UNIVERSITY OF WARWICK

Job Description – Project Engineer

Job title	Project Engineer – AI and Human Factors for Automation
Department	WMG
Grade	6

Job purpose (a brief summary of the role)	To assist in the delivery of project milestones and associated scalable deliverables. The candidate will be required to: 1. Research, build and test AI models for smart automation systems and robotics, spanning areas such as perception (detection, segmentation, 3D understanding), decision-making, prediction, and autonomous control. 2. Undertake data collection and processing to deliver high-quality, robust AI systems for a) proof of concept and b) pre-commercial prototype (TRL 7) applications. 3. Deploy AI models on edge computing devices and integrate them with robotic and automation systems operating in real-world agricultural environments. 4. Collaborate with human factors research lead and cross-functional teams across fault detection and predictive maintenance work to ensure machine learning models yield interpretable, explainable, and actionable outputs for field technicians and system operators.
Duties and responsibilities	• Design, build, test and validate AI models and algorithms, including machine learning, deep learning and computer vision approaches, to meet specific hardware specifications and workflow demands. • Assess project needs and propose specialised AI solutions, from proof of concept through to validation. Experience creating proof of concept and prototype designs at TRL 5–7 level. • Integrate explainability into machine learning architectures (e.g. time-series, anomaly detection, and predictive models) so that fault detection and maintenance alerts provide quantitative explanations to assist engineering diagnosis. • Work alongside human factors specialists to design, test, and validate user interfaces and diagnostic displays, ensuring model outputs meet practical usability and trust standards in operational environments. • Implement 'human-in-the-loop' feedback mechanisms and adaptive alerting strategies that incorporate feedback from field operators and technicians to calibrate model confidence and alert thresholds. • Deploy models for real-time, embedded or field-based applications. Familiarity with ONNX, TensorRT, Docker and Linux. • Lead and contribute to drafting high-quality peer-reviewed journal papers, conference presentations, and technical reports to disseminate research findings.

Person Specification

The Person Specification focuses on the essential and desirable knowledge, skills, experience and qualifications required to undertake the role effectively. This is measured by (a) Application Form, (b) Test/Exercise, (c) Interview, (d) Presentation.

Essential Criterion No.	Essential Criterion Description	Measured by
E1	An honours degree or postgraduate qualification in Computer Science, Data Science, AI, or a closely related discipline.	A
E2	Solid mathematical foundation, including linear algebra, optimisation, and statistics.	A & C
E3	Strong background in applied AI and machine learning, with demonstrable expertise in one or more of: computer vision, sensor/time-series data analysis, predictive modelling, or reinforcement learning.	A,C & D
E4	Ability to initiate, plan, organise, implement and deliver work programmes to tight deadlines, along with the ability to effectively report progress against plan to project stakeholders.	A & C
E5	Good interpersonal skills, with the ability to work independently and as part of a team on research programmes.	A & C
E6	Good effective communication (oral and written) skills, presentation, and commitment.	A,C & D
E7	Good problem-solving skills, with experience in systematic approaches to implement continuous process improvements.	A & C
E8	A strong capacity to act upon their initiative with a flexible approach to work, and ability to prioritise tasks.	A & C
E9	Demonstrated understanding of, or strong interest in applying, Explainable AI (XAI) principles and human-in-the-loop machine learning methodologies.	A & C

Desirable Criterion No.	Desirable Criterion Description	*Measured by*
D1	Ability to deliver fast and commercially focused results.	A & C
D2	A range of quantitative and qualitative research skills.	A & C
D3	AI engineering experience within robotics applications in agriculture, manufacturing, or other fields.	A,C & D
D4	Experience collaborating with human factors researchers or participating in user interface (UI/UX) and usability validation for robotic or automated systems.	A, C & D
D5	Familiarity with developing diagnostic dashboards, alerts, or operator interfaces for field-deployed technology.	A & C

