Md Jahid Hasan

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Summary

Applied AI researcher with over five years of experience building, deploying, and evaluating machine learning and agentic AI systems across research and industry environments. Awarded a PhD in Business Information Systems from RMIT University in May 2026, completed through an industry-embedded programme with Carsales.com Ltd, culminating in a multi-agent architecture for automated vehicle damage assessment. Currently a Research Fellow at RMIT, building cloud-native analytics pipelines on AWS and designing multi-agent orchestration for the Advanced Air Mobility project. Experienced in engaging researchers and stakeholders to translate complex requirements into practical cloud-based solutions, and in deploying AI models, analytics pipelines, and production-grade agent workflows to deliver data-driven research outcomes.

Professional Experience

Feb 2026 – Present **Research Fellow in Data Science and Geospatial Analytics**, *RMIT School of Engineering, RMIT University*, Melbourne, Australia

- Developing the geospatial core of the Advanced Air Mobility analytics project with PySpark and Apache Sedona, producing origin–destination models and mobility flow analysis across Australian regional geographies from large-scale spatiotemporal datasets.
- Translating complex research requirements into practical solutions across EC2, EMR, Athena, and SageMaker, keeping these pipelines fit for purpose and optimised for performance and cost.
- Designing a multi-agent orchestration architecture (LangChain, LangGraph, Claude Agent SDK) over the existing workflow, decomposing it into specialised agents for data ingestion, distributed OD extraction, and demand estimation across large-scale mobility and freight datasets.
- Extending the architecture to the delivery layer with agents for visualisation, freight analysis, and reporting, regenerating the stakeholder figure catalogue and drafting milestone reports under quality gates and human-in-the-loop checkpoints based on real programme incidents.

Sep 2022 – Jan 2026 **Data Science and Computer Vision Researcher**, *Carsales.com Ltd*, Melbourne, Australia

- Built and maintained end-to-end machine learning pipelines for vehicle condition assessment and pricing, applying feature engineering, regression modelling, and structured evaluation frameworks that formed the analytical foundation of the programme.
- Advancing from these pipelines, designed and deployed CarDVLM, an end-to-end vision-language model integrating object detection with structured reasoning for automated vehicle damage assessment, delivering a production-ready multimodal AI system.
- Scaled this system into production with AWS and Metaflow inference workflows, reducing automated assessment time from 20 to 6 minutes and increasing operational throughput by 1.4×.
- Delivered a multi-agent architecture, orchestrated via LangChain and LangGraph, in which a supervisor agent routes queries to specialist agents for object detection, vision-language reasoning, damage classification, cost estimation, fraud detection, and conversational memory.

Education

Sep 2022 – May 2026 **PhD in Business Information Systems**, *Royal Melbourne Institute of Technology (RMIT) University*, Australia. (Awarded May 2026)

Industry-embedded PhD jointly supervised by RMIT University and Carsales.com Ltd, advancing multimodal AI for intelligent vehicle assessment. Developed CarDNet, GroundingCarDD, and CarDVLM, progressing from object detection to end-to-end vision-language modelling for vehicle damage type, location, and severity analysis. Curated benchmark datasets and developed the CarDamageEval evaluation framework integrating structured accuracy and semantic quality metrics. Contributed to collaborative research across biomedical imaging, finance, and healthcare domains. Authored five first-authored publications in PhD including three Scimago Q1 journal papers.

Academic Experience

- **Postgraduate Research Co-Supervisor, Aviation Master's Program at *RMIT University***. Co-supervising a postgraduate research project applying AI methods to a real-world aviation challenge, within a joint supervisory team. Commencing 2026.

- **Aviation Industry Project (2650), Group Supervisor at *RMIT University***. Supervising five student research groups, approximately 20 students, through applied research projects addressing real-world aviation industry challenges.

- **Advanced Business Analytics (ISYS3449), Teaching Assistant at *RMIT University***. Delivered tutorials and workshops on data preparation, visualisation, and machine learning methods using Python and AI Studio. Guided students in model development, evaluation, and advanced analytics topics.

- **Business IT Infrastructure (INTE2043), Teaching Assistant at *RMIT University***. Facilitated labs on IT infrastructure and cloud systems, including Linux administration, networking, and server deployment. Introduced advanced topics such as virtualisation, containers, IoT, and APIs.

Selected Publications (*Google Scholar*)

2025 **Md Jahid Hasan**, Hamed Jahani, Yee Ling Boo and Kok-Leong Ong; CarDamageEval: Benchmark Evaluation of Car Damage Assessment Using Vision Language Models, Proceedings of the 23rd Australasian Data Science and Machine Learning Conference (AusDM'25)(*Project Page*).

