# AWAD BIN NAEEM

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## About me

I am a Marie Skłodowska-Curie COFUND (FutureData4EU) PhD Fellow working on the project *"AI-based Neurobiological Phenotyping of Patients with Expansion Repeats and Brain Disorders,"* which develops an AI-driven platform integrating genomic, epigenetic, multimodal MRI, and clinical data to improve diagnosis, classification, and prognosis of neurodegenerative diseases such as Huntington's disease, Amyotrophic Lateral Sclerosis, Myotonic Dystrophies, Alzheimer's disease, and Spinocerebellar Ataxias. I hold a graduate degree in Computer Science from NCBA&E Multan (September 2022, CGPA 3.55/4.0) and have a strong interest in optimizing smart transportation systems, machine learning, deep learning, medical disease detection, and data science. I have published more than 30 research articles in reputed journals and conferences and maintain an active Google Scholar profile (AWAD BINNAEEM). My publications span intelligent road management systems for autonomous, non-autonomous, and VIP vehicles; early gender identification of date palm using machine learning; systematic literature reviews of routing protocols in MANET for disaster management; comparative analyses of algorithms for breast cancer diagnosis; improved hybrid routing approaches for MANET disaster management; private cloud hybrid architectures for secure data communication; uncovering spam on Twitter using machine learning; and hypothyroidism disease diagnosis using machine learning algorithms. I have also contributed to AI-guided analysis of cough sounds for COVID-19 screening. Building on my master's thesis on road transportation systems, I combine academic and industry experience: three years as Senior Web Developer at Infinite Byte IT Solution Multan, one year as Web Developer at Mux, one year as Lecturer at the Virtual University Multan City Campus, three years as Senior IT Lecturer at Exclusive International Multan, and most recently (2022–2024) as Lecturer at the National College of Business Administration and Economics.

## Education & Training

**Ph.D** | University of Bologna | 01/03/2024 - Current | Bologna, Italy

**Field of study** Department of Biomedical and Neuromotor Sciences

**M.PHIL** | National College Of Business Administration And Economics | 01/09/2019 - 01/09/2022 | Multan, Pakistan

**BSCS** | Institute of Southern Punjab | 01/10/2012 - 01/09/2016 | Multan

## THESIS

**Smart Road Management System for Prioritized Autonomous Vehicles under Vehicle-to-Everything (V2X) communication** | 01/09/2021 - 01/09/2022

Write here this thesis works on smart transportation strategies for emergency autonomous and normal

autonomous vehicles under the vehicle-to-every-things circumstance.

1) We propose algorithm-based strategies in different real-time road environments in which we handle EAV and NAV by using

V2X communication. For this, we are taking three different real-time routes from Pakistan, and one international by using OpenStreetMap (OSM).

2) AISM handles all types of vehicles and their road networks, it works like a database that contains all information regarding all vehicles that are entered in our smart road.

3) AISM assigns high and low priority on the base of vehicles, manage route junction, and assign routes to all vehicle so

that no collision occurs on the route. All vehicles run smoothly without any disturbance occurring on the smart roads.

4) The Simulations are conducted using Simulation of Urban Mobility (SUMO).

5) These simulation works are performed on three different real routes these routes are taken from different Pakistan cities. From Multan city, we are taking the Bypass Multan route and Nishtar route, and one route is taken from M2-motorway Lahore.

6) Simulation of Urban Mobility and the results show that the proposed strategy could significantly reduce the average delay time caused by the EAV and NAV, compared with the widely used priority queue and FIFO

techniques. (Publish Research Article in Springer Journal)

https://doi.org/10.1007/s11042-023-16950-1

**Intelligent Road Management System for Autonomous, Non-Autonomous, and VIP Vehicles** | 01/09/2020 - 01/09/2020

This paper's contributions are mentioned below.

We advocate for an IM approach that establishes intelligent channels for all types of vehicles and their communication. The IM unit monitors who is currently utilizing the junction. When a vehicle is within the communication range of an IM unit, it may receive traffic updates, allowing it to avoid approaching a junction before it is safe to do so. The strain on the IM unit is considerably decreased since all of the demanding computing tasks are conducted on the vehicle side. Simulations utilizing SUMO (Simulation of Urban Mobility), the results of which reveal the commonly used scheduling technique, show that the proposed design may significantly minimize the average wait time caused by the intersection. (Publish Research Article in MDP Journal)

https://doi.org/10.3390/wevj14090238

## Work experience

**Exclusive International College Multan** | Instructor | 01/01/2020 - 01/10/2022 | Multan, Pakistan

·Planning lessons and activities that facilitate students' acquisition of basic and advanced computer skills.