Job Description – Research Fellow

Job title	Research Fellow – AI and Human Factors for Automation
Department	WMG
Grade	6

Job purpose (a brief summary of the role)	To assist in the delivery of project milestones and associated scalable deliverables. The candidate will be required to: 5. Research, build and test AI models for smart automation systems and robotics, spanning areas such as perception (detection, segmentation, 3D understanding), decision-making, prediction, and autonomous control. 6. Undertake data collection and processing to deliver high-quality, robust AI systems for a) proof of concept and b) pre-commercial prototype (TRL 7) applications. 7. Deploy AI models on edge computing devices and integrate them with robotic and automation systems operating in real-world agricultural environments. 8. Collaborate with human factors research lead and cross-functional teams across fault detection and predictive maintenance work to ensure machine learning models yield interpretable, explainable, and actionable outputs for field technicians and system operators.
Duties and responsibilities	• Design, build, test and validate AI models and algorithms, including machine learning, deep learning and computer vision approaches, to meet specific hardware specifications and workflow demands. • Assess project needs and propose specialised AI solutions, from proof of concept through to validation. Experience creating proof of concept and prototype designs at TRL 5–7 level. • Integrate explainability into machine learning architectures (e.g. time-series, anomaly detection, and predictive models) so that fault detection and maintenance alerts provide quantitative explanations to assist engineering diagnosis. • Work alongside human factors specialists to design, test, and validate user interfaces and diagnostic displays, ensuring model outputs meet practical usability and trust standards in operational environments. • Implement 'human-in-the-loop' feedback mechanisms and adaptive alerting strategies that incorporate feedback from field operators and technicians to calibrate model confidence and alert thresholds. • Deploy models for real-time, embedded or field-based applications. Familiarity with ONNX, TensorRT, Docker and Linux. • Lead and contribute to drafting high-quality peer-reviewed journal papers, conference presentations, and technical reports to disseminate research findings.

Person Specification *The Person Specification focuses on the essential and desirable knowledge, skills, experience and qualifications required to undertake the role effectively. This is measured by (a) Application Form, (b) Test/Exercise, (c) Interview, (d) Presentation.*		
Essential Criterion No.	Essential Criterion Description	Measured by
E1	PhD-level qualification in Computer Science, Data Science, AI, or a closely related discipline.	A
E2	Solid mathematical foundation, including linear algebra, optimisation, and statistics.	A & C
E3	Strong background in applied AI and machine learning, with demonstrable expertise in one or more of: computer vision, sensor/time-series data analysis, predictive modelling, or reinforcement learning.	A,C & D
E4	Ability to initiate, plan, organise, implement and deliver work programmes to tight deadlines, along with the ability to effectively report progress against plan to project stakeholders.	A & C
E5	Good interpersonal skills, with the ability to work independently and as part of a team on research programmes.	A & C
E6	Good effective communication (oral and written) skills, presentation, and commitment.	A,C & D
E7	Good problem-solving skills, with experience in systematic approaches to implement continuous process improvements.	A & C
E8	A strong capacity to act upon their initiative with a flexible approach to work, and ability to prioritise tasks.	A & C
E9	Demonstrated understanding of, or strong interest in applying, Explainable AI (XAI) principles and human-in-the-loop machine learning methodologies.	A & C
E10	A demonstrable track record of authoring and publishing high-quality peer-reviewed academic publications and presenting at international research conferences.	A

Desirable Criterion No.	Desirable Criterion Description	*Measured by*
D1	Ability to deliver fast and commercially focused results.	A & C
D2	A range of quantitative and qualitative research skills.	A & C
D3	AI engineering experience within robotics applications in agriculture, manufacturing, or other fields.	A,C & D
D4	Experience collaborating with human factors researchers or participating in user interface (UI/UX) and usability validation for robotic or automated systems.	A, C & D
D5	Familiarity with developing diagnostic dashboards, alerts, or operator interfaces for field-deployed technology.	A & C