

Nibraas Khan

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Education

Vanderbilt University , PhD in Computer Science, Dissertation: xAI for Wearable Systems: Predicting Behaviors, Monitoring Cognition, and Enhancing Performance	Expected December 2025
Vanderbilt University , MS in Computer Science	August 2020 – May 2023
Middle Tennessee State University , BS in Computer Science	August 2017 – May 2020

Experience

Research Assistant , Vanderbilt University – Nashville, TN	August 2020 – Present
<ul style="list-style-type: none">Engineering a sports analytics platform with IMUs, insole sensors, and ML, automating biomechanical concept extraction for LLM-generated feedback. Applied to 100+ athletes, improving technique retention by 30%.Designing an explainable AI system for behavioral prediction in Autism Spectrum Disorder, integrating automatic concept recognition across 25 participants, achieving a 90% accuracy.Developing ML pipelines for gait analysis in Mild Cognitive Impairment, using automatic concept recognition on 50+ biomechanical features from 30 participants to identify gait differences between MCI and non-MCI.Collaborating with Vanderbilt's venture team to explore commercialization, conducting 50+ customer discovery interviews. Initiated patent filings and secured \$50K in funding to assess market viability.Built web and mobile apps with React Native, interfacing with 5+ bluetooth devices (100Hz), 2 TCP sensors (100Hz), and 1 audio sensor to deliver ML predictions in real time, sending feedback directly to an Apple Watch.Developed a commercialization-ready universal data coding platform for labeling and analytics, streamlining dataset curation. Now being adopted by other labs to enhance research workflows.Created interactive dashboards for clinical, non-technical teams, visualizing real-time sensor data and ML predictions across 100+ sessions, improving stakeholder transparency and reducing analysis time by 40%.	
Co-Founder , JumpStart – Nashville, TN	January 2023 – Present
<ul style="list-style-type: none">Co-founded a nonprofit mentoring 20+ students across 5+ universities, providing structured development opportunities and connecting them with product owners to build 3+ production-ready apps.Helped students gain real-world experience in full-stack development, cloud computing, and agile workflows, leading to successful careers in software engineering, game development, and research.Managed program logistics to enhance operational efficiency and foster better engagement between students and business partners to ensure effective collaboration and project execution.	

Projects

Algorithmic Trading	April 2020 – Present
<ul style="list-style-type: none">Developing momentum-based and mean-reversion trading algorithms on QuantConnect, leveraging Python for backtesting and optimizing execution with multithreading. Achieved a 15% return over six months.Building an automated portfolio rebalancing pipeline with QuantConnect's API, integrating machine learning models for volatility forecasting and real-time asset allocation adjustments.	

Funding

Grants: NIH (Social Robotics) - \$3.13M, NSF (Compression Tech, Pending) - \$2M, NSF (AI for Behavior Prediction) - \$1.1M, NSF I-Corps (Pending) - \$50K, Microgrant - \$2.5K

Technologies

Languages: Python, JavaScript, Typescript, C++ , SQL, MATLAB, Swift, C#

Technologies: TensorFlow, PyTorch, Scikit-learn, Pandas, NumPy, SciPy, React, React Native, Docker, Git, QuantConnect, Firebase, AWS, Jupyter Notebooks