JALIL AHMED

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PROFESSIONAL SUMMARY

Machine Learning Researcher with 5+ years of experience building and evaluation deep learning systems for complex, real-world data. Strong background in computer vision, representation learning, and model generalisation, with hands-on experience across the full ML life-cycle from problem formulation and experimental design to deployment under real constraints. Increasingly focused on understanding why and when models work, with interest in interoperability, uncertainty, robustness, and learning theory. Experiences in translating research into reliable systems, collaborating across disciplines, and working within regulated and high-impact environments.

TECHNICAL SKILLS

Programming: Python, JavaScript, Java, C, C++
ML/Deep Learning: TensorFlow, PyTorch, Keras, 3D CNNs, Transfer Learning, Federated Learning, Multi-Agent AI Systems
Computer Vision: Medical Image Segmentation, Object Detection, RANSAC, Super-Resolution, Style Transfer
Frameworks/Tools: Node.js, React, React Native, OpenGL, Docker, MLFlow, Git
Standards: IEC 62304, IEC 82304-1, ISO 13485, SaMD Development
Languages: English (Fluent), German (B1)

PROFESSIONAL EXPERIENCE

Machine Learning Scientist **Aug 2022 – Present**
Nano4Imaging GmbH, Düsseldorf, Germany
- Developed deep learning models for real-time tracking of passive MRI markers, improving interventional procedure accuracy
- Designed and implemented physics-based synthetic data generation pipelines to augment training datasets and improve model robustness
- Supervised intern analyzing style transfer between 3T, 1.5T, and 0.55T MRI scanners, studying cross-platform model generalization
- Developing ML models for SaMD following IEC-62304 and ISO-13485 medical device standards for regulatory compliance.
- Contributed to experimental design for preclinical animal studies, bridging research and clinical translation.

Research Assistant – Computational Neuroradiology **Apr 2021 – Jul 2022**
Clinic of Neuroradiology, University Hospital Bonn, Germany
- Applied deep learning with focus on model generalization to develop robust segmentation models for neurological structures.
- Analyze multi-loss training approaches using principles of federated learning to enable focus on diverse sources of information in data
- Collaborated with clinicians to translate clinical needs into technical solutions

Data Scientist – Medical Informatics in Translational Oncology **May 2020 – Mar 2021**
German Cancer Research Center (DKFZ), Heidelberg, Germany
- Built machine learning models predicting chemotherapy-induced cardiotoxicity using cardiac echography and multimodal clinical data
- Developed computational pathology pipelines for automated tissue analysis in whole slide images

Master Thesis – Deep Learning for COPD Classification **May 2018 – Apr 2019**
ISO-Gruppe / Siemens Healthineers, Forchheim, Germany
- Evaluated 3D CNN architectures for COPD and emphysema subtype classification in CT images (published at BVM 2020)
- Implemented multi-class, multi-label classification approach achieving robust performance across heterogeneous datasets
- Applied transfer learning across different tasks and datasets, demonstrating strong generalization capabilities

Software Developer (Student Position) **Mar 2017 – Apr 2018**
Portabiles Healthcare Technologies, Erlangen, Germany
- Optimized time-warping algorithms in JavaScript for physiological signal processing applications
- Built cross-platform healthcare applications using Node.js, React, React Native, and Java
- Participated in complete software development lifecycle from requirements gathering to deployment

EDUCATION

M.Sc. Medical Engineering **Oct 2015 – Sep 2019**
Friedrich-Alexander Universität, Erlangen-Nürnberg, Germany
Specialization: Pattern Recognition, Medical Image Analysis, Machine Learning, Deep Learning, Computer Vision

B.Sc. Biomedical Engineering **Sep 2010 – Jul 2014**
Riphah International University, Islamabad, Pakistan
Focus: Electronics, Biomedical Instrumentation, Medical Imaging, Neural Networks

KEY PROJECTS & PUBLICATIONS

Publications:

- **Jalil Ahmed** et al. "COPD Classification in CT Images Using a 3D Convolutional Neural Network." BVM 2020 Workshop
- Osama Anwar et al. "Hansen Parameter Evaluation for the Characterization of Titania Photocatalysts." Nanoscale 2022

Selected Projects:

- **MRI Reconstruction Pipeline:** Implemented spin simulation, wavelet regularization, and iterative reconstruction algorithms in Python
- **Camera Model Identification:** Comparative study of JPEG compression effects on neural network performance for source identification
- **IBM Watson Stuttering Detection:** Built Node.js web application detecting hesitations and repetitions using Watson Speech-to-Text
- **Computer Vision Suite:** Developed RANSAC for object detection, marker detection for AR, and multi-frame super-resolution

Certifications: Structuring ML Projects (Coursera) | Multi AI Agent Systems with crewAI (DeepLearning.AI) | SaMD, IEC 62304 & IEC 82304-1 (Medical Device HQ)