

Akshay Kolgar Nayak

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Personal Website

 Github  LinkedIn  Scholar



Education

- 2023–present **Doctor of Philosophy (Advised by Dr. Vikas Ashok)**, *Department of Computer Science, Old Dominion University (Expected Graduation: December 2026)*.
- 2023–2025 **Master of Science (Advised by Dr. Vikas Ashok)**, *Department of Computer Science, Old Dominion University (GPA: 3.83/4)*.
- 2016–2020 **Bachelor of Engineering (Advised by Dr. Thippeswamy M N)**, *Computer Science, Visvesvaraya Technological University (GPA: 3.4/4)*.

Research Directions & Methods

Human-Centered Computing, Human-Computer Interaction, Accessibility and Usability, Inclusive Computing Education, Responsible AI, Simulations in Health Care Education, MLLM/Voice-Driven System evaluations (Quantification of Subjective Metrics), Social Computing, Accessible Learning Technologies, Data Visualization, Quantitative and Qualitative Study, Web Archiving, Eye tracking, Ubiquitous Computing and Wearable Technologies, Culturally Responsive Design

Professional Experiences

- May 2026 – Present **Graduate Research Assistant, Health, Education, and AI Learning (HEAL) with Eastern Virginia Medical School (EVMS), ODU**, *Advised by Dr. Ginger Watson*, Multimodal evaluation of Provider-Standardized Patient (SP)/OSCE interaction – verbal, para-verbal, and non-verbal cues for MIRS evaluation..
- May 2026 – Present **Applied Science Intern, Map Communications**, Voice Data Mining for customer call simulation, multi-agent evaluation framework for evaluating LLM-driven customer-service agents, and quantitative metrics for subjective response quality..
- Jan 2024 – May 2026 **Graduate Teaching Assistant, Old Dominion University**, CS121G – Information Literacy and Research; CS733 – Natural Language Processing.
- Jan 2023 – Dec 2023 **Graduate Research Assistant at HandsOn Lab, ODU**, *Hosted by Prof. Ajay Gupta*, Projects: (i) Admin Portal for Taste of India Festival (ReactJS, NextJS, NestJS, JavaScript, MySQL, Docker); (ii) Predictive Modeling with Prostate Cancer Data (with Eastern Virginia Medical School - EVMS) (EDA, Survival Analysis, Biomarker Identification and Drug Prediction) (PyTorch, TensorFlow, Hugging Face Transformers, spaCy, Sklearn, Pandas, Numpy, Matplotlib, Seaborn, Plotly); (iii) Linguistic Analysis for Employee Survey Data (NLP, LiWC, WEKA, Neural Networks - R-CNN, BERT, Transformers); (iv) Intervention for Agitation in Alzheimer Patients using Wearable Technologies (Time Series Data Analysis, Event Prediction, Intervention Modalities).
- Jul 2022 – Dec 2022 **Software Engineer at BetaNXT**, *Refinitiv Beta Classic and Worldwide Wealth Services (WWS)*, (JAVA, ESQ (Data transformation, message flows, RESTful APIs), Message flows, COBOL, IBM IIB, IBM WebSphere MQ).
- Sep 2020 – Jun 2022 **Associate Software Engineer at London Stock Exchange Group (Refinitiv)**, *Cloud Infrastructure and System Design*, (Azure, VMWare, Shell Scripting, Networks and Security).

Publications

Journal Articles

- J3 Md Javedul Ferdous, **Akshay Kolgar Nayak**, Yash Prakash, Nithiya Venkatraman, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Understanding Online Discussion Experiences of Blind Screen Reader Users, *International Journal of Human-Computer Interaction (Accepted)*, , 2025.
- J2 **Akshay Kolgar Nayak**, Yash Prakash, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Insights in Adaptation: Examining Self-reflection Strategies of Job Seekers with Visual Impairments in India, *Proceedings of the ACM on Human-Computer Interaction (PACMHCI)*, volume 9, Article CSCW304, 2025.
- J1 Yash Prakash, **Akshay Kolgar Nayak**, Mohan Sunkara, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, All in One Place: Ensuring Usable Access to Online Shopping Items for Blind Users, *Proceedings of the ACM on Human-Computer Interaction (PACMHCI - EICS)*, volume 8, Article 257, 2024.

