Abdul Wahid

Industry Research Fellow | *Post- Doctoral Researcher*
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Academic Qualifications

PhD in *Artificial Intelligence* **Jun. 2019 – Dec. 2023**
- *School of Electrical & Electronics Engineering*
- **Data Science Institute (DSI), University of Galway.**

MS *in Engineering*
- *School of Electronics and Information Engineering* **Feb. 2014 – Apr. 2016**
- **Chonbuk National University, South Korea.**

B. Tech in *Information Technology Engineering*
- *School of Engineering* **Sep. 2008 – Jun. 2012**
- **Baba Ghulam Shah Badshah University, India.**
- Grade A

Research Profile

I am a computer scientist with expertise at the intersection of software systems, data-intensive architectures, and AI-enabled platforms. My research focuses on building robust, scalable, and interpretable computational systems, integrating software engineering principles, distributed systems, and machine learning. I combine formal modelling, system-level design, and empirical evaluation to address reliability, performance, and trustworthiness in complex software-driven environments. I bring a strong record of peer-reviewed research, competitive funding, undergraduate and postgraduate teaching, and interdisciplinary collaboration, with clear potential for leadership in Software & Systems research.

- **Publications**: 20+ peer-reviewed papers (ISWC, IEEE, Springer, Procedia, Applied Sciences) (Citations 242, h-index 7).
- **Funding**: Research Ireland Academic–Industry Postdoctoral Fellowship (2026), Co-PI on €60,000 EDHI-funded project; recipient of SFI PhD Fellowship;
- **Conferences**: Presented at ISWC, International Conference on ML & Optimisation, IEEE ICTC, among others.
- **Supervision**: Mentored UG/PG students on capstone and coursework projects.

Open Science & FAIR Practices

- All publications linked to ORCID; open-access first approach.
- Commitment to FAIR data: public release of code, datasets, and reproducible pipelines.

Interdisciplinary & Industry Engagement

- Collaboration with engineers, data scientists, and policy experts (E-governance, XR, digital twins).
- Industry: Huawei Research Dublin (digital twins), Zerve AI (data science).
- Horizon projects (PEERS, OpenVerse): ethical governance, immersive technologies.

Work Experience

Industry Research Fellow **Jan 2026 – Present**

FCAT, Fidelity Investments, Ireland | Research Ireland Academic-Industry Postdoctoral Fellowship

- I am an Industry Research Fellow in collaboration with FCAT, Fidelity Investments, funded through the Research Ireland Academic-Industry Postdoctoral Fellowship 2026.
- I lead a project on market-level markers and temporal trends that best predict long-term forecasting accuracy, robustness, and stability of prediction markets.
- My research aim is to develop a knowledge graph-based representation of prediction markets to model agents, signals, events, incentives, and information flows, enabling structured reasoning over market behaviour.
- Leverages Large Language Models (LLMs) for market summarisation, narrative extraction, and risk scoring, integrating Graph-RAG pipelines for explainable and verifiable analysis.
- Aims to support trustworthy, transparent, and auditable prediction market analytics for financial decision-making and governance contexts.

Post-Doctoral Researcher **Jan 2024 – Present**

Data Science Institute, University of Galway

- I am part of the E-governance research group.
- I co-lead the development of technological synergies, IPR frameworks, and ethical governance models for virtual worlds and immersive environments.
- I am involved in developing LLMs, knowledge graphs, and ontologies to build interoperable and transparent digital ecosystems.
- I collaborate across interdisciplinary teams to align AI-driven virtual environments with regulatory, ethical, and industry standards.

Associate Lecturer (Part-time) **June 2025 - Present**

School of Computing, National College of Ireland.

- Design and deliver undergraduate *Artificial Intelligence* and *Machine Learning Foundations modules*, aligning theory with real-world applications.
- Create original lectures, assignments, and assessments.
- Coordinate and support students through project-based learning, ensuring engagement with real datasets and industry-relevant tools.
- Integrate blended learning techniques and digital platforms (e.g., Moodle, interactive assessments) to enhance accessibility and student success.

Assistant Lecturer (Part-time) **March. 2025 – May. 2025**

Technological University of Shannon

- Designed and delivered a graduate-level course on autonomous vehicle sensor technologies and system architectures.
- Created original content, including lectures, case studies (Tesla, Waymo, Cruise), and hands-on assignments on Camera, LiDAR, Radar, IMU, GPS & V2X systems.

- Covered emerging trends such as sensor fusion, AI-based perception, cybersecurity, edge computing, and ethical deployment of AV technologies.
- Assessed students through practical implementation projects, including ROS-based sensor fusion, drowsiness detection, and anomaly detection in sensor data.

