

Raluca D. Gaina

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Game AI and systems developer with 10+ years of experience designing intelligent systems, gameplay simulations, and scalable technical architectures for games and interactive systems. Co-founder of a startup applying AI to automate playtesting and optimise game design through large-scale simulation. Experienced in building maintainable systems, driving technical strategy, collaborating across disciplines, and translating experimental ideas into practical products. Passionate about data-driven iteration, experimentation, and creating robust foundations for long-term game development.

Skills

Game Systems & Architecture	AI & Experimentation	Collaboration & Production
✓ Unity (C#), Java, Python ✓ Gameplay systems design and implementation ✓ Scalable architecture and maintainable code ✓ Prototyping and rapid iteration ✓ Debugging, optimisation, testing	✓ Simulation systems and AI-driven testing ✓ Reinforcement Learning, Evolutionary Algorithms ✓ Proc.I Content Generation ✓ Automated gameplay evaluation ✓ Experiment design and optimisation	✓ Cross-disciplinary collaboration ✓ Game jams and networking ✓ Technical documentation and communication ✓ Code reviews and mentoring ✓ Git / Version control ✓ Translating research into production-ready systems

Experience

Co-founder / Director

Tabletop R&D | 2023 – Present

- Built AI-driven simulation platform for large-scale automatic playtesting and game balancing
- Created digital twins of physical games capable of running thousands of simulations to evaluate gameplay decisions
- Developed reusable systems supporting experimentation and iterative design workflows
- Collaborated closely with designers, publishers, and stakeholders to translate gameplay requirements into technical solutions
- Defined technical roadmap, system architecture, and AI integration strategy
- Leading transition toward scalable SaaS infrastructure and user-facing tools

Game AI Researcher & Lecturer

Queen Mary University of London | 2021 – 2026

- Designed and implemented gameplay systems and AI behaviours in Unity (C#) and Java for game prototyping and analysis
- Led, designed and delivered MSc and BSc courses in Game AI and game development
- Supervised 20+ student projects, many producing playable prototypes and research outputs
- Regularly communicated complex AI and game concepts to diverse audiences
- PhD supervisor and research impact coordinator in IGGI Doctoral Programme

Research & Teaching Roles (AI & Games)

Queen Mary University of London / University of Essex | 2016 – 2021

- Contributed to multiple AI and game-related research projects
- Led development of the open-source Tabletop Games Framework, supporting scalable game simulation, AI experimentation, and collaborative development workflows
- Collaborated across research and industry partnerships (e.g., DSTL, Alan Turing Institute)
- Developed and delivered teaching in AI, game development, and computational creativity
- Developed and prototyped AI-driven systems in game contexts
- Completed research internship at Microsoft Research working on multi-agent reinforcement learning environments
- Collaborated with interdisciplinary teams across academia and industry

Selected AI & Game Projects

1. **AI Playtesting & Simulation Platform (Tabletop R&D).** End-to-end system for modelling, simulating, and analysing board games using AI agents. Based on the **Tabletop Games Framework** (<https://github.com/GAIGResearch/TabletopGames/>), leading innovative research in AI and tabletop board games.
2. **General Video Game AI Research.** Developed planning and decision-making systems using evolutionary algorithms, and led state of the art AI competitions. **Multi-Agent Reinforcement Learning Environments.** Designed and implemented competitive environments for AI benchmarking with Microsoft Research.
3. **Game Development (Unity/C# & Java).** Built multiple playable game prototypes, implementing gameplay mechanics, AI systems, and core game loops, with a focus on rapid prototyping and iteration. Unity (primary), experience adapting to new engines and tools.

Education

- [2021] PhD, Intelligent Games & Game Intelligence – Queen Mary University of London
- [2016] MSc, Computer Games (Distinction) – University of Essex
- [2015] BSc, Computer Games (First Class) – University of Essex

Selected Leadership & Community

- General Chair, IEEE Conference on Games 2026
- Organiser, London Game AI Meetup (2019–2024)
- Chair and reviewer across major AI & games conferences and journals
- Mentoring roles and part of Athena Swan and Women in Games teams

Selected Achievements

- Best Artifact Award, Best PC Member Nomination – AIIDE 2019
- Best Paper Award Nomination – IEEE Conference on Games
- MSc Project Prize and K.F. Bowden Memorial prize (highest marks) – University of Essex
- Multiple competition placements in AI, game development and science communication challenges, including IEEE Present Around the World and IEEE CoG video competitions

Research Publications

A complete list of publications is available at <https://rdgain.github.io/publications>