JALIL AHMED

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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)