

Muhammad Tanveer Jan, Ph.D.

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Summary

Mission-driven Data Scientist and Computer Science Ph.D. with over 6 years of experience combining deep analytical expertise with production-grade ML software engineering to deliver scalable clinical intelligence solutions. Expert in processing high-volume, high-dimensional, and unstructured healthcare data to surface clinical insights and documentation analytics. Proven track record building end-to-end AI pipelines to interpret complex human-environment data, automate documentation review, and optimize health workflows. A collaborative technical leader adept at translating ambiguous clinical problems into highly resilient, production-grade AI services with robust CI/CD and observability loops..

Technical Skills

- **Generative AI & Agentic Systems:** LangChain, Agentic Workflows, RAG Architecture, Large-Language Models, Vision-Language Models (VLM), Facial Recognition, Optical Character Recognition.
- **AI/ML Frameworks:** PyTorch, TensorFlow, OpenCV, Scikit-Learn, Reinforcement Learning, Pattern Recognition.
- **Healthcare Tech & Compliance:** EHR Integration, Clinical-Grade Infrastructure, Digital Biomarkers, Validation against Clinical Benchmarks (MoCA), Physiological Signal Processing.
- **Cloud & Data Platforms:** Microsoft Azure, AWS, Databricks, Docker, Kubernetes, Multi-GPU Training.
- **Programming Languages:** Production-level Python, C/C++, R, MATLAB, JavaScript, TypeScript.
- **Cross-Stack Development:** NodeJS, ReactJS, AngularJS, HTML/CSS, REST APIs, NoSQL Data Storage

Professional experience

AI Research Scientist – Guident Corp (April 2023 – Present)

Served in a high-autonomy, client-facing capacity to engineer and deploy mission-critical AI architecture and vision pipelines.

- **Agentic Workflows & VLM Design:** Design and build advanced multi-modal pipelines leveraging Vision-Language Models (VLMs) and decision-making frameworks to interpret complex behavioral and environmental data arrays.
- **Rapid Prototyping & Cross-Stack Deployment:** Ideate, prototype, and scale intelligent backend model pipelines and telemetry processing architectures integrated into cross-platform frontend interfaces.
- **Low-Latency System Optimization:** Productionize deep learning models and agent components on compute-constrained edge and cloud infrastructures, balancing performance with real-time inference constraints.
- **Safety & Guardrail Implementation:** Architect robust monitoring infrastructure with custom validation guardrails to ensure mission-critical, high-fidelity system execution.

Graduate Research Assistant / Team Lead – Florida Atlantic University (Jan 2021 – May 2026)

Directed large-scale, federally funded data science initiatives requiring strict data strategy and cross-functional team leadership.

- **High-Volume Healthcare Analytics:** Managed and structured an NIH-funded 90TB longitudinal dataset consisting of unstructured, high-dimensional clinical, video, and sensor data, maintaining a rigorous data quality mindset.
- **Clinical Intelligence & Document Integration:** Integrated complex Electronic Health Record (EHR) data with high-volume physiological signals (HRV, gait) to build automated predictive analytics for risk forecasting and clinical decision-making.
- **Clinical Validation & Storytelling:** Validated sophisticated machine learning models against gold-standard clinical benchmarks, including MoCA (Montreal Cognitive Assessment) profile data; distilled results into dashboards to tell a compelling data story to stakeholders.

- **Cross-Functional Team Collaboration:** Partnered cross-functionally with leaders from the Colleges of Medicine, Nursing, and Neuroscience to convert complex predictive algorithms into production-ready clinical tools.
- **Enterprise Applications Delivered:** Successfully engineered and shipped three major industry platforms: a Telehealth framework (Atos Unify), a 3D Health Estimation application (Delray Medical Center), and a predictive demand-forecasting tool (GA Telesis).
- **Peer-Reviewed Published Frameworks:** Published over 23 papers (220+ Citations, H-index: 9) detailing innovative automated health monitoring, anomaly detection, and patient tracking systems in complex hospital and driving environments.

Machine Learning Engineer Intern – Guident Corp (May 2022 – July 2022)

- **Cloud & Data Infrastructure:** Engineered and optimized cloud-based NoSQL data storage and real-time processing pipelines for high-performance vision and telemetry data.
- **MLOps:** Supported cloud-based infrastructure for automated data extraction and machine learning model deployment pipelines.