·Instructing in a manner that develops students' confidence in their abilities.

·Observing and managing classroom dynamics.

·Invigilating and grading projects, quizzes, and examinations.

·Tracking and communicating students' advancement throughout the course.

**Virtual University Sub Campus** | Visiting Lecturer | 01/10/2018 - 01/12/2019 | Multan, Pakistan

·Teach introductory computer technology and data management applications courses to underclassmen as part of the university's general education core curriculum.

·Participate with other department faculty members in offering advanced computer science courses to students pursuing bachelor's degrees in fields related to computer and information technology.

·Instruct and mentor individually applied technology and computer science, majors, as they work their way through each department's undergraduate programs.

·Assist department staff in managing and maintaining the university's main computer lab, working rotating shifts to ensure it remains open for students during both day and evening hours.

·Coordinate with faculty as well as outside personnel in discussing research opportunities, and represent the department in requesting funding from the university finance department and private donors.

·Develop a curriculum to be used by department staff and to be published and shared with other academic institutions.

·Work with the department chair as well as the university admissions department annually to arrange class schedules for each academic semester.

·Maintain regular office hours during the academic semester to be available to meet with students individually when needed.

**Infinite Bytes & IT Solution** | Senior Web Developer | 01/01/2017 - 01/05/2019 | Multan, Pakistan

• Performing coding assignments.

• Reviewing code work for accuracy and functionality.

• Creating and implementing design plans.

• Analyzing code segments regularly.

• Delegating tasks to team members.

• Keeping up-to-date with industry trends and technology developments

**Cothm** | IT Instructor | 01/07/2017 - 01/09/2018 | Multan, Pakistan

• Conduct IT skills gap analyses.

• Design technical manuals using simple language.

• Conduct role-specific training on tools and programs each team uses daily.

• Research and recommend learning systems.

• Apply educational methods to students.

• Train new employees on proper use of hardware and software.

• Perform regular organization-wide training on system security.

• Evaluate the effectiveness of each educational session.

• Maintain updated records of training curriculum and materials.

• Establish the system connectivity through wire/wireless by troubleshooting.

**MUX SOLUTIONS** | Junior Web Developer | 01/04/2016 - 01/04/2017 | Multan, Pakistan

• Assisting the web development team with all aspects of website and application design.

• Assisting with the testing and maintenance of backend and front-end applications.

• Integrate data from various back-end services and databases.

• Brainstorming new tech applications such as digital storage and mobile technology.

• Collaborating with developers to implement new web features.

• Keeping up-to-date with the latest technology and programming trends.

• Using user feedback to identify and correct problems with a client's website.

• Stay plugged into emerging technologies/industry trends and apply them to operations and activities

**Lecturer** | National College of Business Administration and Economics | 01/03/2023 - 31/10/2024 | Multan, Pakistan

Participate with other department faculty members in offering advanced computer science courses to students pursuing bachelor’s degrees in fields related to computer and information technology.

Instruct and mentor individually applied technology and computer science, majors, as they work their way through each department’s undergraduate programs.

Assist department staff in managing and maintaining the university’s main computer lab, working rotating shifts to ensure it remains open for students during both day and evening hours.

## Projects

**Organization Corporation Portal** | 01/04/2015 - 01/10/2015

My project is based on a web-based application. In my project, there are multiple Partners. In this one is an active partner and all of the others are sleeping partners. In my project, other sleeping Partners do not need to come to his company. Only they log in website through their user’s name and password and see all complete details related to them from anywhere and anytime. So, they have saved a lot of time. And they can easily search for all the details from the search box. If they needed to print some detail which they needed they only clicked in printing button. The

active partner is the main person who is controlling the whole system. He is logging in to his page with his user's name and password. Then a new page is open. On this page, there are present product-related data and there are also present stock, sale, and purchase details. He can also see the all-expense details and also chat with their partners through the discussion platform. And their profit is presented in a percentage format.

