


# Syed Taimoor Hussain Shah





Researcher at Politecnico di Torino, Italy

## Education:

 PolitoBioMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, Italy	April 2025	<b>Ph.D., AI, Computer Vision, and Biomedical Engineering</b> Title: Multimodal AI Tools for Predicting Neurological and Neurodevelopmental Trajectories	Politecnico di Torino, Italy
	Nov. 2018	<b>M.S., AI and Machine Vision</b> Title: Developing Classification Models for Hyperspectral Images	Pakistan Institute of Engineering and Applied Sciences, Pakistan
	Sept 2016	<b>B.S., Computer Science (Honors)</b> Title: Library Management System Using WPF with MVVM Framework	Bahauddin Zakariya University, Pakistan

 Web Page  
<https://www.polito.it/personale?p=taimoor.shah>

## Position:

 Google Scholar	2025-Current	<b>PostDoctoral Researcher</b> diGitAL twin framework for TailorEd infant nutrition (GALATEA) Project, EU H2020, Department of Mechanical and Aerospace Engineering <b>Duties:</b> Bio-informatics, Graph-based Models Development, Artificial Intelligence and Machine Learning.	Politecnico di Torino, Italy
 ResearchGate			
 ORCID			
 LinkedIn	2018-2021	<b>Research Associate</b> Department of Computer and Information Sciences <b>Duties:</b> Remote Sensing Data, Identify and Segment Objects on Earth, Development of Semi-supervised Techniques with less number of Samples.	Pakistan Institute of Engineering and Applied Sciences, Pakistan

## Journal Publications:

1. Almira Isufi DDS, Marco Agostino Deriu, **Syed Taimoor Hussain Shah**, Damiano Pasqualini DDS (2025). On the Horizon: What's next for Endodontics. Dental Clinics of North America (Elsevier). DOI: <https://doi.org/10.1016/j.cden.2025.05.007>.
2. Michela Sperti, Camilla Cardaci, Francesco Bruno, **Syed Taimoor Hussain Shah**, Konstantinos Panagiotopoulos, Karim Kassem, Giuseppe De Nisco, Umberto Morbiducci, Raffaele Piccolo, Francesco Burzotta, Fabrizio D'Ascenzo, Marco Agostino Deriu, Claudio Chiastra (2025). Artificial intelligence-based approaches for characterizing plaque components from intravascular optical coherence tomography imaging: toward integration into clinical decision support systems. Reviews in Cardiovascular Medicine (IMR Press), 26 (7). DOI: <https://doi.org/10.31083/RCM39210>.
3. Angel Ruiz-Zafra, Janet Pigueiras-del-Real, Jose Heredia-Jimenez, **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, & Lionel C. Gontard (2025). PyBodyTrack: A python library for multi-algorithm motion quantification and tracking in videos. SoftwareX, 31, 102272. <https://doi.org/10.1016/j.softx.2025.102272>.
4. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Andrea Buccoliero, Iqra Iqbal Khan, Syed Baqir Hussain Shah, Angelo Di Terlizzi, & Giacomo Di Benedetto (2025). Analyzing neonatal vocal expression: Methodological approaches to identifying neurological and psychiatric signatures. Journal of Multiscale Neuroscience, 4(2): 158-176. DOI: <https://doi.org/10.56280/1703023560>.
5. Janet Pigueiras-Del-Real, Lionel C. Gontard, Isabel Benavente-Fernández, **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Simón P. Lubián-López, Ángel Ruiz-Zafra (2025). Evaluating Methods for Reliable Non-Invasive Motion Quantification as an Indicator of Favorable Neonatal Progression. Healthcare (MDPI). DOI: <https://doi.org/10.3390/healthcare13131577>.
6. Syed Adil Hussain Shah, **Syed Taimoor Hussain Shah**, Abdul Muiz Fayyaz, Syed Baqir Hussain Shah, Mussarat Yasmin, Mudassar Raza, Angelo Di Terlizzi, Marco Agostino Deriu (2025). Improving biomedical image pattern identification by Deep B4-GraftingNet: application to pneumonia detection. IET Image Processing.

<https://doi.org/10.1049/jpr2.70064>.

7. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Konstantinos Panagiotopoulos, Janet Pigueiras-del-Real, Kainat Qayyum, Syed Baqir Hussain Shah, Shahzad Ahmad Qureshi, Angelo Di Terlizzi, Giacomo Di Benedetto, Marco Agostino Deriu (2025). Artificial intelligence coupled with the Internet of Things targeting neurodevelopmental challenges in preterm neonates. *Journal of Multiscale Neuroscience* 4(1), 32-56. <https://doi.org/10.56280/1680389540>.
8. Shahzad Ahmad Qureshi, Touseef Sadiq, Anila Usman, Ambreen Khawar, **Syed Taimoor Hussain Shah**, Aziz ul Rehman (2025). SAlexNet: Superimposed AlexNet using Residual Attention Mechanism for Accurate and Efficient Automatic Primary Brain Tumor Detection and Classification. *Results in Engineering*, 104025. DOI: <https://doi.org/1.1016/j.rineng.2025.104025>.
9. Shahzad Ahmad Qureshi, Aziz-Ul-Rehman, Lal Hussain, Touseef Sadiq, **Syed Taimoor Hussain Shah**, Adil Aslam Mir, Muhammad Amin Nadim, Darnell K. Adrian Williams, Tim Q Duong, Qurat-Ul-Ain Chaudhary, Natasha Habib, Asrar Ahmad, Syed Adil Hussain Shah (2024). Breast cancer detection using mammography: Image processing to deep learning. *IEEE Access*. <https://doi.org/10.1109/ACCESS.2024.3523745>.
10. Syed Adil Hussain Shah, **Syed Taimoor Hussain Shah**, Andrea Buccoliero, Syed Baqir Hussain Shah, Angelo Di Terlizzi, Giacomo Di Benedetto, Marco Agostino Deriu (2024). Explainable AI-based skin cancer detection using CNN, particle swarm optimization, and machine learning. *Journal of Imaging*, 10(12), 332. <https://doi.org/10.3390/jimaging10120332>.
11. Janet Pigueiras-del-Real, Angel Ruiz-Zafra, Isabel Benavente-Fernández, Simón P Lubián-López, Syed Adil Hussain Shah, **Syed Taimoor Hussain Shah**, Lionel C Gontard (2024). NeoVault: empowering neonatal research through a neonate data hub. *BMC Pediatrics*, 24(1), 1-9. <https://doi.org/10.1186/s12887-024-05276-y>.
12. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Iqra Iqbal Khan, Atif Imran, Syed Baqir Hussain Shah, Atif Mehmood, Shahzad Ahmad Qureshi, Mudassar Raza, Angelo Di Terlizzi, Marco Cavaglia, Marco Agostino Deriu (2024). Data-driven classification and explainable-AI in the field of lung imaging. *Frontiers in Big Data*. <https://doi.org/10.3389/fdata.2024.1393758>.
13. Francesca Romare Gentile, **Syed Taimoor Hussain Shah**, Michela Sperti, Konstantinos Panagiotopoulos, Roberto Primi, Sara Bendotti, A Currao, S Compagnoni, Enrico Baldi, C Lopiano, L Vicini Scajola, Gaicomo Marconi, Marco Agostino Deriu, Simone Savastano (2023). An innovative medical decision support tool for neurological outcome prediction from post-resuscitation electrocardiograms (MILESTONE). *European Heart Journal*, 44(Supplement 2). <https://doi.org/10.1093/eurheartj/ehad655.650>.
14. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Shahzad Ahmad Qureshi, Angelo Di Terlizzi, Marco Agostino Deriu (2023). Automated facial characterization and image retrieval by convolutional neural networks. *Frontiers in Artificial Intelligence*. <https://doi.org/10.3389/frai.2023.1230383>.
15. **Syed Taimoor Hussain Shah**, Shahzad Ahmad Qureshi, Aziz ul Rehman, Syed Adil Hussain Shah, Arslan Amjad, Adil Aslam Mir, Amal Alqahtani, David A Bradley, Mayeen Uddin Khandaker, Mohammad Rashed Iqbal Faruque, Muhammad Rafique (2021). A novel hybrid learning system using modified breaking ties algorithm and multinomial logistic regression for classification and segmentation of hyperspectral images. *Applied Sciences*, 11(16). <https://doi.org/10.3390/app11167614>.

## Conference Publications:

1. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Syed Baqir Hussain Shah, Janet Pigueiras-del-Real, Iqra Iqbal Khan, Ammara Zamir, Qandeel Asghar, Shahzad Ahmad Qureshi, Angel Ruiz-Zafra, Lionel Cervera Gontard, and Marco Agostino Deriu (2025). Multiclass Lung Cancer Detection Using Deep Learning and Explainable AI on Chest CT Scans. 22nd IBCAST 2025 - Section: Artificial Intelligence & Software Technologies. Manuscript ID: 134 (Blind Review & 18% Acceptance Rate - Presented).
2. Camilla Cardaci, Michela Sperti, Francesco Bruno, **Syed Taimoor Hussain Shah**, Giuseppe De Nisco, Enrico Cerrato, Paolo Angelo Canova, Umberto Morbiducci, Raffaele Piccolo, Francesco Burzotta, Fabrizio D'Ascenzo, Marco Agostino Deriu, Claudio Chiastra (2025). AI-driven framework for calcium detection in atherosclerotic lesions using intracoronary optical coherence tomography. GNB 2025 (IX Congress of the National Group of Bioengineering). DOI: [https://www.gnb2025.it/assets/img/Contributi/GNB\\_2025\\_paper\\_018.pdf](https://www.gnb2025.it/assets/img/Contributi/GNB_2025_paper_018.pdf).
3. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Konstantinos Panagiotopoulos, Janet Pigueiras-del-Real,

