Atif ANWER

Computer Vision Researcher | AI Systems Engineer

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Education

2019 – 2022

PhD Computer Sciences / Electrical & Electronics Engineering *(Dual-Degree)*,
INSA Rouen Normandie, France & University Teknologi PETRONAS, Malaysia, *Funded by*: Agence Nationale de la Recherche (ANR) project ICUB,
Supervisors: Prof. Samia Ainouz (INSA), Asst. Prof. Naufal Bin Saad (UTP)
Thesis: Specular Highlight Detection and Adversarial Generation of Specularity-Free Images using Multi-Domain Translation Network Trained with Polarimetric Data

2016 – 2017

MSc Electrical & Electronics Engineering,
University Teknologi PETRONAS, Perak Malaysia,
Supervisor: Asst. Prof. Syed Saad Azhar Ali
Thesis: Real-time underwater 3D scene reconstruction using Kinect v2 time of flight camera

2001 – 2004

B.E. Mechatronics,
Major: Robotics, Control Systems and Image processing,
National University of Sciences & Technology (NUST), Pakistan,
Supervisor: Dr. Saeed Ur Rahman
Thesis: Development and control of Bipedal Autonomous Robot (BART)

Interests

- Object detection and Semantic Segmentation
- Human Pose Estimation applications
- Generative AI applications
- Mobile Robot design and development

Technical & Professional Highlights

- Proven experience in researching and developing unsupervised and semi-supervised ML/DL systems for both conventional and novel computer vision challenges.
- In-depth knowledge of mechatronic systems, hardware integration, and real-time data acquisition.
- Skilled in deploying TensorFlow models to mobile platforms using ONNX and TFLite formats, and working on SMPL/SMPL-X models
- Demonstrated ability to manage multiple projects under tight deadlines.
- Strong interpersonal, communication, and time-management skills with experience leading and collaborating within interdisciplinary teams.
- Experienced in designing and building low cost robotic systems from scratch with off the shelf electronic components, controllers and 3D printed parts

Experience

2022

Postdoctoral Researcher, *Université Bourgogne Europe*, Dijon, France,
Research and development of software pipeline and Web Application for end-to-end detection, segmentation, and analysis of Tunnelling Electron Microscopy (TEM) images of Cu, Ni and ZnO nanoparticles. Additionally, development on estimating risk of cardiovascular disease from en-face OCT fundus images using deep learning.

2022
2024

Machine Learning R&D Engineer, *Apeira Technologies*, Le Creusot, France,
Research and development of deep learning algorithms for human pose estimation and posture correction, to improve cyclist performance in videos.

2018
2020

Freelance 3D CAD & Graphic Designer, *Freelancer.com*
Executed multiple 3D CAD modelling and graphic design projects from concept to prototype to completion.

2015
2016

Co-Founder & CTO, *Scifacterz*, Islamabad, Pakistan
Robotics Startup venture centred on design and of "NBE (Non-Biological Entity)" an open-source, low cost, research platform and Home Service Robot

2004
2016

Manager (Mechatronics), Islamabad, Pakistan
Multiple diverse industry roles involving concurrent responsibilities in Mechanical and Electronic Design research, and managerial positions.

Skills

Programming & Frameworks	Python, TensorFlow, OpenCV, MATLAB, C#, Visual Basic, OpenAI API (LLMs), Mediapipe, Rerun, Gradio, React, TypeScript, Electron
3D Modeling & Rendering	Creo, SolidWorks (Design for Additive Manufacturing (DFAM)), SketchUp, Blender
Design & Illustration	Adobe Photoshop, Affinity Designer, Figma, CorelDRAW
Tools & Platforms	Git, LaTeX, Notion, WordPress, 3D Printing

Languages

Urdu	Native	
English	Fluent	*IELTS (Band 8.0)*
French	Medium	*Good Understanding, Medium Speaking*

Extra Curricular/Pro-Bono

2020

Administrator, r\ComputerVision subreddit and discord server

2010
2011

Guest writer (Hardware reviewer), *wccftech.com*

2007
2012

Lead Server Administrator, *Micronet Broadband Ltd.*, Islamabad, Pakistan

Projects

Automated analysis of TEM images of nano-particles (2023 ➞)

Solely responsible for creation of a robust software pipeline and Web Application for end-to-end detection, segmentation, and analysis of Transmission Electron Microscopy (TEM) images featuring Cu, Ni and ZnO nanoparticles, by deploying a custom-trained YOLO v8 OBB network.

