Dr. Muhammad Awais Sattar

Ph.D., M.Sc.

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PROFILE:

I am an experienced innovator specializing in Process Tomography, Multiphase Flow, Industrial Automation, Artificial Intelligence, and Robotics. Currently, I am working as a Postdoctoral Researcher at Luleå University of Technology, Sweden, where I continue to push the boundaries of research and technological advancement. Previously, I served as an Assistant Professor of Computing at Riphah International University, Pakistan, where I was dedicated to both educating students and expanding my expertise. I have also worked as a Consultant in Artificial Intelligence, leveraging AI-driven solutions to solve complex industrial challenges. During my tenure as an Early-Stage Researcher at Lodz University of Technology, I collaborated with renowned laboratories worldwide, making significant contributions to research in data processing, image processing, and image reconstruction. My Ph.D. work focused on enhancing Electrical Tomographic sensors through innovative algorithms, significantly improving their performance and accuracy.

SUMMARY OF QUALIFICATIONS:

- PhD in Computing
- Expertise in Artificial Intelligence, Data Processing, and Analysis
- 6+ years of professional experience in various roles within academia and industry
- Demonstrated leadership in research, teaching, and departmental management.
- Extensive experience in leading and managing teams, with a focus on innovation and excellence.
- Published in reputable journals and conferences.
- Supervised over 5 MS theses and 10 BS projects.

PROFESSIONAL EXPERIENCE:

Feb 2025 – Current [Full Time]	▪ **Postdoctoral Researcher** – Department of Computer Science, Electrical and Space Engineering Luleå University of Technology
Oct 2023 – Jan 2025 [Part Time]	▪ **Consultant Artificial Intelligence** – Odyssey Solutions
Oct 2022 – Jan 2025 [Full time]	▪ **Program In-charge** – Department of Data Science, Computer Graphics, and Visualizations Riphah School of Computing & Innovation ▪ **Assistant Professor** – Department of Data Science and Computer Graphics and Visualizations Faculty of Computing Riphah International University, Lahore Campus, Pakistan
Oct 2022 – June 2023 [Part time] July 2022 – Oct 2022 [Full time]	▪ **Head of Department** – Faculty of Computer Science Fazaia College Of Education for Women, Lahore, Pakistan
Apr 2018 – Apr 2022 [Full time]	▪ **Marie Skłodowska-Curie Actions (MSCA) Engineering Science Researcher** Department of Applied Computer Science and Telecommunication Lodz University Of Technology, Lodz, Poland.
Oct 2020 – Dec 2020 [Secondment]	▪ **Visiting Scientist** Technical University of Delft, Delft, Netherlands.
Oct 2019 – Dec 2019 [Secondment]	▪ **Visiting Scientist** Federal University of Technology – Parana, Curitiba, Brazil
Mar 2019 – May2019 [Secondment]	▪ **Visiting Scientist** Helmholtz-Zentrum Dresden Rossendorf || Teletronics GMBH, Dresden, Germany
Aug 2018 – Sept 2018 [Secondment]	▪ **Visiting Scientist** Rocsole Inc, Kuopio, Finland

Jan 2015 – Jan 2016 [Full Time]	▪	**University Teaching Assistant** Faculty of Electrical Engineering and Mathematics Rochester Institute of Technology, Dubai, United Arab Emirates
Dec 2014 – Jan 2015 [Full Time]	▪	**Trainee Design And Application Engineer** Intech Process Automation, Lahore, Pakistan
Jun 2013 – Jul 2013 [Full Time]	▪	**Internee** Creative Engineers, Lahore Pakistan

EDUCATION:

2018 – 2022	▪	**Ph.D. Engineering and Technology in Information and Communication Technology (Applied Computer Science and Telecommunication)** Lodz University of Technology
2015 – 2017	▪	**M.Sc. Electrical Engineering** Rochester Institute of Technology
2010 – 2014	▪	**B.Sc. in Electrical Computer Engineering (Bronze Medal)** COMSATS Institute of Information and Technology

PROFESSIONAL CERTIFICATIONS & COURSES:

Jul 2023 –Jul 2026	▪	**$(ISC)^2$ Certified in Cybersecurity** International Information System Security Certification Consortium (ISC)2
Jun 2021		**Project Design Masterclass** Achiever Lab Dresden Germany
Aug 2020	▪	**Chemical Process Modelling, Multiphase Flow modelling and Problem-Oriented Thinking** Lappeenranta University of Technology, Finland
Jul 2019	▪	**Process Tomography, Data Processing and Innovation** Technical University of Delft Netherlands
May 2019	▪	**International Interdisciplinary PhD Workshop** PhD Workshop (IIPhDW) Wismar, Germany
July 2017	▪	**Industrial Sensors and Control** Netrix Group Lublin Poland

SUBJECTS TAUGHT:

- Computer Vision
- Tools and Techniques in Data Science
- Data Structure and Algorithms
- Programming Fundamentals (Python)
- Object Oriented Programming (Python)
- Problem Solving
- Introduction to Computing
- Control Systems
- Calculus and Analytical Geometry
- Research Methods

REVIEWER ROLES:

I have been involved as a reviewer for publications in the following.

- MDPI: Sensors, Applied Sciences, Processes
- Flow Measurement and Instrumentation
- Wiley Concurrency and Computation: Practice and Experience
- IEEE Access

PUBLICATIONS:

Journal Articles

1. Fareed M, Fatima M, Uddin J, Ahmed A, **Sattar MA (2025)** A Systematic Review of Ethical Considerations of Large Language Models (LLMs) in Healthcare and Medicine. *Front. Digit. Health* 7:1653631. https://doi.org/10.3389/fdgth.2025.1653631
2. **Sattar MA** and Laila DS (2025) A review of ultrasound monitoring applications in agriculture. *Front. Plant Sci.* 16:1620868. https://doi.org/10.3389/fpls.2025.1620868
3. Raza, M., Jahangir, Z., Riaz, M.B.,M,Saeed, **MA, Sattar**. Industrial applications of large language models. *Sci Rep* **15**, 13755 (2025). https://doi.org/10.1038/s41598-025-98483-1

4. M. Raza, M. Jasim Saeed, M. B. Riaz and **Sattar MA**, "Federated Learning for Privacy-Preserving Intrusion Detection in Software-Defined Networks," in IEEE Access, vol. 12, pp. 69551-69567, 2024, doi:10.1109/ACCESS.2024.3395997
5. Aslam I, Saeed MJ, Jahangir Z, Zafar K, **Sattar MA** (2024) Affordable Augmented Reality for Spine Surgery: An Empirical Investigation into Improving Visualization and Surgical Accuracy. *IAPGOŚ* 4/2024:154–163. https://doi.org/10.35784/iapgos.6715
6. Islam A, Bukhari F, **Sattar MA**, Kashif A (2024) Determining Student's Online Academic Performance Using Machine Learning Techniques. *IAPGOŚ* 3/2024:109–117. https://doi.org/10.35784/iapgos.6173
7. **Sattar, M. A**., Garcia, M. M., Portela, L. M., & Babout, L. (2022). *A Fast Electrical Resistivity-Based Algorithm to Measure and Visualize Two-Phase Swirling Flows. Sensors*, 22(5). https://doi.org/10.3390/s22051834
8. **Sattar, M. A**., Garcia, M. M., Banasiak, R., Portela, L. M., & Babout, L. (2020). *Electrical Resistance Tomography for Control Applications : Quantitative Study of the Gas-Liquid Distribution inside A Cyclone*. MDPi Sensors, 20(21), 6069. https://doi.org/10.3390/s20216069
9. **Sattar, M. A**., Wrasse, A. D. N., Morales, R. E. M., Pipa, D. R., Banasiak, R., Da Silva, M. J., & Babout, L. (2020). *Multichannel Capacitive Imaging of Gas Vortex in Swirling Two-Phase Flows Using Parametric Reconstruction*. IEEE Access, 8, 69557–69565. https://doi.org/10.1109/ACCESS.2020.2986724
10. Garcia, M. **M., Sattar**, M. A., Atmani, H., Legendre, D., Babout, L., Schleicher, E., Hampel, U., & Portela, L. M. (2022). *Towards Tomography-Based Real-Time Control of Multiphase Flows: A Proof of Concept in Inline Fluid Separation*. Sensors, 22(12). https://doi.org/10.3390/s22124443
11. Rao, G., **Sattar, M**. A., Wajman, R., & Jackowska-Strumiłło, L. (2021). *Quantitative evaluations with 2d electrical resistance tomography in the low-conductivity solutions using 3d-printed phantoms and sucrose crystal agglomerate assessments*. Sensors (Switzerland), 21(2), 1–31. https://doi.org/10.3390/s21020564
12. Garcia, M. M., Sahovic, B., **Sattar, M**. A., Atmani, H., Schleicher, E., Hampel, U., Babout, L., Legendre, D., & Portela, L. M. (2020). *Control of a Gas-Liquid Inline Swirl Separator Based on Tomographic Measurements. IFAC-PapersOnLine*, 53(2), 11483–11490. https://doi.org/10.1016/j.ifacol.2020.12.588
13. Sahovic, B., Atmani, H., **Sattar, M**. A., Garcia, M. M., Schleicher, E., Legendre, D., Climent, E., Zamansky, R., Pedrono, A., Babout, L., Banasiak, R., Portela, L. M., & Hampel, U. (2020). *Controlled Inline Fluid Separation Based on Smart Process Tomography Sensors*. Chemie-Ingenieur-Technik, 92(5), 554–563. https://doi.org/10.1002/cite.201900172
14. **Awais Sattar, M**., & Ismail, A. (2017). *Modeling and Fuzzy Logic Control of a Quadrotor UAV*. International Research Journal of Engineering and Technology, 4(5).
15. **Awais Sattar, M**., & Ismail, A. (2017). *PID Control of a Quadrotor UAV*. International Research Journal of Engineering and Technology, 4(5).
16. **Awais Sattar, M**., & Ismail, A. (2017*). Quadrotor Control using Adaptive Fuzzy PD Technique*. International Research Journal of Engineering and Technology, 4(5).

