Jiyao Pu

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PROFESSIONAL SUMMARY

PhD in Machine Learning from Durham University with hands-on experience in rule generation, reinforcement learning, NLP, LLM applications, and multi-agent systems. Developed the Strategy Evaluation Rule (SER) framework integrating neural rule generation, simulation, and social-metric evaluation, delivering adaptive and scalable AI solutions. Skilled in Python, PyTorch, TensorFlow, LangChain, AWS/GCP, and deploying ML pipelines in production environments. Seeking AI/ML Engineer roles to apply research expertise in building intelligent, efficient, and user-centric AI products. Holding a 3-year UK PSW visa (valid until 2028).

EDUCATION

- **Durham University** — *Mar 2021 - Jun 2025*
  PhD in Machine Learning — Durham, UK

- **Newcastle University** — *Sep 2019 - Sep 2020*
  MSc in Computer Science — Newcastle, UK
  ◦ Grade: 76.6%

- **University of Electronic Science and Technology of China** — *Sep 2012 - Jun 2016*
  BSc in Electronic Science and Technology — Chengdu, China

EMPLOYMENT EXPERIENCE

- **Application Solutions Manager** — *Jul 2016 - Mar 2019*
  China Mobile Communications Group Yunnan Co., Ltd., Chuxiong Branch, Enterprise & Government Client Department
  ◦ Supported bid and tender preparation by managing documentation, maintaining version control, and collaborating with internal teams on proposal submissions.
  ◦ Managed and promoted enterprise product offerings, including intelligent TV set-top boxes, tailoring application solutions for government and corporate clients.
  ◦ Designed and documented scalable workflows and solution specifications to improve deployment efficiency and service onboarding.
  ◦ Organised and delivered product training sessions for branch staff to enhance their proficiency with enterprise solutions.

SKILLS

- **Programming Languages:** Python, C, C++, C#, Java, JavaScript, HTML, CSS, PHP, SQL, Shell.
- **Platform:** Linux, Unity, Unreal Engine 5, Godot Engine, AWS, GCP, Windows.
- **AI:** Reinforcement learning, Zero-shot learning, Few-shot learning, Generative models, Contrastive learning, Deep learning, Large Language Models (LLMs)
- **Tools:** PyTorch, TensorFlow, LangChain, Git, Docker, Kubernetes.
- **Hardware & Embedded Systems:** MSP430, Raspberry Pi, Electric Wheelchair Platform, EEG, Mechanical Arm Car Platform, Camera Modules, Sensor Integration, Motor Drivers, DSP, FPGA, Controllers.

PROJECTS

- **AI Talent Bench** — *Feb 2025 – Jun 2025*
  Web Technologies, LLM, Task Generation Framework
  ◦ Architected and implemented a web-platform prototype for MXM's AI Talent Bench, enabling companies to upload job descriptions and configure training and assessment workflows.
  ◦ Extended "Rule Generation Networks" framework to develop a Task Generator that ingests job descriptions, seed metrics, and seed datasets (Google stock data, Geometric Brownian motion, Beijing air quality), producing parametrised, labelled time-series tasks with justifications.
  ◦ Led MXM's Durham team in prototype development and drafted all AWS competition documentation.

- **Digital Twin Dreamscape** — *Jun 2023 - Dec 2023*
  Raspberry Pi, Python, Unity, Web/Mobile Technologies, OpenCV, Reinforcement Learning
  ◦ Developed an integrated control system for real-time video streaming and remote control via web/mobile interfaces.
  ◦ Implemented a digital twin in Unity that mirrors the physical car's movements, achieving synchronised control between virtual and physical spaces.
  ◦ Created a proportional virtual model of the robotic arm car and incorporated target recognition pipelines with OpenCV, ensuring accurate digital representation.

- Applied reinforcement learning techniques to train an intelligent agent for autonomous control of the virtual car, optimising performance through real-time feedback.

- **EyeGaze Smart Wheelchair** *Jul 2022 - Dec 2022*
  Electric Wheelchair Platform, Camera Module, Python, OpenCV, Eye-Tracking Algorithms
  - Developed a vision module integrated with a traditional electric wheelchair, capturing real-time eye images via a camera sensor.
  - Implemented eye-tracking algorithms using OpenCV to analyse gaze data and translate it into control commands for wheelchair movement.
  - Created a responsive interface linking the visual sensor input to the wheelchair's control system, ensuring intuitive navigation.
  - Applied real-time image processing techniques to achieve accurate eye movement detection, enhancing the overall system performance.

- **Laser Beam Combining via LCOPA Control** *Sep 2014 - Jun 2015*
  FPGA, DSP, LCOPA, VHDL, Image Processing, Target Recognition
  - Developed a hardware control system integrating FPGA-based video acquisition for real-time image capture.
  - Implemented DSP-based video processing algorithms for efficient target recognition.
  - Created the LCOPA (Liquid Crystal Optical Phased Array) control module, ensuring precise optical phase adjustments.
  - Applied advanced image processing techniques to optimise laser beam combining performance.

PUBLICATIONS C=CONFERENCE, J=JOURNAL, T=THESIS

[J.1] Pu, J., Duan, H., Zhao, J. and Long, Y., 2023. Rules for Expectation: Learning to Generate Rules via Social Environment Modelling. IEEE Transactions on Circuits and Systems for Video Technology.

[C.1] Gao, R., Wan, F., Organisciak, D., Pu, J., Duan, H., Zhang, P., Hou, X. and Long, Y., 2023. Privacy-enhanced zero-shot learning via data-free knowledge transfer. In 2023 IEEE International Conference on Multimedia and Expo (ICME) (pp. 432-437). IEEE.

[T.1] Pu, J., 2025. Hybrid Intelligence in Evolving Games: Automated Rule Design, Strategy Evolution, and Evaluation Optimisation for Intelligent Societies. PhD thesis, Durham University.

MANUSCRIPTS IN PREPARATION S=IN SUBMISSION, M=MANUSCRIPT

[M.1] Triadic Reciprocal Dynamics: The AI Framework for Social Rule Evolving. Plan to submit *Nature Machine Intelligence* for consideration.

[M.2] Integrating Extrinsic and Flow Intrinsic Rewards for Adaptive Rule Generation in Dynamic Environment. Plan to submit *Nature Humanities and Social Sciences Communications* for consideration.

[S.1] Flow-Centric Rule Design: Evolving Rules for Optimal Difficulty and AI Skill Balance. Submitted to *ACM Multimedia 2025*.