2025 **Md Jahid Hasan**, Kha Cong Nguyen, Hamed Jahani, Yee Ling Boo and Kok-Leong Ong; Vehicle Damage Detection Using Artificial Intelligence: A Systematic Literature Review, In *Proceedings of WIREs Data Mining Knowl Discov, 15: e70027. https://doi.org/10.1002/widm.70027* **(Scimago Q1, Impact Factor: 11.7).**

2025 **Md Jahid Hasan**, Mahmudul Hasan, Sumya Akter, Abu Bakar Siddique Mahi, Md Palash Uddin; Enhancing Brain Tumor Classification with a Novel Attention Based Explainable Deep Learning Framework, In *Proceedings of Biomedical Signal Processing and Control, Volume 112,https://doi.org/10.1016/j.bspc.2025.108636(Project Page).*

2024 **Md Jahid Hasan**, Agustinus Nalwan, Kok-Leong Ong, Hamed Jahani, Yee Ling Boo and Kha Cong Nguyen; GroundingCarDD: Text-Guided Multimodal Phrase Grounding for Car Damage Detection, In *Proceedings of IEEE Access, vol. 12, pp. 179464-179477, 27 Nov. 2024. DOI: 10.1109/ACCESS.2024.3506563 (Project Page).*

Selected Projects (Open Source)

- **Agent Evaluation and Grounding Toolkit** (*PromptProof*, *AgentProof*, *GroundProof*). AgentProof is a framework-free agent runtime of around 1,500 lines with gate-checked tool use, crash-safe tracing, and a CI regression gate using an LLM-as-judge across 90+ tests. PromptProof adds a self-correcting prompting engine that verifies claims against real sources. GroundProof, built on AgentProof, is a corrective RAG system with time-aware retrieval and deterministic supersedence rules, cutting prompt tokens by 62 per cent while preserving evidence retention.

- **Production Multi-Agent Systems and Deployment** (*UDA-Hub*, *CICDAgent*). UDA-Hub is a multi-agent system using a LangGraph Supervisor pattern across six agents, with an escalation gate for low-confidence human handoff. CICDAgent handles CI/CD, taking a containerised agent from commit to AWS deployment with keyless OIDC authentication and integrated security scanning.

- **Applied Portfolio** (*View portfolio*).

Interactive origin-destination and freight demand exploration tools for regional corridor feasibility screening, including integration with the CSIRO TraNSIT road freight benchmarking platform. Also includes OD Explorer tools using passenger mobility data inspired by *VISTA*, analysing origin-destination passenger flows, temporal travel patterns, and distance-based corridor screening across Victoria to support AAM feasibility planning.

Core Technical Expertise

Agentic AI	LangChain, LangGraph, Claude Agent SDK, RAG, MCP, Multi-agent Orchestration.
MLOps	AWS, Git, Metaflow, MLflow, DVC, GitHub Actions, Docker, CI/CD, FastAPI.
AI / ML	Computer Vision, Multimodal AI, LLMs, VLMs, LLM Fine-tuning, Data Science.
Big Data	PySpark, Parquet, Distributed Geospatial Processing, Origin-Destination Modelling.
Programming	Python, TypeScript, Pydantic, SQL, PyTorch, TensorFlow, Scikit-learn, Pandas.

Grants & Funding

Industry Grant (RMIT–Carsales, PRJ00000694), *Supported the development of Grounding-CarDD and CarDVLM for an automated car damage assessment system.*

RACE AWS Merit Allocation Scheme (RMAS), *Awarded four consecutive rounds of AWS cloud computing credits from RACE AWS Merit Allocation Scheme (RMAS), covering the period from January 2025 to December 2026, to support large scale data preparation, model training, and multi-agent system development.*

Professional Credentials & Achievements

- **Agentic AI Engineer with LangChain and LangGraph; Agentic AI (*Udacity Nanodegree Program*)**. Covering LangGraph agent orchestration, retrieval augmented generation, human-in-the-loop workflows, multi-agent architecture and routing, tool calling, state and memory management, and agentic retrieval augmented generation with evaluation loops.

- **Machine Learning DevOps Engineer; Data Scientist (*Udacity Nanodegree Program*)**. Covering production machine learning pipelines, automated retraining, drift monitoring, continuous integration and deployment, API deployment with FastAPI, MLflow, and GitHub Actions, CRISP-DM, natural language processing, recommendation systems, and software engineering for data science.

- Awarded the PhD **HDR Certificate of Excellence** by RMIT University in 2025 in recognition of outstanding research achievement in Information Systems and Business Analytics.

- Research outputs have received more than **500 citations**, with an **h-index of 12** and **i10-index of 14** according to *Google Scholar*.

- Elected **HDR Candidate Representative**, College of Business and Law, RMIT University, contributing to academic governance, research policy discussions, and HDR community engagement.

Reference

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