Smart Healthcare Applications LLM-based code evaluation techniques focused on educational assessment and semantic understanding Multi-Agent systems for scientific research and knowledge discovery AI-based Signal Processing for Hand Hygiene Monitoring in Healthcare Facilities
PAPERS IN PROGRESS	Akshay Madan , “CAPA-Agent: A Context-Aware Proactive AI Agent for Personalized Smart Home and Healthcare Applications using Reasoning LLMs” Akshay Madan , Dhruv Kumar, “Survey of Code Evaluation LLMs for Educational Assessment and Semantic Understanding”
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) <i>V. Chamola, E. P. Gummana, A. Madan, B. K. Rout, and J. J. Rodrigues, “Advancements in yoga pose estimation using artificial intelligence: A survey,” Current Bioinformatics (Journal), Bentham Science, 2023 (IF - 2.1)</i> 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) <i>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)</i>

INDUSTRY EXPERIENCE	<p>American Express India Private Limited, Gurugram, India - Intern Jun 2017 - Jul 2017 Study of the Implementation of Virtualization at American Express</p> <p>KPMG Advisory Services Private Limited, New Delhi, India - Intern May 2015 - Jul 2015 Prototype for Android App “Where is my Bus?”</p> <p>Vihaan Networks Limited, Gurugram, India - Intern May 2013 - Jun 2013 HLR Subscriber Data Synchronization for GSM</p>
ACHIEVEMENTS AND AWARDS	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<p>SADET: Security Assured Data Science Education & Training</p> <ul style="list-style-type: none"> • Developed Educational Resources explaining wireless network concepts to high school students from minority groups • Supported by the National Science Foundation (NSF) <p>National Service Scheme, India</p> <ul style="list-style-type: none"> • 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	<p>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</p> <p>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</p> <p>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</p>