Cyclist pose estimation and posture correction (2023-2024)

Research and development of deep learning algorithms aimed at human pose estimation and posture correction, with a focus on enhancing cyclist performance in videos from hand-held devices. Solely responsible for refining MediaPipe accuracy by transfer-learning of graph-convolutional network (GCN) and utilizing the improved pose estimates to generate accurate SMPL/SMPL-X meshes, facilitating various cycling performance calculations.

Estimating risk of cardio-vascular diseases from OCT-A images (2023 ➞)

Comprehensive research and development project on estimating the risk of cardiovascular disease from en-face OCT fundus images. Employed a Convolutional Neural Network (CNN) architecture with EfficientNet v2 as the backbone. A journal publication of the research work has been submitted for peer-review.

SpecSeg (2021-2022)

Conceived and developed a highly efficient Specular Segmentation (SpecSeg) network, structured on the U-net architecture that can detect pixels strongly affected by specular highlights with a high degree of precision.
(SpecSeg repository, Huggingface Demo)

SHMGAN (2019-2022)

PhD Research - Development of a multi-input Generative Adversarial Network (GAN) designed to produce specular-free images from a single RGB input image, eliminating the need for external labels. Specular Highlights Mitigating GAN (SHMGAN) was trained using polarimetric images obtained under uncontrolled lighting conditions and showcased adversarial network design within challenging real-world scenarios.
(SHMGAN repository)

Teaching

2025 **Masters Course (MS Health AI M2)**, ***Image Processing***, Département IEM (Informatique Electronique Mécanique), University de Bourgogne, France

2024 **Masters Course (MS Health AI M2)**, ***Image Processing***, Département IEM (Informatique Electronique Mécanique), University de Bourgogne, France

2023 **Masters Course (MS Health AI M2)**, ***Image Processing***, Département IEM (Informatique Electronique Mécanique), University de Bourgogne, France

2022 **Undergraduate Course**, *Data Analysis and Digital Tools*, Département Informatique et technologie de l'information, INSA Rouen, France

2021 **Undergraduate Course**, *Data Analysis and Digital Tools*, Département Informatique et technologie de l'information, INSA Rouen, France

2019 **Teaching Assistant**, *Probability & Statistics*, Department of Electrical & Electronics Engineering, UTP, Malaysia

Publications

Anwer, Atif., P. F-Lessard, Z. Qian, J-T. Pouzens, G. Carnide, D. Roubert, R. Clérgereaux, F. Mériaudeau, J C. Hierso, and M L. Kahn. Nanomaterials morphology automatic treatment by computer vision applied to multivariate analysis: A case of human vs machine comparison. ***Angewandte Chemie, International Ed. in English*** *(IF: 16.1) (In Progress)*, 2025.

Louis Arnould, **Anwer, Atif**, Andrzej Grzybowski, and Fabrice Meriaudeau. Selecting the right AI algorithm for the job: A guide for navigating the AI jungle in ophthalmology. *Ophthalmol. Ther.*, 14(8):1637–1647, August 2025.

Pétra Eid, Abderrahmane Bourredjem, **Anwer, Atif**, Catherine Creuzot-Garcher, Pearse Andrew Keane, Yukun Zhou, Siegfried Wagner, Fabrice Meriaudeau, and Louis Arnould. Retinal microvascular biomarker assessment with automated algorithm and semiautomated software in the montrachet dataset. *Translational Vision Science and; Technology*, 14(3):13, March 2025.

C. Germanese, **Anwer, Atif**., P. Eid, L.-A. Steinberg, C. Guenancia, P.-H. Gabrielle, C. Creuzot-Garcher, F. Meriaudeau, and L. Arnould. Artificial intelligence-based prediction of neurocardiovascular risk score from retinal swept-source optical coherence tomography–angiography. ***Scientific Reports*** *(IF: 3.8)*, 14, Nov 2024.