Conference Articles

- C10 **Akshay Kolgar Nayak**, Yash Prakash, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Contextual Scaffolding and Self-Efficacy: Supporting Computer Skill Development among Blind Learners in India, *Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI)*, 2026.
- C9 Yash Prakash, **Akshay Kolgar Nayak**, Shoaib Alyaan, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, VoxVista: Enhancing Screen Reading Experience for Online User Comments, *Proceedings of the 2026 ACM SIGIR Conference on Human Information Interaction and Retrieval (CHIIR)*, 2026.
- C8 Yash Prakash, **Akshay Kolgar Nayak**, Nithiya Venkatraman, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Micro-Behavioral Analysis of Online Shopping Patterns for Blind Users, *Proceedings of the 2026 ACM SIGIR Conference on Human Information Interaction and Retrieval (CHIIR)*, 2026.
- C7 **Akshay Kolgar Nayak**, Yash Prakash, Md Javedul Ferdous Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Examining Inclusive Computing Education for Blind Students in India, *Proceedings of the 57th ACM Technical Symposium on Computer Science Education (SIGCSE)*, 2026.
- C6 Mohan Sunkara, **Akshay Kolgar Nayak**, Sandeep Kalari, Yash Prakash, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Adapting Online Customer Reviews for Blind Users: A Case Study of Restaurant Reviews, *Proceedings of the 22nd International Web for All Conference (W4A - Accepted) (Best Paper)*, pp 1–12, 2025.
- C5 Nithiya Venkatraman*, **Akshay Kolgar Nayak***, Suyog Dahal, Yash Prakash, Hae-Na Lee, Vikas Ashok, AccessMenu: Enhancing Usability of Online Restaurant Menus for Screen Reader Users, *Proceedings of the 22nd International Web for All Conference (W4A - Accepted)*, pp 1–12, 2025.
- C4 Yash Prakash, Pathan Aseef Khan, **Akshay Kolgar Nayak**, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Towards Enhancing Low Vision Usability of Data Charts on Smartphones, *IEEE Transactions on Visualization and Computer Graphics (TVCG - IEEE VIS)*, volume 31, Article 1, 2025.
- C3 Yash Prakash, **Akshay Kolgar Nayak**, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Understanding Low Vision Graphical Perception of Bar Charts, *Proceedings of the 26th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS)*, pp 1–10, 2024.
- C2 Mohan Sunkara, **Akshay Kolgar Nayak**, Sandeep Kalari, Satwik Ram Kodandaram, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, Assessing the Accessibility and Usability of Web Archives for Blind Users, *International Conference on Theory and Practice of Digital Libraries (TPDL)*, volume 15177, pp 203–221, 2024.

- C1 Yash Prakash, **Akshay Kolgar Nayak**, Shoaib Mohammed Alyaan, Pathan Aseef Khan, Hae-Na Lee, Vikas Ashok, Improving Usability of Data Charts in Multimodal Documents for Low Vision Users, *Proceedings of the 26th International Conference on Multimodal Interaction (ICMI)*, pp 498–507, 2024.

Conference Short Articles

- S1 Mohan Sunkara, **Akshay Kolgar Nayak**, Sandeep Kalari, Yash Prakash, Sampath Jayarathna, Hae-Na Lee, Vikas Ashok, QuickQue: Enabling Quick Access to Information in User Reviews for Screen Reader Users, *Proceedings of the 22nd International Web for All Conference (W4A - Accepted)*, 2025.

