

CURRICULUM VITAE OF MUHAMMAD ADEEL NISAR

(Updated on 17.08.2022)

My research interest includes Pattern Recognition, Machine Learning, Deep Multitask-Learning, Medical Data Science and Timeseries Data Analysis.

PERSONAL PARTICULARS:

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ACADEMIC QUALIFICATIONS:

- 2022 PhD in Computer Science at Medical Data Science Group, Institute of Medical Informatics, University of Lübeck, Germany, obtained (German) Grade: 1.0 (Equivalent to CGPA: 4.0/4.0).
Thesis Title: Sensor-Based Human Activity Recognition for Assistive Health Technologies
Supervisor: Prof. Dr.-Ing. habil. Marcin Grzegorzek
- 2010 MPhil in Computer Science from University of the Punjab, Lahore, Pakistan. Thesis completed at University of L'Aquila, Italy. Obtained CGPA: 3.70/4.0.
Thesis Title: Integration of Answer Set Programming Modules with Logical Agents
Supervisor: Prof. Dr. Stefania Costantini / Prof. Dr. Syed Mansoor Sarwar
- 2005 Master of Science (M. Sc.) in Computer Science from PUCIT, University of the Punjab, Lahore, Pakistan and obtained CGPA: 3.64/4.0
Thesis Title: SAREA Semi-Automated Requirements Elicitation Assistant

EMPLOYMENT HISTORY:

Total Work Experience: **17 years**

- 2021 – 2022 **Assistant Professor** (Fulltime Regular) at Department of Information Technology, University of the Punjab, Lahore, Pakistan.
- 2019 – 2022 **Research Associate** (full time PhD Candidate) at Medical Data Science Group, Institute of Medical Informatics, University of Lübeck, Germany.
- 2017 – 2019 **Research Associate** (full time PhD Candidate) at Research Group of Pattern Recognition, Department of Electrical Engineering and Computer Science, University of Siegen, Germany.
- 2009 – 2021 **Assistant Professor** (Fulltime Regular) at Punjab University College of Information Technology, University of the Punjab, Lahore, Pakistan.

- 2008 – 2009 **Lecturer** (Fulltime Regular) at Punjab University College of Information Technology, University of the Punjab, Lahore, Pakistan.
- 2006 – 2008 **Lecturer** (Fulltime Contractual) at Punjab University College of Information Technology, University of the Punjab, Lahore, Pakistan.
- 2005 – 2006 **Visiting Lecturer** at Punjab University College of Information Technology, University of the Punjab, Lahore, Pakistan.

RESEARCH PROJECTS:

- 2021 – 2022 **ScreenFM:** The purpose of the project is to analyse the general movements (GMs) of young infants and to detect a kind of GMs called Fidgety Movements (FMs). Absence of FMs might lead to neurological disorders in young infants. A learning-based pattern recognition platform that is intended to automate the investigation of fidgety movements using algorithms is being developed. As data input, we use images from two RGBD (i.e. color and depth) cameras (Microsoft Kinect Azure and iPhone 12 Pro) and four Inertial Measurement Units (IMUs) sensors (Suunto Movesense IMU) placed on the infants' shoulders and hips. Following the standard methodology of pattern recognition, the platform's classification algorithms are trained with sensor data provided by our consortium's medical experts.
- 2020 – 2021 **3D Modelling Using Video Data:** The purpose of this research work is to process and analyse the depth video data for 3D pose estimation. The outcomes of pose estimation lead towards the tracking of joints of a human body, involving both adults and infants, during their physical activities. I also generated the 3D models of humans while tracking the movements of their limbs.
- 2019 – 2020 **SenseVojta:** The purpose of this research work is to analyse time-series data and development of activity recognition model using wearable sensors data with the fusion of angle information of the joints of human body that is extracted through video data recorded by Kinect depth camera.
- 2017 – 2019 **Cognitive Village:** My work includes analysis of wearable sensors' data and development of Hierarchical Activity Recognition Framework with the fusion of different wearable sensor modalities aiming to recognise activities of daily living, for example, cleaning a room, preparing meal, taking care of personal hygiene etc., in order to evaluate the level of independent living of elderly people.

THESES SUPERVISION:

I have supervised and co-supervised following research theses in the last **five** years.