Anwer, Atif., S. Ainouz, N M Saad, S S A. Ali, and F. Meriaudeau. *Joint network for specular highlight detection and adversarial generation of specular-free images trained with polarimetric data*. ***Neurocomputing*** *(IF: 5.5)*, 559:126769, 2023.

C. Germanèse, F. Meriaudeau, P. Eid, R. Tadayoni, D. Ginhac, **Anwer, Atif**., S. Laure-Anne, C. Guenancia, C. Creuzot-Garcher, P. Gabrielle, et al. *A Retinal Oct-Angiography and Cardiovascular STAtus (RASTA) Dataset on Swept-Source Microvascular Imaging for Cardiovascular Risk Assessment*. ***Data*** *(IF: 2.2)*, 2023.

Anwer, Atif, Samia Ainouz, Mohamad Naufal Mohamad Saad, Syed Saad Azhar Ali, and Fabrice Meriaudeau. *SpecSeg network for specular highlight detection and segmentation in real-world images*. ***Sensors*** *(IF: 3.4)*, 22(17):6552, 2022.

Anwer, Atif, Syed Saad Azhar Ali, Amjad Khan, and Fabrice Meriaudeau. *Underwater 3D scanning using Kinect v2 time of flight camera*. In *Thirteenth International Conference on Quality Control by Artificial Vision 2017*, volume 10338. SPIE, 2017.

Anwer, Atif, Syed Saad Azhar Ali, Amjad Khan, and Fabrice Meriaudeau. *Underwater 3D Scene Reconstruction Using Kinect v2 Based on Physical Models for Refraction and Time of Flight Correction*. ***IEEE Access*** *(IF: 3.4)*, 5:15960–15970, 2017.

Anwer, Atif, Syed Saad Azhar Ali, Amjad Khan, and Fabrice Meriaudeau. *Underwater 3D scanning using Kinect v2 time of flight camera*. In *The International Conference on Quality Control by Artificial Vision 2017*, 2017.

Anwer, Atif, Fabrice Mériaudeau, and Syed Hasan Adil. *Customized graphical user interface implementation of Kinect Fusion for underwater application*. In *2017 IEEE 7th International Conference on Underwater System Technology: Theory and Applications (USYS)*, pages 1–6. IEEE, 2017.

Anwer, Atif, Syed Saad Azhar Ali, Amjad Khan, and Fabrice Mériaudeau. *Real-time underwater 3D scene reconstruction using commercial depth sensor*. In *2016 IEEE International Conference on Underwater System Technology: Theory and Applications (USYS)*, pages 67–70. IEEE, 2016.

IF: Clarivate Web Of Science Impact Factor

Achievements

2019–2020 **Graduate Assistant Scholarship**,
Universiti Teknologi PETRONAS, Malaysia

2016–2017 **Graduate Assistant Scholarship**,
Universiti Teknologi PETRONAS, Malaysia

2016–2017 **1st round favourite**,
Robot Launch 2014 (Global robotics startup competition), RoboHub.org

2011 **Winner "Intel More to the Core™ Challenge"**,
Intel™, Pakistan

2010 **Winner "CPU IQ Blogger Challenge, South Asian region"**,
Intel™, Pakistan

2009 **Member Technical Evaluation & Judges panel**,
"RoboSprint 2010", Air University, Islamabad

2003 **Winner "Best Idea Award"**,
"1st National Fire Fighting Robot Competition (FFRC)", College of EME, NUST, Pakistan

Internship Co-supervision

2025 ***Augmented Reality in Mandibular Tumor Surgery***,
Development of a real-time AR system for mandibular tumor surgery by overlaying CT 3D reconstructions onto endoscopic video, using feature extraction, tracking and homography chaining for accurate image registration.,
University Bourgogne Europe, Dijon, France

2024 ***Fully automated detection of nanoparticles in TEM images***,
Detection of Zn, CuO and Ni nanoparticles in Transmission Electron Microscopy (TEM) images using YOLO and generation of 2D size plots based on the NP dimensions,
University Bourgogne Europe, Dijon,

References

Fabrice Mériaudeau
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Laboratoire d'Informatique, du Traitement de l'Information et des Systèmes (LITIS) Lab, INSA Rouen, France
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