**Job Portal System** | 01/04/2016 - 01/10/2016

Write here the description...The main theme of this project is to provide users access variety of jobs with so many facilities. Here you can take a look at all types of jobs and see details in their descriptions. A quick convenient, reliable timely, and efficient way to search recruiting, search, and employment professionals worldwide.

Educational resources for developing effective job searches.

## Skills

Research Paper Writing | SUMO(Simulation of Urban MObility) | Jupyter Notebook (Anaconda) | Weka | Google Colab | Deep Learning | Machine Learning | SQL | Web Designer | Web Developer | JavaScript (front-end) | PHP (back-end) | End-Note | Microsoft Office

## Publications

### 1. Journal Articles

#### A. Awad Bin Naeem as First Author

1. **Naeem, A. B.**, Senapati, B., Rasheed, J., Abid, F., & Alsubai, S. (2025). Precision agriculture using a two-tier ML model: Integrating aKNCN soil classification with ELM-mBOA yield prediction. *SN Computer Science, 6*(6), 726. Springer Nature Singapore.
2. **Naeem, A. B.**, Osman, O., Alsubai, S., Cevik, T., Zaidi, A. T., & Rasheed, J. (2025). Lightweight CNN for accurate brain tumor detection from MRI with limited training data. *Frontiers in Medicine, 12*, 1636059. Frontiers.
3. **Naeem, A. B.**, Soomro, A. M., Saim, H. M., & Malik, H. (2024). Smart road management system for prioritized autonomous vehicles under vehicle-to-everything (V2X) communication. *Multimedia Tools and Applications, 83*(14), 41637–41654. Springer.
4. **Naeem, A. B.**, Senapati, B., Mahadin, G. A., Ghulaxe, V., Almeida, F., Sudman, S. I., & Ghafoor, M. I. (2024). Determine the prevalence of hepatitis B and C during pregnancy by using machine learning algorithm. *International Journal of Intelligent Systems and Applications in Engineering, 12*(13s), 744–751.*
5. **Naeem, A. B.**, Senapati, B., Bhuva, D., Zaidi, A., Bhuva, A., Sudman, M. S. I., & Ahmed, A. E. M. (2024). Heart disease detection using feature extraction and artificial neural networks: A sensor-based approach. *IEEE Access, 12*, 37349–37362. IEEE.
6. **Naeem, A. B.**, Senapati, B., Islam Sudman, M. S., Bashir, K., & Ahmed, A. E. M. (2023). Intelligent road management system for autonomous, non-autonomous, and VIP vehicles. *World Electric Vehicle Journal, 14*(9), 238. MDPI.
7. **Naeem, A. B.**, Khalid, F., Soomro, A. M., Del Mundo, A. D., Zaidi, A., Senapati, B., & Doshi, O. P. (2023). Early gender identification of date palm using machine learning. *Journal of Computing & Biomedical Informatics, 4*(2), 128–141.*
8. **Naeem, A. B.**, Senapati, B., Chauhan, A. S., Kumar, S., Gavilan, J. C. O., & Abdel-Rehim, W. M. F. (2023). Deep learning models for cotton leaf disease detection with VGG-16. *International Journal of Intelligent Systems and Applications in Engineering, 11*(2), 550–556.*
9. **Naeem, A. B.**, Senapati, B., Chauhan, A. S., Makhija, M., Singh, A., Gupta, M., Tiwari, P. K., & Abdel-Rehim, W. M. F. (2023). Hypothyroidism disease diagnosis by using machine learning algorithms. *International Journal of Intelligent Systems and Applications in Engineering, 11*(3), 368–373.*
10. Naeem, A. B., Senapati, B., Rasheed, J., Zaidi, A., Quispe, W. W. S., & Ahmed, A. E. M. (2024). Classification of remote sensing images using Vision Transformers and transfer learning. Power System Technology, 48(3), 873–887. https://doi.org/10.52783/pst.888