Graduate Teaching Assistant **2019 – 2024**
Data Science Institute, University of Galway

- Developed teaching and assessment materials, delivered lectures and tutorials, graded assignments and exams, and guided students while assisting in undergraduate and master's courses:

EE 130	*Fundamentals of Engineering (2019-2020)*
EE224	*Microprocessor Systems Engineering (2020-2021)*
EE230	*Electrical Circuits and Systems (2020-2021)*
CT5105	*Tools and Techniques for Large Scale Data Analytics (2023)*
CT1111	*Engineering Computing (2024)*
EI150	*Engineering Design (2024)*

Lecturer **Sep. 2016 – Mar. 2017**
Yuncheng University – Yuncheng, Shanxi, China

- Supported research projects, aiding academic progression and growth in line with demands.
- Courses Taught: *Digital Signal Processing, Computer Vision, Image Processing, Visual Basic (VB.NET)*

Industry Experience

Industry Research Fellow **Jan 2026 – Present**
Fidelity Investments, Ireland
Research Ireland Academic-Industry Postdoctoral Fellowship

- Industry Research Fellow in collaboration with FCAT, Fidelity Investments, funded under the Research Ireland Academic- Industry Postdoctoral Fellowship (2026).
- Lead a research programme on identifying market-level signals and temporal dynamics that predict long-term forecasting accuracy, robustness, and stability in prediction markets.
- Design and develop a knowledge graph-based representation of prediction markets to model agents, events, signals, incentives, and information flows, enabling structured and machine-interpretable market reasoning.
- Integrate Large Language Models (LLMs) with Graph-RAG pipelines for market summarisation, narrative extraction, and explainable risk scoring.

Research and Development Intern **Jan. 2022 – Aug. 2022**
Huawei Research – Dublin, Ireland

- I was a part of the cloud core network (CNN) team, where my focus was on Digital Twin technology.
- My research focused on modelling digital twin technology for cloud networks.

- Investigated the strategies to overcome the limitations of current modelling languages.
- AI-based code generation engines for modelling DT technology for telecommunication networks.
- Produced thorough research reports on various digital twin technologies, assessing suitability for telecommunication networks.

Data Scientist **Sep. 2022 – July. 2023**
Zerve AI – Dublin, Ireland

- Worked on predictive and prescriptive data analytics projects to enable clients to make data-driven decisions that optimise their services, profits, and customer engagement.
- Used machine learning to explore clients' data and provide insights and solutions that can help solve complex business problems.
- Collaborated with clients to understand their specific needs, develop tailored solutions and incorporate their feedback

Research Associate **Mar. 2017 – Jun. 2019**
Software Eng. Lab, Chonbuk National University

- Conducted research on semantic segmentation for autonomous vehicle systems using deep learning techniques.
- Developed a semantic segmentation model to enhance object recognition and navigation in self-driving applications.
- Designed and trained a deep convolutional neural network to estimate pig mass from 2D images for predictive analytics in smart agriculture.
- Applied computer vision and AI methods to real-world industrial and autonomous system challenges.

Projects

- **Multilingual Knowledge Alignment using LLMs and Knowledge Graphs (Horizon Europe):** Developed a multilingual reasoning pipeline integrating transformer-based LLMs with domain-specific knowledge graphs to detect semantic drift across languages and improve contextual consistency in machine translation systems. Implemented using PyTorch, Hugging Face Transformers, and Neo4j.
- **Graph-RAG for Ethics and IPR in Virtual Worlds**: Designed a Retrieval-Augmented Generation (RAG) framework combining structured knowledge graphs with generative LLMs to answer ethical and policy-related questions across multilingual datasets. Enhanced retrieval precision by 34% through hybrid symbolic-neural reasoning.
- **Language Quality Estimation using Generative Models**: Built a quality-prediction model for translated text using fine-tuned T5 and GPT architectures on synthetic multilingual data. Integrated uncertainty estimation for confidence scoring, improving automatic localisation review accuracy in simulation by 28%.
- **Digital Twin Simulation Pipeline (Huawei Research Ireland:** Modelled AI-driven digital twin environments for real-time cloud networks using distributed training and synchronisation across large datasets. Implemented model versioning and monitoring with Azure ML and MLflow for continuous deployment.
- **Predictive Analytics for Automotive Retail (Zerve AI):** Developed and deployed ML models predicting vehicle sales velocity based on market dynamics and consumer behaviour, using PyTorch, Azure Data Factory, and CI/CD pipelines. Supported production scalability with explainable dashboards for non-technical stakeholders.

Teaching & Supervision

- Over 5 years of teaching experience across UG/PG, including module design and full delivery.
- Designed new graduate modules in AI, ML, and Autonomous Systems.
- **Supervision**: >10 UG capstone projects, MSc dissertation mentoring, co-supervision of Insight/DSI postgraduate projects.
- **Pedagogical Innovation**: blended learning, project-based assessments, integration of reproducibility and open science into coursework.
- **Public Engagement**: VR workshops for schools (STEM outreach), open lectures on AI and governance.

Research Funding

- ***Research Ireland Academic–Industry Postdoctoral Fellowship (2026)***
- Co-Principal Investigator on an EDHI-funded project titled *"Building a Recommender System for Technological Risk Management"*, awarded by Data2Sustain with a total funding of €60,000.