Conference Proceedings

17. **Sattar, M. A**., & Babout, L. (2021). *Towards Combination of Data Reduction and Augmented Reality for Online and Onsite ERT-Based Monitoring of Inline Separation*. Global 10th World Congress on Industrial Process Tomography.
18. **Sattar, M. A**., Garcia, M. M., Banasiak, R., Portela, L. M., & Babout, L. (2020). *Scaling Of Electrical Resistance Tomography Data Of Swirled Liquid-Gas Separation Using Fast Camera Imaging*. Wirtualne Sympozjum Środowiskowe Ptze, 2–4.
19. Rao, G., **Sattar, M. A**., Wajman, R., & Jackowska-Strumillo, L. (2019). *Application of the 2D-ERT to evaluate phantom circumscribed regions in various sucrose solution concentrations*. May, 34–38. https://doi.org/10.1109/iiphdw.2019.8755409

Theses

20. **Sattar, M. A.** (2022). *Tomography-Based Approaches for Process Visualization and Control: Exemplary Case of Inline Fluid Separation* [Lodz University of Technology]. https://doi.org/10.13140/RG.2.2.11963.80161
21. **Sattar, M. A.** (2017). *Adaptive Fuzzy Control of Quadrotor* [Rochester Institute of Technology]. https://repository.rit.edu/theses/9618/

HONORS AND AWARDS:

- **Marie Skłodowska-Curie Research Fellow**
  3-year Research Award of 3200€ / Month

Awarding institution: European Union

- **Best Paper Award**
  Conference: International Interdisciplinary
  PhD Workshop (IIPhDW) Wismar, Germany.
- **Master of Science Scholarship**
  RIT Dubai

RESEARCH THESIS SUPERVISED:

- **Improving Content Relevance and Quality with AI**
  Robeel Hassan (MS Thesis, 2023-2025)
- **Lens on Language: Camera-Assisted Sign Language Recognition for Sentence Understanding**
  Shamim Asghar (MS Thesis, 2023-Present)
- **Hyper-Efficient Deep Learning for Real-Time Pest and Disease Detection in Precision Agriculture**
  Muhammad Bilal (MS Thesis, 2023-2025)
- **Breast Cancer Detection Using Magnetic Resonance Images Empowered with Deep Learning.**
  Muhammad Arif (MS Thesis, 2023-2025)
- **Creating 3D Visual Models By Using Augmented Reality (AR) Technology To Improve Classroom Learning**
  Muhammad Umar Maqbool (MS Thesis, 2022-23)
- **Enhancing Precision: Augmented Reality in Minimally Invasive Spine Surgery**
  Iqra Aslam (MS Thesis, 2022-23)
- **Federated Learning For Privacy-Preserving Intrusion Detection in Software-Defined Networks**
  Mubashar Raza (MS Thesis, 2022-23)

REFERENCES:

Professional

- **Prof. Dr. Laurent Babout**
  Professor at the Institute of Applied Computer Science
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Professional

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