#### B. Awad Bin Naeem as Second Author

11. Soomro, A. M., **Naeem, A. B.**, Ghafoor, M. I., Senapati, B., & Rajwana, M. A. (2023). A systematic review of artificial intelligence techniques used for IDS analysis. *Journal of Computing & Biomedical Informatics, 5*(1), 52–67.*
12. Soomro, A. M., **Naeem, A. B.**, Rajwana, M. A., Bashir, M. Y., & Senapati, B. (2023). Advancements in AI-guided analysis of cough sounds for COVID-19 screening: A comprehensive review. *Journal of Computing & Biomedical Informatics, 5*(1), 105–117.*
13. Soomro, A. M., **Naeem, A. B.**, Ayub, F., Senapati, B., & Ghafoor, M. I. (2023). Performance evaluation of routing protocol OSPF with GNS3. *Journal of Computing & Biomedical Informatics, 5*(1), 174–182.*

14. Ghafoor, M. I., Tahir, M. R., **Naeem, A. B.**, Soomro, A. M., & Bashir, M. Y. (2023). Increased traffic efficiency in green communication by using a new load-balancing technique. *Journal of Computing & Biomedical Informatics, 5*(2), 39–48.*
15. Soomro, A. M., **Naeem, A. B.**, Saim, M., Soomro, M. A., Khurshid, I., & Baloch, M. A. (2022). Analysis study of routing protocols in MANET for disaster management. *Journal of Computing & Biomedical Informatics, 3*(2), 124–135.*
16. Soomro, A. M., **Naeem, A. B.**, Shahzad, K., Madni, A. M., Del Mundo, A. D., Sajid, M., & Baloch, M. A. (2022). Forecasting cotton whitefly population using deep learning. *Journal of Computing & Biomedical Informatics, 4*(1), 64–76.*
17. Senapati, B., **Naeem, A. B.** (2024). Technology Innovations Model of Artificial Intelligence to Stop Industrial Espionage in Manufacturing Establishments. International Journal of Intelligent Systems and Applications in Engineering, 12(3), 2814–2826. https://doi.org/10.5281/zenodo.7991995

**C. Awad Bin Naeem as Third or Later Author**

18. Basharat, S., Khan, N., & **Naeem, A. B.** (2025). Predicting cotton whitefly populations through deep learning. *Machine Learning for Human Intelligence, 3*(1), 32–43.*
19. **Naeem, A. B.**, Senapati, B., Rasheed, J., Zaidi, A., Quispe, W. W. S., & Ahmed, A. E. M. (n.d.). Classification of remote sensing images on vision transformers and transfer learning. *(In press).*
20. Abdul Majid Soomro, Awad Bin Naeem, Fridous Ayub, Biswaranjan Senapati, Ojas Prakashbhai Doshi, & Nimra Bari. (2023). ECG Models Predict AFib From 2012-2022: A Systematic Literature Review . Journal of Computing & Biomedical Informatics, 4(02), 186–203. Retrieved from https://jcbi.org/index.php/Main/article/view/148
21. Muhammad Imran Ghafoor, Muhammad Rehan Tahir, **Awad Bin Naeem**, Abdul Majid Soomro, & Muhammad Yousouf Bashir. (2023). Increased Traffic Efficiency in Green Communication by using a New Load Balancing Technique. Journal of Computing & Biomedical Informatics, 5(02), 39–48. Retrieved from https://www.jcbi.org/index.php/Main/article/view/189
22. Muhammad Sajid, Awad Bin Naeem, Abdul Majid Soomro, Biswaranjan Senapati, Alok Singh Chauhan, Fridous Ayub, & Shahzad, K. . (2023). Implementing Machine Learning Algorithms to Compare the Ratio of NO2 and O3 in Suspended Particulate Matter. Journal of Computing & Biomedical Informatics, 4(02), 76–87. Retrieved from https://jcbi.org/index.php/Main/article/view/96
23.

**2. Conference Papers**

**A. Awad Bin Naeem as First Author**

24. **Naeem, A. B.**, Soomro, A. M., Bhuva, A., Bashir, K., Bhuva, D., Maaliw, R. R., & Abdel-Rehim, W. M. F. (2023). Intelligent four-way crossroad safety management for autonomous, non-autonomous and VIP vehicles. In *2023 IEEE International Conference on Emerging Trends in Engineering, Sciences and Technology (ICES&T)* (pp. 1–6). IEEE.

