Ahmed Alia

Assistant Professor

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Personal Statement

Ahmed Alia holds a Dr.-Ing. in Artificial Intelligence, specializing in deep learning and video analytics. He has over five years of applied research experience at Forschungszentrum Jülich (Germany), developing AI-driven solutions to address real-world societal challenges. He also brings 12+ years of experience at An-Najah National University, where he contributed to web-based systems development, teaching, and technical training. In addition, he has contributed to several international projects supporting technology-enhanced education and digital learning initiatives. He has published in high-impact peer-reviewed journals and serves as a reviewer for international conferences and journals. He offers strong skills in AI framework design, research-driven problem solving, and interdisciplinary collaboration. He is passionate about advancing impactful AI research and translating it into practical solutions that improve people's lives.

Current Position

Sep 2025–Present **Assistant Professor**, *An-Najah National University*, Faculty of Information Technology and Artificial Intelligence, Nablus, Palestine.

Research Interests

Machine Learning, Deep Learning, Large Language Models (LLMs), Vision–Language Models (VLMs), Intelligent Systems, Image and Video Analytics, Crowd Behavior Analysis, Public Safety and Smart Cities

Education

2020–2024 **Doctor of Engineering (Dr.-Ing.) in Artificial Intelligence**, *Bergische Universität Wuppertal*, Germany, Evaluation: Excellent.
Thesis Title: *Artificial Intelligence Framework for Video Analytics: Detecting Pushing in Crowds*.
`https://doi.org/10.34734/FZJ-2024-04610`

2012–2015 **M.Sc. in Computing**, *Birzeit University*, Palestine, GPA: 90.8% (Distinction).
Thesis Title: *Modified Binary Cuckoo Search using Rough Set Theory for Feature Selection*.

2002–2006 **B.Sc. in Computer Science**, *An-Najah National University*, Palestine, GPA: 83.4% (Very Good).

2000–2001 **High School Certificate (Scientific Branch)**, *Jenin Secondary School*, Palestine, GPA: 88.2%.

International Internships and Mobility

Jun 2023 **Erasmus+ Staff Training Mobility (Cross-Cultural Communication and International Networking.)**, *University of Warsaw*, Poland, Funded by Erasmus+.

Jun–Aug 2019 **Research Internship in Big Data**, *Paris-Sud University*, France, Funded by Erasmus+.

Jun–Jul 2009 **Vocational Training in Networking Technology**, *Korea University of Technology and Education*, South Korea, Funded by KOICA.

Work Experience

Sep 2025–Present **Assistant Professor**, *An-Najah National University*, Faculty of IT and AI, Nablus, Palestine.

Oct 2020–Sep 2025 **Scientific Researcher in Artificial Intelligence**, *Forschungszentrum Jülich*, Institute for Advanced Simulation (IAS), Germany.

- Conducted research on AI solutions for crowd dynamics, enhancing public safety and comfort in urban environments.
- Collaborated with international multidisciplinary teams to develop practical real-world applications.
- Supervised student projects focused on intelligent systems to improve safety and quality of life.
- Published research outcomes in peer-reviewed journals and conferences.

2019–2020 **Part-Time Lecturer**, *Management Information Systems Department*, An-Najah National University, Palestine.

2008–2020 **Research and Teaching Assistant, Web Developer, and Trainer**, *An-Najah National University*, Palestine.

2010–2012 **IT Specialist (International Project)**, *World Bank-funded project: Enhancing Technology Education and Establishing Multimedia Educational Resources Center*, An-Najah National University, Palestine.

2008–2009 **Moodle Administrator and Training Coordinator (International Project)**, *World Bank-funded project: Learning Innovation Teams*, An-Najah National University, Palestine.

2006–2008 **Research and Teaching Assistant**, *Information Technology Department*, An-Najah National University, Palestine.

Awards and Scholarships

2025 **Second Poster Prize**, *Vision AI for Crowd Analysis, IAS Retreat*, Forschungszentrum Jülich, Germany.

2024 **Research Excellence Award (for 2023)**, *An-Najah National University*, Nablus, Palestine.

2023 **Best Presenter Award**, *CompAuto 2023 (Computers and Automation)*, Paris, France.

2023 **Palestinian Islamic Bank Award for Scientific Research**, Palestine.

2020–2023 **PhD Scholarship**, *German Federal Ministry of Education and Research (BMBF)*, Funding No. 01DH16027.
Palestinian-German Science Bridge

2003–2006 **Tuition Fee Award**, *An-Najah National University*, Palestine.

Journal Publications

- Xu, Q., Üsten, E., **Alia, A.**, He, B., Guo, R., and Chraibi, M. "Hybrid machine learning and physics-based modeling of pedestrian pushing behaviors." *Transportation Research Part C: Emerging Technologies* (2026), Accepted. **[IF: 7.9]**
- Abubaker, M., Alsadder, Z., Abdelhaq, H., Boltes, M., and **Alia, A.** "RPEE-Heads Benchmark: A Dataset and Empirical Comparison of Deep Learning Algorithms for Pedestrian Head Detection in Crowds." *IEEE Access* (2025), Accepted. **[IF: 3.4]**
- **Alia, A.**, Maree, M., Chraibi, M., and Seyfried, A. "A Novel Voronoi-based Convolutional Neural Network Framework for Pushing Person Detection in Crowd Videos." *Complex & Intelligent Systems* (2024), Accepted. **[IF: 5.8]**
- **Alia, A.**, Maree, M., Chraibi, M., Toma, A., and Seyfried, A. "A Cloud-Based Deep Learning Framework for Early Detection of Pushing at Crowded Event Entrances." *IEEE Access*, 11 (2023): 45936–45949. **[IF: 3.476]**