Fellowships, Grants & Awards

- 2025 **Dr. Hussein Abdel-Wahab Memorial Graduate Fellow**, Old Dominion University (\$2500)
2025 **Best Paper Award**, ACM Web For All (W4A)
2024 **ISAB Research Scholarship**, Old Dominion University (\$1000)
2024 **CSGS Research Scholarship**, Old Dominion University (\$1000)
2023 **Dominion Scholar**, Old Dominion University (\$10000)
2023 **Best Research Mentor Award**, Old Dominion University (\$500)
2023 **Best Teaching Assistant Award**, Old Dominion University

Community Services

- Reviewer/PC Member:** CHI, CSCW, HAI, IMWUT, IUI,, UIST, SIGCSE TS
2025 **Student Exchange Research Mentor** (Hosted by Dr. Vikas Ashok), Old Dominion University
2024 **REU Research Mentor** (Hosted by Dr. Vikas Ashok), Old Dominion University
2024 **International Student Research Mentor** (Hosted by Prof. Ajay Gupta), Old Dominion University
2023 **Treasurer, Indian Student Association**, Old Dominion University

Teaching Experiences & Invited Talks

- Jan 2024 – May 2026 **Graduate Teaching Assistant**, CS121G – Information Literacy and Research
2025 **Invited Talk: Understanding Usability in Multimodal Documents: Case study of Hotel Menus**, Web Science and Digital Libraries (WS-DL) Expo, Old Dominion University, Invited by Dr. Michael Nelson
May 2024 **Invited Talk: Accessibility and Usability of Web Archives**, Global Accessibility and Awareness Day (GAAD), Invited by Old Dominion University
May 2024 **Guest Lecture: Natural Language Processing with Transformers**, ODU Data Science Bootcamp, Invited by Old Dominion University
Jan 2024 – May 2024 **Graduate Teaching Assistant**, CS733 - Natural Language Processing (NLP)
2023 **Invited Talk: Adapting to the US graduate education system**, Old Dominion University, Invited by Dr. Michele C Weigle
2023 **Invited Talk: Understanding EEG headsets with Emotiv**, Old Dominion University, Invited by Prof. Ajay Gupta

Mentorship

- Aug 2025 **Fuka Ogawa**, Exchange Student, Old Dominion University

Jun 2024 **Stefania Dzhaman**, REU Student, Old Dominion University
Aug 2023 **Samhitha Holla**, Visiting Research Intern, Old Dominion University
Aug 2023 **Varsha S Anand**, Visiting Research Intern, Old Dominion University
Aug 2023 **Sanjana J Bharadwaj**, Visiting Research Intern, Old Dominion University

Technical Skills

Programming Languages & Technologies: Data Science, Data Analysis, Machine Learning, Deep Learning, Natural Language Processing (NLP), Computer Vision, Generative AI, Prompt Engineering, LLM Evaluation, Multi-Agent Systems, RAG, Reinforcement Learning, Time-Series Analysis, Probability and Statistics, Python, Java, C, C++, HTML, CSS, JavaScript, TypeScript, SQL, Shell Scripting, ESQL, COBOL

Libraries, Frameworks & Tools: TensorFlow, PyTorch, Scikit-learn, Keras, Pandas, NumPy, SciPy, Matplotlib, Seaborn, Plotly, Jupyter Notebook, Hugging Face Transformers, spaCy, LangChain, LiWC, WEKA, OpenCV, Git, Docker, ReactJS, NextJS, NestJS, Node.js, Tableau, PowerBI, Excel

ML Architectures & Models: CNN, YOLO, Transformers (T5, GPT, BERT), Multimodal LLMs (MLLM), LSTM, Bi-LSTM, RNN, Mask R-CNN, VGG, Autoencoders, GAN, Siamese Networks, Time Series Analysis, Event Prediction Pipelines

Cloud, DevOps & Integration: Microsoft Azure, AWS, GCP, VMware, Docker, IBM Integration Bus (IIB), IBM WebSphere MQ, RESTful APIs, Message Flows, System Design

Databases: MySQL, MongoDB, Vector Databases (Chroma, Pinecone)

Research & HCI Methods: Accessibility & Usability Evaluation, Human-Centered Design, Quantitative & Qualitative Studies, Explainable AI (SHAP, LIME), Eye Tracking, Web Archiving, Culturally Responsive Design

Version Control & Collaboration: Git, GitHub, Jira, Confluence