Kainat Qayyum, Syed Baqir Hussain Shah, Andrea Buccoliero, Angelo Di Terlizzi, and Marco Agostino Deriu (2025). Explainable Emotion Recognition Using Xception-Based Feature Extraction and Supervised Machine Learning on the RAVDESS Dataset. 2025 IEEE Medical Measurements & Applications (MeMeA). DOI: <https://doi.org/10.1109/MeMeA65319.2025.11068008>.

4. **Syed Taimoor Hussain Shah**, Veronika Calati, Alessandra Bizzarri, Marco Agostino Deriu (2022). Medical imaging and artificial intelligence to investigate neuro-cardiac pathologies and discover hidden relationships: A state-of-the-art review. DETERMINED, 155–166. <https://doi.org/10.5281/zenodo.8009881>.
5. **Syed Taimoor Hussain Shah**, Shahzad Ahmad Qureshi, Aziz ul Rehman, Syed Adil Hussain Shah, Jamal Hussain (2020). Classification and Segmentation Models for Hyperspectral Imaging - An Overview. In Intelligent Technologies and Applications. INTAP (Springer). [https://doi.org/10.1007/978-3-030-71711-7\\_1](https://doi.org/10.1007/978-3-030-71711-7_1).
6. **Syed Taimoor Hussain Shah**, Syed Gibran Javed, Abdul Majid, Syed Adil Hussain Shah, Shahzad Ahmad Qureshi (2019). Novel Classification Technique for Hyperspectral Imaging using Multinomial Logistic Regression and Morphological Profiles with Composite Kernels. In Proceedings of the 16th International Bhurban Conference on Applied Sciences and Technology (IBCAST). IEEE. <https://doi.org/10.1109/IBCAST.2019.8667162>.

## Preprints:

1. Shahzad Ahmad Qureshi, Muhammad Abdul Basit, Qasim Ijaz, **Syed Taimoor Hussain Shah**, Syed Mesam Tamar Kazmi, Inam ul Haq, Ghulam Mustafa, Syed Adil Hussain Shah (2025). Bias-Resilient Ensemble of Transfer Learning Models for Automated COVID-19 Detection from Chest Radiographs. Preprints, 202508.1553. DOI: <https://doi.org/10.20944/preprints202508.1553.v1>.
2. Shahzad Ahmad Qureshi, Muhammad Owais, Ayesha Hakim, Qasim Ijaz, **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Adil Aslam Mir (2025). VRTMS: A 3D-Virtual Reality Training and Maintenance System as a Modular Cognitive Approach to a Prototype Infrared Computed Tomography Machine Assembly. Preprints. DOI: <https://doi.org/10.20944/preprints202505.0899.v1>.
3. Shahzad Ahmad Qureshi, Aziz-Ul-Rehman, Lal Hussain, Touseef Sadiq, **Syed Taimoor Hussain Shah**, Adil Aslam Mir, Darnell K. Adrian Williams, Tim Q Duong, Qurat-Ul-Ain Chaudhary, Natasha Habib, Asrar Ahmad, Syed Adil Hussain Shah (2024). Breast cancer detection using mammography: Image processing to deep learning. Preprints. <https://doi.org/10.20944/preprints202405.0527.v1>.