Research Assistant – University of Salerno, Italy (Sept 2019 – July 2020)

- **Cross-Stack Agentic UI/UX:** Prototyped and deployed interactive interfaces using JavaScript, TypeScript, and charts to visualize complex model performance metrics and real-time state transitions for non-technical stakeholders.
- **Pipeline Monitoring & Latency Tracking:** Integrated dynamic data extraction behaviors within web applications to monitor model drift and system latency in high-throughput data environments.
- **Internal API & Library Engineering:** Developed and maintained internal libraries and APIs using NodeJS, establishing reusable architectural patterns to streamline the integration of model capabilities into cross-platform user products.
- **Environment Management & Deployment:** Standardized the use of containerization and package management frameworks (NPM/Yarn) to ensure reproducible and consistent application deployment across distributed cloud and on-premise platforms.
- **Data Flow Optimization:** Optimized frontend and backend data flows for computational efficiency, ensuring software infrastructure could handle the visualization of high-dimensional datasets.
- **Validation & Testing:** Conducted rigorous testing and validation of data extraction scripts to ensure the integrity of datasets used for training and evaluating intelligent behavioral models.

Education

Florida Atlantic University, PhD - Boca Raton FL

Major: Computer Science, January 2021 – February 2026, [CGPA : 3.95]

Research Area: Computer Vision and Machine Learning

University of Salerno, MSc – Salerno, Italy

Major: Computer Science September 2018 – September 2020 [CGPA: 3.88]

Thesis: Event-Based Facial Recognition Systems

Awards/Achievements

- Researcher of the Year 2025 – Florida Atlantic University
- Master's Scholarship 2020 Italy
- Graduate Researcher 2021-2025
- Green Card Holder

Selected Publication & Patents

Total Citations: 220+ | **h-index:** 9 | **Total Papers:** 23+

- 1- *"Driving Device, Method, and Application for Detecting Cognitive Changes in Drivers"*, Provisional patent USPTO, application # 64/011,489. Mar 23,2026
- 2- **Muhammad Tanveer Jan**, Borko Furht, Sonia Moshfeghi, Jinwoo Jang, Seyedeh Gol Ara Ghoreishi, Charles Boateng, Kwangsoo Yang et al. "Enhancing road safety: in-vehicle sensor analysis of cognitive impairment in older drivers." *Multimedia Tools and Applications* (2024): 1-22.
- 3- **Muhammad Tanveer Jan**, Sonia Moshfeghi, Joshua William Conniff, Jinwoo Jang, Kwangsoo Yang, Jiannan Zhai, Monica Rosselli, David Newman, Ruth Tappen, and Borko Furht. "Methods and tools for monitoring driver's behavior." In 2022 International Conference on Computational Science and Computational Intelligence (CSCI), pp. 1269-1273. IEEE, 2022.
- 4- Alsaidi, Mostapha, **Muhammad Tanveer Jan**, Ahmed Altaher, Hanqi Zhuang, and Xingquan Zhu. "Tackling the class imbalanced dermoscopic image classification using data augmentation and GAN." *Multimedia Tools and Applications* 83, no. 16 (2024): 49121-49147.
- 5- **Jan, Muhammad Tanveer**, Christian Garbin, Johannes Ruetschi, Oge Marques, and Hari Kalva. "Automated patient localization in challenging hospital environments." *Multimedia Tools and Applications* (2024): 1-19.
- 6- **Jan, Muhammad Tanveer**, Aditya Kumar, Vivek Ganesh Sonar, Mike Wells, Abhijit Pandya, Gabriella Engstrom, Richard Shih, and Borko Furht. "Comprehensive survey of body weight estimation: techniques, datasets, and applications." *Multimedia Tools and Applications* (2024): 1-31.
- 7- Altaher, Ahmed, Mustafa Khalid Mezaal, **Muhammad Tanveer Jan**, Munid Alanazi, Mostapha Alsaidi, Zahra Salekshahrezaee, Ali Salem Altaher, and Hanqi Zhuang. "Finger Knuckle Print Classification Using Pretrained Vision Models." In 2023 IEEE 20th International Conference on Smart Communities: Improving Quality of Life using AI, Robotics and IoT (HONET), pp. 62-67. IEEE, 2023.

Invited Talks/Presentations

- **FAU 2025 Research Renewal:** College of Executive Education, Florida Atlantic University
- **Graduate Student Research Session:** College of Engineering and Computer Science, FAU,
- **Student Research Poster Presentation:** College of Nursing, FAU
- **Research Publication Presentation:** 2022 Future Technologies Conference, Vancouver, Canada

Organization – Volunteer Work

- Data Science and Machine Learning Club (DSML FAU)
Co-Founder, Vice President
- IEEE Intelligent Transportation Systems
- IEEE Young Professionals Society