Luca Lowndes

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first year engineering/comp sci student passionate
about machine learning, full stack dev, and road bike riding

EDUCATION

Monash University	Melbourne, Victoria
Bachelor Of Engineering and Computer Science	*Feb. 2025 – Dec. 2029*
Stanford University	Online
Machine Learning Specialization - Andrew. Ng	*Feb. 2024 – Feb. 2025*
Deep Learning.AI	Online
Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization	*Feb. 2025 – Feb. 2025*
DeepLearning.AI	Online
Structuring Machine Learning Projects - Andrew. Ng	*Feb. 2025 – Feb. 2025*
AIE	Melbourne, Victoria
Certificate III in Information Technology	*Jan. 2023 – Nov. 2024*
Harvard University	Online
CS50x - Harvard University Introduction To Computer Science	*May. 2022 – June 2022*
Life Saving Victoria	Melbourne, Victoria
Bronze Medallion	*Jan. 2022 – June. 2022*
Elwood College	Melbourne, Victoria
Dux. Mathematical Methods	*Jan. 2019 – Dec. 2024*

PROJECTS

- **UniHack 2025 - Growth Garden - First Place - Youngest Ever Winner - Largest Student Hackathon In Australia**: I competed in Uni hack 2025, the largest student hackathon in Australia, where I placed first out of more than 850 participants, making me the youngest ever winner of the largest student hackathon in Australia. We created Growth Garden, a tool that aims to make improving your life easier through
- **MNIST Interactive Model Analyzer**: An interactive tool for experimenting with MNIST handwriting recognition models using a custom-built 28x28 drawing grid.

EXPERIENCE

Monash Deep Neuron	Monash University
AI and HPC Technical Team Member	*Feb 2025 - Present*

- **Overview**: As a member of the AI, HPC, and Education team at Monash Deep Neuron, I specialize in Neural Cellular Automata (NCA), an emerging approach to self-organizing systems inspired by traditional cellular automata but augmented with neural networks. Whilst simultainously educating students on how AI works and how they can use it to further their education.
- **My Role within AI and HPC**: My role involves working closely with research papers, implementing cutting-edge methodologies using PyTorch, and leveraging WebGL and various APIs to develop and optimize NCA models. Through our work, we are exploring the ways in which NCA can be used to model Embryo development, simulating early life. My role within this specializes in looking at new ways we can optimize the system, whether that be through on-device optimisation, and cost-function optimization.
- **My Role within Education and Outreach**: My role involves educating students on how Artificial Intelligence (AI) works under the hood, along with educating them on they can best leverage AI to further their education.

Freelance Software Engineer	Hybrid
Enhaning user experiences through AI integration	*Jan 2025 - Present*

- **Scag Australia**:

- * **Designed & built the "Scag Mechanic" AI agent**: Engineered conversational prompts and knowledge-retrieval pipelines to compare mower models, troubleshoot issues, and recommend service schedules based on run-hours and parts usage.
  - * **Structured & secured proprietary data**: Consolidated multiple data sources (sales pocket guide, blades guide, official Australian warranty document), enforced Australian-first precedence, and restricted the model to `scag.com/scagaustralia.com.au` to maintain a single source of truth.
  - * **Integrated AI into web channels**: Advised on and prototyped both in-site chat and mobile-optimized AI pages for `scagaustralia.com.au`, ensuring seamless UX on phones and desktop.
  - * **Embedded brand persona & legal safeguards**: Defined persona rules reinforcing the "Scag Family" values of care and uptime, prominently surfaced safety and warranty reminders, and added disclaimers for non-Scag brands (e.g., Toro).
  - * **Stakeholder collaboration & knowledge transfer**: Liaised directly with senior leadership (COO & team), delivered test scripts and evaluation questions, and provided handover documentation for ongoing tuning and expansion.
- ○ **International Mowers**:
  - * **Developed the "IM Advisor" AI assistant**: Crafted conversational flows and retrieval mechanisms to help users select the right mower, compare international vs. local models, and surface key specs for various terrains.

  - * **Unified global product data**: Aggregated multiple datasheets (model specs, parts catalogues, service intervals) from internationalmowers.com and regional partners, normalizing formats and ensuring up-to-date availability.
  - * **Embedded into web and mobile**: Prototyped an embeddable chat widget and a standalone mobile-friendly advice page, preserving responsive design and low bandwidth usage for field technicians.
  - * **Reinforced brand identity and compliance**: Enforced "International Mowers" tone of expert support, highlighted safety warnings, warranty terms, and regional service contacts, with disclaimers for models not sold locally.
  - * **Cross-functional collaboration**: Worked closely with sales, operations, and support teams to refine FAQs, validate AI responses, and produce handover guides for ongoing maintenance.

- **Domino's**

  Day Manager *Dec 2023 - Current*

  - ○ **Overview**: As Day Manager at Domino's Brighton, I ensured timely deliveries in high-pressure situations while maintaining exceptional customer service to enhance franchisee satisfaction and profitability.

PROGRAMMING SKILLS

- **Languages**: Python, Javascript, C, C++, C, Typescript, HTML, CSS, Latex   **Technologies**: AWS, Unity, Tensorflow, PyTorch, Numpy, .Net, Unity, Unreal Engine