- **Alia, A.**, Maree, M., and Chraibi, M. "A Hybrid Deep Learning and Visualization Framework for Pushing Behavior Detection in Pedestrian Dynamics." *Sensors*, 22(11) (2022): 4040. **[IF: 3.874]**
- **Alia, A.**, and Taweel, A. "Enhanced Binary Cuckoo Search With Frequent Values and Rough Set Theory for Feature Selection." *IEEE Access*, 9 (2021): 119430–119453. **[IF: 3.476]**
- **Alia, A.**, Maree, M., and Chraibi, M. "On the exploitation of GPS-based data for real-time visualisation of pedestrian dynamics in open environments." *Behaviour & Information Technology* (2021): 1–15. **[IF: 3.32]**
- **Alia, A.**, and Taweel, A. "Feature selection based on hybrid binary cuckoo search and rough set theory in classification for nominal datasets." *International Journal of Information Technology and Computer Science*, 4 (2017): 65–75.

Conferences

- **Alia, A.**, Maree, M., and Chraibi, M. "A Dynamic Distance Social LSTM for Predicting Pedestrian Trajectories in Crowded Environments." *MadeAI 2025*, Porto, Portugal, 7–11 Jul 2025. (Talk)
- Helmholtz AI Conference 2025, Karlsruhe, Germany, 03–05 Jun 2025. (Attending)
- Abubaker, M., Alsadder, Z., Abdelhaq, H., Boltes, M., and **Alia, A.** "A Novel Dataset for Detecting Pedestrian Heads in Crowds Using Deep Learning Algorithms." *TGF24*, Lyon, France, 2–5 Dec 2024. (Talk)
- Helmholtz AI Conference 2024, Düsseldorf, Germany, 12–14 Jun 2024. (Attending)
- **Alia, A.**, Maree, M., and Chraibi, M. "Artificial Intelligence-based Early Pushing Detection in Live Video Streams of Crowds." *CompAuto 2023*, Paris, France, 07–09 Dec 2023. (Talk)
- **Alia, A.**, Maree, M., and Chraibi, M. "A Novel Voronoi-based CNN Approach for Crowd Video Analysis and Pushing Person Detection." *Helmholtz AI Conference 2023*, Hamburg, Germany, 12–14 Jun 2023. (Talk)
- **Alia, A.**, Maree, M., and Chraibi, M. "DL4PuDe: Deep-Learning Framework for Pushing Detection in Pedestrian Dynamics." *deRSE23*, Paderborn, Germany, 20–22 Feb 2023. (Talk)
- **Alia, A.**, Maree, M., and Chraibi, M. "A Fast Hybrid Deep Neural Network Model for Pushing Behavior Detection in Human Crowds." *AICCSA 2022*, Abu Dhabi, UAE, 5–7 Dec 2022. (Conference Paper and Talk)
- **Alia, A.**, Maree, M., and Chraibi, M. "A Real-Time Neural Network-based System for Pushing Detection in Crowded Event Entrances." *Traffic and Granular Flow*, IIT Delhi, India, 15–17 Oct 2022. (Talk)
- **Alia, A.**, Maree, M., Haensel, D., Chraibi, M., Lügering, H., Sieben, A., and Üsten, E. "Two Methods for Detecting Pushing Behavior from Videos: A Psychological Rating System and a Deep Learning-based Approach." *PED2021*, Melbourne, 29–30 Nov 2021. (Talk)
- Challenges & Practices of Pedagogy & Instructional Technology Conference, American University in Cairo, Egypt, 11–15 Mar 2012. (Attending)

Teaching Courses

Instructor	Machine Learning; Data Mining; Introduction to Probability; Web Programming I; Web Programming II; Scientific Research.
Teaching Assistant	Database I; Database II; Programming in Computer I; Programming in Computer II; Information Retrieval; Android Application Development; Introduction to Computer Science; Data Structures; Object-Oriented Programming; Data Mining.
Trainer	PHP & MySQL; Oracle SQL; Primavera Project Management; ICDL; Android Application Development.

Supervision

2025/2026 **Undergraduate Project Supervision (MIS Department)**, *An-Najah National University*, Faculty of IT and AI, Nablus, Palestine.
Supervised 9 undergraduate graduation projects.

2020–2024 **Student Supervision and Mentoring in AI & Computer Vision**, *Forschungszentrum Jülich (IAS)*, Jülich, Germany.
Supervised and mentored 2 students on AI research projects in deep learning and video analytics.

2023–2025 **AI Internship Project Supervision**, *Forschungszentrum Jülich (IAS)*, Jülich, Germany.
Supervised 4 AI internship projects in computer vision and video analytics.

GitHub Repositories

2024 VCNN4PuDe: `https://github.com/PedestrianDynamics/VCNN4PuDe`

2023 CloudFast-DL4PuDe:`https://github.com/PedestrianDynamics/CloudFast-DL4PuDe`

2022 DL4PuDe: `https://github.com/PedestrianDynamics/DL4PuDe`

Computer Skills

AI and Data Science	Apache Spark (Scala), TensorFlow, Keras, LangChain, NumPy, Pandas, OpenCV, RapidMiner, Weka
Programming	Python, C++, Java, Scala, PHP
Web	HTML, XML, CSS, JavaScript, RDF, RDFS, RDFa, OWL, SPARQL, Ontology
Databases	Oracle, SQLite, MySQL

Languages

Arabic	Native
English	Very Good
German	Basic

References

Available upon request.