Curriculum vitae

PERSONAL INFORMATION

Muhammad Shahid, PhD

Salita Brasile n. 27/19, Genova, 16162, ITALY

+39 347 998 2186

muhammad.shahid@edu.unige.it shahid.eyecom@gmail.com

https://rubrica.unige.it/personale/UUdBXVNq

www.github.com/muhammadshahidwandar

https://www.linkedin.com/in/muhammad-shahid-65a33314/

Skype muhammadshahid300

Date of birth 10 Dec 1989 | Nationality Pakistani

EDUCATION

Nov 2017 - March 2021

Università degli studi di Genova, in affiliation with PAVIS Lab at Istituto Italiano di Tecnologia (IIT) - Italy

PhD in Science and Technology for Electronic and Telecommunication Engineering // Curriculum: Computer Vision, Pattern Recognition and Machine Learning

Thesis: Social Interactions Analysis through Deep Visual Nonverbal Features

Supervisor: Vittorio Murino

Co-Supervisor: Cigdem Beyan

June 2013 - January 2016

Capital University of Science and Technology, Islamabad, Pakistan

Master of Science in Computer Engineering with Specialization in Computer vision

Thesis: Automatic Retinal Blood Vessels Segmentation with Less Time Complexity

April 2006-May 2010

National University of Computer and Emerging Sciences, Islamabad, Pakistan

Bachelor of Science in Telecommunication Engineering

Final year project: Voice, Data and Fax Encryption on FPGA(Vertex4) using Verilog HDL

WORK EXPERIENCE

july 2022 – present

Postdoctoral Research Fellow at DSP and IoT Lab in DITEN University of Genova, Italy

Digital Signal Processing and IoT Lab
Project: Rehabilitation and Monitoring of Post-Stroke Patients using Wearable IMU and Foot Pressure Sensors

- Data collection using wearable embedded devices such as IMU sensors on legs and pressure sensors under feet.
- Developed an API to collect data from various sensor nodes.
- Data cleaning and preprocessing(multivariate time series synchronization, filtering) and feature extraction to make data suitable for machine learning.
- Statistical machine learning and deep learning based spatiotemporal multi-modal data fusion techniques for exercise assessment.

Nov 2020 – March 2021

PhD Student Fellow at at Istituto Italiano di Tecnologia (IIT) Genova, Italy

Visual Geometry and Modelling Lab
Project: Person Detection, Tracking, Re-Identification and Person Gaze Detection

August 2016 – October 2017

Research Officer

Computer Vision Machine Learning Lab (CVML) in Al-Khawarizmi Institute of Computer Science University of Engineering and Technology(UET), GT Road Lahore, Pakistan.

Project: Automatic Security and Surveillance System for Video Streams(ASSVS)

- The main theme of ASSVS is to automatically understanding of visual scenes based on individual contents/High Level Features present in the videos. By extracting high-level features, such as the human's face, age, gender, emotions, actions and objects, human-human interaction, human-object interaction, scene settings etc.

Nov 2011 – October 2013

Hardware Design Engineer and Freelancer

Eyecom Technologies Enabling Digital Media (ECT), Lahore Pakistan.

PERSONAL SKILLS

Mother tongue: Urdu

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C1	C2	C2	C1
Arabic	B1	B1	B2	B1	B1
Italian	B1	B1	A1	A1	A1

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
Common European Framework of Reference for Languages

Job-related skills

- **Programming languages:** Matlab, Python, C++, C#, SQL, Assembly, Verilog HDL and Bash Scripting,
- **Development Environments:** Matlab, Visual Studio, Pycharm, Arduino IDE and Xilinx
- **Machine Learning and Deep Learning Libraries:** Scikit-Learn, Tensorflow, Keras, Pytorch, torchtext, huggingface
- **Computer Vision Libraries:** OpenCV, MatConvNet, etc.
- **Data Handling Libraries:** Numpy, Pandas,ffmpeg, Librosa, NLTK and Torchaudio
- **Hardware Embedded Development Kits:** FPGAs, DSP kits and Microcontrollers
- **Code Version Control:** GIT

ADDITIONAL INFORMATION

Journal Reviewer

IEEE Transactions on Industrial Informatics,
IEEE Access

Summer schools

- VISMAC summer school Organised by Computer Vision, Pattern recognition and machine Learning Italian Association (CVPL), Naples(August 2018).
- Regularization Methods for Machine Learning (REGML2018) co-organized by DiBRiS, SIMULA at University of Genoa (18-22 June 2018)

Conferences

- Image Analysis and Processing – ICIAP, 20th International Conference, Trento, Italy, September 9 to 13, 2019
- Winter Conference on Applications of Computer Vision (WACV). January 5 to 9, 2021, (Virtual Conference)

Courses

- Representation and learning of Dynamic Bayesian Interaction Models from Multisensor Data for Cognitive Self-Aware Ego-Things on February 27-28 and on March 2-6-7 2018 at DITEN
- Natural Language Processing in Tensor-Flow at Coursera
- Completed 4 Machine Learning related courses at Kaggle

Honors and Awards

- Ph.D. research grant from Istituto Italiano di Tecnologia - Genova (2017-2020).
- Won fully funded Out Reach Scholarship award for BS (TE) supported by National ICT R and D Fund , Ministry of Information Technology, Govt. of Pakistan 2006.

