Akshat Choube

✉ choube.a@northeastern.edu
📞 +1 (213) 800-6697
🌐 https://akshat3011.github.io/

My overarching research interest lies in developing Machine Learning and Artificial Intelligence systems that are more "behavior-aware"—capable of understanding users on a deeper level and supporting more personalized experiences. Currently, I focus on designing human-centered AI and ML systems that use passive sensing data from phones and wearables to understand behavior patterns and generate meaningful health & well-being insights. My goal is to personalize these insights so it is accessible and actionable to a wide range of stakeholders—including behavioral researchers, psychologists, and individuals interested in health and wellbeing.

Education

2023 - Present	**Ph.D., Computer Science** *Northeastern University* Advisor: Varun Mishra
2019 - 2021	**MS, Computer Science** *University of Southern California, Los Angeles*
2015 - 2019	**BTech, Computer Science & Engineering** *Indian Institute of Technology (IIT), Palakkad*

Experience

Sept 2023 - Present	**Graduate Research Assistant**, UbiWell Lab, Northeastern University Developing AI and ML systems that transform passive sensing data into actionable, accessible insights for health and wellbeing.
Jul 2021 - Jul 2023	**Software Development Engineer (ML)**, Amazon Search Worked with Query Understanding and Autocomplete teams. Developed ML and NLP solutions to better understand shopping intent on Amazon, improving query parsing, intent detection, to show relevant products and query suggestions.
Jan 2021 - May 2021	**Graduate Research Assistant**, Intelligent Human Perception Lab, USC Built models to predict self-reported mood using Apple Watch data (such as heart rate, physical activity, etc.). Applied statistical analysis and deep learning to uncover correlations between physiological signals and mood.

Jan 2021 - May 2021	**Teaching Assistant** , Viterbi School of Engineering, USC Held office hours to help students with NLP concepts, project development, and report writing. Assisted with grading and facilitated project brainstorming sessions. Presented my paper on multimodal machine learning to a class of 150 students.
Jun 2020 - Aug 2020	**Software Development Engineer Intern (ML)**, Amazon Search, Palo Alto Designed and implemented a Spark-based data processing framework to convert huge offline user behavior and clickstream data into a read-only database (RODB) for deployment in online search services. Enabled customized preprocessing (filtering, transformation, aggregation, merging) for datasets before conversion.
Sep 2019 - Jan 2021	**Graduate Research Assistant**, Social Media Analytics Lab, USC Applied NLP to analyze public health behaviors on Twitter, focusing on conversations, marketing, and misinformation related to tobacco and cannabis products. Investigated the role of social bots in promoting harmful content on the platform, especially looking at at-risk populations (such as young adults and pregnant women).
May 2016 - Sept 2016	**Junior Research Fellow**, Tata Institute of Fundamental Research, Mumbai Studied information exchange system involving bit packets; defined a novel Quality of Service (QoS) metric based on transmission time and packet fraction. Proved optimal transmission ordering and designed a greedy algorithm with a guaranteed 2-approximation to the intractable optimal solution.

Publications

[C1] **A. Choube**, H. Le, J. Li, K. Ji, V. Das Swain, and V. Mishra. "GLOSS: Group of LLMs for open-ended sensemaking of passive sensing data for health and wellbeing". en. In: Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 9.3 (2025), pp. 30.

[C2] **A. Choube**, H. Le, V. Mishra, and S. Intille. "A Multi-Agent LLM Network for Suggesting and Correcting Human Activity and Posture Annotations". In: *Companion of the 2025 on ACM International Joint Conference on Pervasive and Ubiquitous Computing*. 2025, pp. 6. DOI: 10.1145/3714394.3756185.

[C3] H. Le, V. Potter, **A. Choube**, R. Lakshminarayanan, V. Mishra, and S. Intille. "A Context-Assisted, Semi-Automated Activity Recall Interface Allowing Uncertainty". In: Under Major Revision at IMWUT (2025).

[C4] **A. Choube**, S. Bhattacharya, R. Majethia, and V. Mishra. "Imputation Strategies for Longitudinal Behavioral Studies: Predicting Depression Using GLOBEM Datasets". In: *Companion of the 2024 on ACM International Joint Conference on Pervasive and Ubiquitous Computing*. 2024, pp. 736–742.

[C5] **A. Choube**, R. Majethia, S. Bhattacharya, V. D. Swain, J. Li, and V. Mishra. "Imputation Matters: A Deeper Look into an Overlooked Step in Longitudinal Health and Behavior Sensing Research". In: arXiv preprint arXiv:2412.06018, Under Major Revision in IMWUT (2024).

[C6] **A. Choube**, V. D. Swain, and V. Mishra. "SeSaMe: A Framework to Simulate Self-Reported Ground Truth for Mental Health Sensing Studies". In: *2024 12th International Conference on Affective Computing and Intelligent Interaction (ACII)*. IEEE. 2024, pp. 228–237.

[C7] J. Li, X. Li, J. Steinberg, **A. Choube**, B. Yao, X. Xu, D. Wang, E. Mynatt, and V. Mishra. "Vital Insight: Assisting Experts' Context-Driven Sensemaking of Multi-modal Personal Tracking Data Using Visualization and Human-In-The-Loop LLM Agents". In: arXiv preprint arXiv:2410.14879 (2024).

[C8] J.-P. Allem, A. Dormanesh, A. Majmundar, J. B. Unger, M. G. Kirkpatrick, **A. Choube**, A. Aithal, E. Ferrara, and T. Boley Cruz. "Topics of nicotine-related discussions on Twitter: infoveillance study". In: Journal of medical Internet research 23.6 (2021), pp. e25579.

[C9] **A. Choube** and M. Soleymani. "Punchline detection using context-aware hierarchical multimodal fusion". In: *Proceedings of the 2020 international conference on multimodal interaction*. 2020, pp. 675–679.

[C10] R. Vaze, S. Chaudhari, **A. Choube**, and N. Aggarwal. "Energy-delay-distortion problem". In: *2018 Twenty Fourth National Conference on Communications (NCC)*. IEEE. 2018, pp. 1–6.

Service

Reviewing	PACM CHI (2024)
	PACM IMWUT (2024, 2025)

Mentoring	• **Masters Students:**
	Northeastern: Munan Han, Darsh Pandya, Shreeti Shrestha
	• **Undergraduate Students:**
	Northeastern: Win Tongtawee, Arihant Pant, Sohini Bhattacharya

Miscellaneous

Skills & Interests	Human-Computer Interaction, Ubiquitous Computing, Multimodal Machine Learning, Affective Computing, Social Wellbeing and Development, Context-Aware Technologies, Mental Health and Wellbeing, Computational Social Science, Behavioral Analysis
Programming Languages	Python, Swift, C, C++, Scala, Haskell, Java, HTML, CSS
Frameworks and Tools	PyTorch, NLTK, Spark, Keras, TensorFlow, Xcode, React, Visual Studio, LaTeX, Git, Matlab, ArcGIS
Database	MySQL, MongoDB, Dgraph, Neo4j
Languages	English, Hindi, and German (basic)