## Code and Datasets:

1. Angel Ruiz-Zafra, Janet Pigueiras-del-Real, Jose Heredia-Jimenez, **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Lionel C. Gontard. (2025). PyBodyTrack: A python library for multi-algorithm motion quantification and tracking in videos. SoftwareX, 31, 102272. <https://doi.org/10.1016/j.softx.2025.102272>. GitHub: <https://github.com/bihut/PyBodyTrack.git>.
2. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Ammara Zamir, Kainat Qayyum, Syed Baqir Hussain Shah, Syeda Maryam Fatima, Marco Agostino Deriu (2025). Mediapipe based Preprocessed VGGFace2 Dataset. Zenodo. <https://doi.org/10.5281/zenodo.15078556>.
3. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Konstantinos Panagiotopoulos, Janet Pigueiras-del-Real, Syed Baqir Hussain Shah, Marco Agostino Deriu (2025). Xception-based Facial Expression Recognition with SHAP-Driven Explainability. Zenodo. DOI: <https://doi.org/10.5281/zenodo.14809940>.
4. **Syed Taimoor Hussain Shah**, Syed Adil Hussain Shah, Syed Baqir Hussain Shah, Shahzad Ahmad Qureshi, Angelo Di Terlizzi, Marco Agostino Deriu. (2023). Code of Automated Facial Characterization and Image Retrieval by Convolutional Neural Networks. Zenodo. DOI: <https://doi.org/10.5281/zenodo.14865792>.
5. **Syed Taimoor Hussain Shah**, Fayyaz ul Amir Afsar Minhas. (2018). Code of Self-Targeting CRISPR Analysis. Zenodo. <https://doi.org/10.5281/zenodo.14870470>. Gitlab: <https://gitlab.com/taimoor.hussain1259/ACR>.

## Conferences & Seminars:

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Sr. No.	Title	Institute	Location	Year
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1	8th ISHS Hort Forum on Artificial Intelligence (Virtual)	Department of Plant Sciences, University of California	California, USA	2025
2	22nd IBCAST 2025	Centers of Excellence in Science and Applied Technologies	Islamabad, Pakistan	2025
3	6th Oxford Machine Learning Summer School (OxML 2025)	Oxford	London, UK	2025
4	6th Annual Stanford AIMI Symposium (Artificial Intelligence in Medicine and Imaging; Virtual)	Stanford	California, USA	2025
5	IEEE MeMeA 2025	Chania International University	Chania, Greece	2025
6	Fifth Training Event: International Conference on Neonatal Neuroimaging and Monitoring & 3rd Neonatal Neuroimaging Workshop	INiBICA, University of Cadiz, and Nene Foundation	Cadiz, Spain	2024
7	Sixth Training Event: Advanced technologies in pediatric neurodiagnostics and neurodevelopmental diseases	Politecnico di Torino	Torino, Italy	2024
8	Fifth Training Event: Neurodevelopmental Outcomes and Advanced Technologies in CHD	Ospedale Pediatrico Bambino Gesù	Rome, Italy	2024
9	ESC Congress	European Heart Congress	Amsterdam, Netherlands	2023
10	Fourth Training Event: Data management in healthcare, IPR and entrepreneurship	GPI SpA	Trento, Italy	2023
11	VIRTUOUS Transfer of Knowledge Workshop: Platform Evaluation and Demo Presentation	University of Applied Sciences and Arts of Southern	Lugano, Switzerland	2023
12	Third Training Event: Machine Learning for Neurodiagnostics	University of Ljubljana, NEUS Diagnostics, and TOELT (Switzerland)	Ljubljana, Slovenia	2023
13	Second Training Event: Neurodiagnostic focused on neurodevelopmental disabilities	KU Leuven and Icometrix	Leuven, Belgium	2022
14	First Training Event: Neurodevelopment after Preterm Birth: Diagnosis, Ethics and Social Impact	INiBICA, University of Cadiz, and Nene Foundation	Cadiz, Spain	2021
15	3rd International Conference on Intelligent Technologies and Applications INTAP 2020	University of Agder	Grimstad, Norway	2020
16	16th International Bhurban Conference on Applied Sciences and Technology (IBCAST)	Centers of Excellence in Science and Applied Technologies	Islamabad, Pakistan	2019
17	ISACIS'18: Advances in Computer & Information Sciences 2018	Pakistan Institute of Engineering and Applied Science	Islamabad, Pakistan	2018

## Journal Reviewer:

Nature (Scientific Reports); Springer Nature (Earth Science Informatics, BMC Medical Informatics and Decision

Making); PLOS One; Springer (Discover Artificial Intelligence)

## Guest Lectures:

1. Lecture on Artificial intelligence targeting precision medicine (11 April 2025; Master Students; Università del Piemonte Orientale, Novara, Italy)

## Public Engagement Events:

1. 2022 European Researchers' Night (30 September 2022)
2. 2023 European Researchers' Night (30 September 2023)
3. "Just the Woman I Am" Event (07 March 2025)

## Scholarships:

GALATEA (101183057)-Marie Sklodowska-Curie-Innovative Training Network 2020  
(24 NOV 2024 – CURRENT)

PARENT (956394)-Marie Sklodowska-Curie-Innovative Training Network 2020  
(16 NOV 2021 – 15 NOV 2024)

IT Endowment Fellowship by Higher Education Commission (HEC), Pakistan  
(2 NOV 2016 – 1 NOV 2018)

Fauji Foundation Scholarship by Fauji Foundation, Pakistan  
(5 AUG 2007 – 4 AUG 2011)