References

- **Vittorio Murino**,
  Former Director at Pattern Analysis and Computer Vision Department, Istituto Italiano di Tecnologia, Genoa Italy and Huawei Technologies LtD., Research Center, Dublin, Ireland
- **Igor Bisio**,
  Associate Professor
  Department of Marine, Electrical, Electronics and Telecommunications Engineering - DITEN, Genova, Italy
- **Cigdem Beyan**
  Assistant Professor in Department of Information Engineering and Computer Science (DISI), the University of Trento, Italy.

[1]

PUBLICATIONS

[1] **Muhammad Shahid**, Igor Bisio, Chiara Garibotto, Fabio Lavagetto, and Andrea Sciarrone. “Feet Pressure Prediction from Lower Limbs IMU Sensors for Wearable Systems in Remote Monitoring Architectures (**Submitted**)”. In: *GLOBECOM 2023 IEEE Global Communications Conference*. IEEE. 2023, pp. 0–1.

[2] **Muhammad Shahid**, Cigdem Beyan, and Vittorio Murino. “S-VVAD: Visual Voice Activity Detection by Motion Segmentation”. In: *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision*. 2021, pp. 2332–2341.

[3] Cigdem Beyan*, **Muhammad Shahid***, and Vittorio Murino. “RealVAD: A Real-world Dataset and A Method for Voice Activity Detection by Body Motion Analysis”. In: *IEEE Transactions on Multimedia* (2020).

[4] **Muhammad Shahid***, Cigdem Beyan*, and Vittorio Murino. “Comparisons of Visual Activity Primitives for Voice Activity Detection”. In: *International Conference on Image Analysis and Processing*. Springer, Cham. 2019, pp. 48–59.

[5] **Muhammad Shahid***, Cigdem Beyan*, and Vittorio Murino. “Voice Activity Detection by Upper Body Motion Analysis and Unsupervised Domain Adaptation”. In: *Proceedings of the IEEE International Conference on Computer Vision Workshops*. 2019, pp. 1–10.

[6] Cigdem Beyan, **Muhammad Shahid**, and Vittorio Murino. “Investigation of small group social interactions using deep visual activity-based nonverbal features”. In: *Proceedings of the 26th ACM international conference on Multimedia*. 2018, pp. 311–319.

[7] Cigdem Beyan, Matteo Bustreo, **Muhammad Shahid**, Gian Luca Bailo, Nicolo Carissimi, and Alessio Del Bue. “Analysis of Face-Touching Behavior in Large Scale Social Interaction Dataset”. In: *Proceedings of the 2020 International Conference on Multimodal Interaction*. 2020, pp. 24–32.

[8] Cigdem Beyan, Andrea Zunino, **Muhammad Shahid**, and Vittorio Murino. “Personality Traits Classification Using Deep Visual Activity-based Nonverbal Features of Key-Dynamic Images”. In: *IEEE Transactions on Affective Computing* (2019).

[9] Gulraiz Khan, Sahar Samyan, Muhammad Usman Ghani Khan, **Muhammad Shahid**, and Samyan Qayyum Wahla. “A survey on analysis of human faces and facial expressions datasets”. In: *International Journal of Machine Learning and Cybernetics* 11.3 (2020), pp. 553–571.

[10] Khan Bahadar Khan, Amir A Khaliq, Abdul Jalil, Muhammad Aksam Iftikhar, Najeeb Ullah, Muhammad Waqar Aziz, Kifayat Ullah, and **Muhammad Shahid**. “A review of retinal blood vessels extraction techniques: challenges, taxonomy, and future trends”. In: *Pattern Analysis and Applications* 22.3 (2019), pp. 767–802.

[11] Khan Bahadar Khan, **Muhammad Shahid**, Hayat Ullah, Eid Rehman, and Muhammad Mohsin Khan. “Adaptive trimmed mean autoregressive model for reduction of Poisson noise in scintigraphic images”. In: *IIUM Engineering Journal* 19.2 (2018), pp. 68–79.

[1] * show equal contribution

[12] Khan Bahadar Khan, Naeem Iqbal Ratyal, Ali Sufyan, MR Anjum, and **Muhammad Shahid**. “Non-Uniform Channels Mixing and Template Matching Based Denoising of Retinal Images for Optic Disk Detection”. In: *Advanced Studies in Biology* 10.1 (2018), pp. 45–59.

[13] Khan Bahadar Khan, Amir A Khaliq, and **Muhammad Shahid**. “A Novel Fast GLM Approach for Retinal Vascular Segmentation and Denoising.” In: *J. Inf. Sci. Eng.* 33.6 (2017), pp. 1611–1627.

[14] Khan Bahadar Khan, Amir A Khaliq, **Muhammad Shahid**, and Sheroz Khan. “An efficient technique for retinal vessel segmentation and denoising using modified ISODATA and CLAHE”. In: *IIUM Engineering Journal* 17.2 (2016), pp. 31–46.

[15] Khan Bahadar Khan, Amir A Khaliq, and **Muhammad Shahid**. “B-COSFIRE filter and VLM based retinal blood vessels segmentation and denoising”. In: *2016 International Conference on Computing, Electronic and Electrical Engineering (ICE Cube)*. IEEE. 2016, pp. 132–137.

[16] Khan BahadarKhan, Amir A Khaliq, and **Muhammad Shahid**. “A morphological hessian based approach for retinal blood vessels segmentation and denoising using region based otsu thresholding”. In: *PloS one* 11.7 (2016), e0158996.