**B. Awad Bin Naeem as Second Author**

25. Soomro, A. M., **Naeem, A. B.**, Bagchi, S., Ibrahim, B. S. K. M. K., & Debnath, S. K. (2025). Predicting object communication errors in constructor development. *IEEE Access.*
26. Soomro, A. M., **Naeem, A. B.**, Senapati, B., Bashir, K., Pradhan, S., Maaliw, R. R., & Sakr, H. A. (2023). Constructor development: Predicting object communication errors. In *2023 IEEE ICES&T* (pp. 1–7). IEEE.
27. Soomro, A. M., **Naeem, A. B.**, Senapati, B., Bashir, K., Pradhan, S., Ghafoor, M. I., & Sakr, H. A. (2023). In MANET: An improved hybrid routing approach for disaster management. In *2023 IEEE ICES&T* (pp. 1–6). IEEE.
28. Soomro, A. M., **Naeem, A. B.**, Debnath, S. K., Bagchi, S., Gupta, S., & Saluja, K. (2023). Private cloud hybrid architecture for protected data communication. In *2023 International Conference on Advancement in Computation & Computer Technologies (InCACCT)* (pp. 450–455). IEEE.
29. Soomro, A. M., **Naeem, A. B.**, Bagchi, S., Sharma, N., Singh, P., & Debnath, S. K. (2023). Uncovering spam in Twitter: A machine learning approach. In *2023 International Conference on Computational Intelligence and Sustainable Engineering Solutions (CISES)* (pp. 993–998). IEEE.

**C. Awad Bin Naeem as Third or Later Author**

30. Senapati, B., **Naeem, A. B.**, Khan, T. A., Golder, S. S., Das, S., Mondal, S., Mishra, L. N., & Patra, S. (2024). A study on web user's attitude and knowledge towards data security and privacy issues of web browser extensions. In *2024 IEEE ICECCME* (pp. 1–8). IEEE.
31. Senapati, B., Talburt, J. R., & **Naeem, A. B.** (2023). Transfer learning-based models for food detection using ResNet-50. In *2023 IEEE eIT* (pp. 224–229). IEEE.
32. Soomro, A. M., Debnath, S. K., **Naeem, A. B.**, Bagchi, S., Saluja, K., & Gupta, S. (2023). Intrusion detection behavioral model by using ANN. In *International Conference on Data Analytics and Insights* (pp. 589–600). Springer Nature Singapore.
33. Debnath, S. K., Malik, S., Kaur, G., Bagchi, S., Soomro, A. M., & **Naeem, A. B.** (2023). Prediction accuracy improvement for cardiovascular diseases using machine learning algorithm. In *2023 IEEE UPCON* (pp. 1032–1037). IEEE.
34. Soomro, A. M., Haseeb, A. M., Debnath, S. K., Bagchi, S., **Awad, N.**, Ahamed, K. M. K. A., Mastaneh, M., & Takao, I. (2025). An innovative deep learning technique to identify potato illness. In *Artificial Life and Robotics, 30*, 688–694.

35. Soomro, A. M., Asad, A., Bagchi, S., Debnath, S. K., **Awad, N.**, Ahamed, K. M. K. A., Mastaneh, M., & Takao, I. (2025). Evaluation of heart disease risk using deep learning technique with image enhancement. In *Artificial Life and Robotics, 30*, 710–716.
36. Soomro, A. M., Debnath, S. K., Arora, J., Saluja, K., Bagchi, S., **Naeem, A. B.**, & Shetty, C. (2024). Diagnosis of autoimmune thrombocytopenic disease by using an adaptive genetic algorithm. In *International Conference on Data Analytics and Insights* (pp. 163–173). Springer Nature Singapore.
37. Senapati, B., **Naeem, A. B.**, Ghafoor, M. I., Gulaxi, V., Almeida, F., Anand, M. R., & Gollapudi, S. (2024). Wrist crack classification using deep learning and X-ray imaging. In *International Conference on Advances in Computing Research* (pp. 60–69). Springer Nature Switzerland.

**3. Book Chapters**

38. Senapati, B., **Naeem, A. B.**, & Maaliw, R. R. (2024). Machine learning model for improving the overall equipment effectiveness in industrial manufacturing sites. In *Advances in Computational Intelligence and Its Applications* (pp. 151–161). CRC Press.
39. Naeem, A. B., Senapati, B., Islam Sudman, M. S., Bashir, K., & Ahmed, A. E. M. (2023). Detection of food allergy using deep learning. In Medical Imaging Informatics (pp. 153–172). IET. https://doi.org/10.1049/PBHE057E_ch8

**Recommendations**

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