Master Thesis:

- 2021 – 2022 Gabriela Augustinov, “The Analysis of Knowledge Transfer in Daily Human Activity Recognition”
- 2020 – 2021 Niclas Kath, “Privacy Concerns in Models about Physical Activity”
- 2019 – 2021 Mohsin Nazir, “Feedback-Based Human Activity Recognition System”

- 2019 – 2020 Fatima Amjad, “A Feature Selecting Technique on Multimodels Sensoric Data for Human Activity Analysis”
- 2018 – 2019 Anupama Mohankumar, Frequent Trajectory Detection and Trajectory Clustering Using Deep Learning (*Masterarbeit*)

Bachelor Thesis:

- 2021 – 2022 Laura Pauline Scherf, “Deep Learning based Recognition of Activation Levels in SenseVojta using IMUs data”
- 2020 – 2021 Clara Moeller, “A Temporal Pooling Based End-to-End Learning Model For Human Activity Recognition For Wearable Sensors Data”
- 2018 – 2019 Florian Grensing, “Human Activity Recognition Using LSTM Pooling”

RESEARCH PUBLICATIONS:**Journal Papers:**

1. Muhammad Adeel Nisar, Kimiaki Shirahama, Frédéric Li, Xinyu Huang, and Marcin Grzegorzec. Rank Pooling Approach for Wearable Sensor-based ADLs Recognition. *Sensors* (MDPI, IF: 3.275), 20(12), June 2020. DOI: 10.3390/s20123463.
2. Frédéric Li, Kimiaki Shirahama, Muhammad Adeel Nisar, Xinyu Huang, and Marcin Grzegorzec. Deep Transfer Learning for Time Series Data Based on Sensor Modality Classification. *Sensors* (MDPI, IF: 3.275), 20(15), July 2020. DOI: 10.3390/s20154271.
3. Frédéric Li, Kimiaki Shirahama, Muhammad Adeel Nisar, Lukas Köping, and Marcin Grzegorzec. Comparison of Feature Learning Methods for Human Activity Recognition using Wearable Sensors. *Sensors* (MDPI, IF: 3.275), 18(2), February 2018. DOI: 10.3390/s18020679.
4. Fatima Amjad, Muhammad Hassan Khan, Muhammad Adeel Nisar, Muhammad Shahid Farid, and Marcin Grzegorzec. A comparative study of feature selection approaches for human activity recognition using multimodal sensory data. *Sensors* (Basel, Switzerland), 21, 2021. DOI: 10.3390/s21072368.
5. Muhammad Tausif Irshad, Muhammad Adeel Nisar, Philip Gouverneur, Marion Rapp, and Marcin Grzegorzec. AI Approaches Towards Prechtl’s Assessment of General Movements: A Systematic Literature Review. *Sensors* (MDPI, IF: 3.275), 20(18), September 2020. DOI: 10.3390/s20185321.
6. Corinna Peifer, Anita Pollak, Olaf Flak, Adrian Pyszka, Muhammad Adeel Nisar, Muhammad Tausif Irshad, Marcin Grzegorzec, Bastian Kordyaka, and Barbara Kozusznik. The symphony of team flow in virtual teams using artificial intelligence for its recognition and promotion. *Frontiers in Psychology*, 12, 2021. DOI: 10.3389/fpsyg.2021.697093.

Conference/Workshop Papers:

1. Anne Stein, Karen Otte, Hannah Röhling, Frédéric Li, Muhammad Adeel Nisar, and Marcin Grzegorzec. Segmentation of infants in depth data: Evaluation of thresholding approaches In: Buzug T.M. , Handles H. , Klein S. , Hübner C. , Mertins A. , Rostalski P. , Student Conference Proceedings 2022: Medical Engineering Science, Medical Informatics, Biomedical Engineering, Auditory Technology, Biophysics and Robotics and Autonomous Systems , Lübeck , Infinite Science Publishing , 307-310 , 2022
2. Gabriela Augustinov, Muhammad Adeel Nisar, Frédéric Li, Amir Tabatabaei, Marcin Grzegorzec, Keywan Sohrabi, and Sebastian Fudickar. 2022. Transformer-Based Recognition of Activities of Daily Living from Wearable Sensor Data. In iWOAR '22: 7th international Workshop on Sensor Based Activity Recognition and Artificial Intelligence, September 19–20, 2022, Rostock, Germany. ACM, New York, NY, USA, [*Accepted*]