Achievements

- **Research Ireland Academic-Industry Postdoctoral Fellowship (2026)** – *Awarded a highly competitive national fellowship supporting industry-aligned research with FCAT, Fidelity Investments, 2026.*
- **EDHI Funding Award (€60,000)** – *Co-PI*, Data2Sustain, 2025.
- **Science Foundation Ireland PhD Fellowship** – *University of Galway / Confirm SFI Centre*, 2019–2023
- **Fully Funded MS Scholarship** – *Chonbuk National University, South Korea*, 2014–2016
- **Huawei Research Internship** – *Huawei Research Dublin*, selected participant, 2022
- **Travel Grant –** International Conference on Machine Learning, Optimisation and Data Science, 2022, & ISWC 2024.
- **Reviewer –** ESWC (Extended Semantic Web Conference), ***Nominated for Best Reviewer Award 2025.***
- Reviewer and editorial board member for Springer Nature journals, contributing to peer review and scholarly community service.

Computer Languages, Frameworks and Tools

- Python
- C / C++
- MATLAB
- Docker
- SQL
- TensorFlow
- Karas
- PyTorch
- Linux/Windows
- Ms Office/ Latex (Overleaf)

Technical Skills

Programming & Computational Frameworks	Python, Java, C++, SQL, MATLAB; development of algorithms for optimisation, numerical analysis, and data-driven modelling
Mathematical & Computational Modelling	Statistical modelling, linear algebra, numerical methods, optimisation techniques, probabilistic modelling, simulation frameworks
AI, Data Science & Applied Mathematics	Machine Learning, Deep Learning, Predictive Analytics, Biomedical Signal Processing, Natural Language Processing, Generative Models, Large Language Models

Databases & Systems Architecture	PostgreSQL, MongoDB, API design, microservices, high-performance computing (HPC), distributed systems; cloud deployment (AWS, GCP, Azure)
User-Centred Design & Simulation	Co-design workshops, VR/AR/MR modelling for simulation and patient engagement, accessibility (WCAG)
Project Delivery & Research Leadership	Agile methodologies, Git, CI/CD pipelines, risk modelling and management, cross-disciplinary collaboration, research project coordination

Scientific Affiliations

- SCIE & SPIE Barcelona.
- IJDSN & EE.
- PLOS ONE.
- ESWC

Languages

- English -- fluent
- Arabic – Beginner
- Hindi -- Fluent
- Urdu – Advanced

LIST OF PUBLICATIONS

(click here for the complete list)

- **Wahid A,** Yahya M, Zaman F, Zhou B, Breslin JG, Intizar MA, Kharlamov E. Integrating I4. 0 Knowledge Graphs with Large Language Models Beyond SPARQL Endpoints. (ISWC 2024)
- **Wahid, A**., Breslin, J.G. and Intizar, M.A., 2024. TCRSCANet: Harnessing Temporal Convolutions and Recurrent Skip Component for Enhanced RUL Estimation in Mechanical Systems. Human-Centric Intelligent Systems, pp.1-24.
- **Wahid, A**., Yahya, M., Breslin, J.G. and Intizar, M.A., 2023. Self-Attention Transformer-Based Architecture for Remaining Useful Life Estimation of Complex Machines. Procedia Computer Science, 217, pp.456-464.
- **Wahid, A**., Zhu, J., Mauceri, S., Li, L. and Liu, M., 2022, September. Digital Twins: Modelling Languages Comparison. In International Conference on Machine Learning, Optimization, and Data Science (pp. 169-178). Cham: Springer Nature Switzerland.
- **Wahid, A**., Breslin, J.G. and Intizar, M.A., 2022. Prediction of machine failure in industry 4.0: a hybrid CNN-LSTM framework. Applied Sciences, 12(9), p.4221.
- **Wahid, A**. and Ali, M.I., 2019. Deconvolutional Pixel Layer Model for Road Segmentation without Human Assistance. In AICS (pp. 88-94).
- **Wahid, A**. and Lee, H.J., 2017, October. Image denoising method based on directional total variation filtering. In 2017 International Conference on Information and Communication Technology Convergence (ICTC) (pp. 798-802). IEEE.
- **Wahid, A**., Kim, S.M. and Choi, J., 2015, November. Mobile indoor localization based on RSSI using Kalman filter and trilateration technique. In International Conference on Machine Vision (ICMV).

REFERENCES

PhD Supervisor	**Prof. John Breslin,** Professor of Electronics Engineering, PI Data Science Institute & Insight Centre, University of Galway, Ireland. Email: john.breslin@universityofgalway.ie
PhD Supervisor	**Dr Ali Intizar,** Assistant Professor, School of Electronic Engineering, PI Insight Centre, Dublin City University. Email: ali.intizar@dcu.ie
MS Supervisor	**Prof. Choi, Jae-Ho,** Professor of Electronics Engineering, Chonbuk National University, South Korea. Email: wave@jbnu.ac.kr
Current Line Manager	**Dr Lukasz Porwol,** Unit Leader, Data Science Institute & Insight Centre, University of Galway, Ireland.
	Dr Adegboyega Ojo, Professor, Canada Research Chair in Governance and Artificial Intelligence digital Government; artificial intelligence governance; data-intensive public sector innovation; policy analytics