Robin Leman

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EDUCATION

MSc in Computational Statistics and Machine Learning. UCL, London, UK SEP 2025 - SEP 2026

- **Activities**: Head of ML Tutorials at the UCL AI Society. Organized weekly workshops covering core ML concepts.
- **Coursework**: Probabilistic & Unsupervised Learning (Gatsby), Approximate Inference (Gatsby), Reinforcement Learning (DeepMind), Open-Endedness & General Intelligence (DeepMind), Bayesian Deep Learning, GenAI.

BSc in Physics and Computer Science. McGill University, Montreal, Canada SEP 2019 - MAY 2022

- **CGPA**: 3.82/4.00
- **Activities**: President of GameDev McGill. Led a 10-people team to organize hackathons & events for 100+ members.

RESEARCH EXPERIENCE

Latent Dynamics Representations for Long-Horizon Consistency in World Models JAN 2026 - PRESENT
Supervisor: Jagmohan Chauhan (UCL)

- Investigating hierarchical latent representations and decoupled dynamics to reduce feature drift in world models.

Real Time Visualization of Debris Disks in Scattered Light and Thermal Radiation (BSc Thesis) MAY 2022
Supervisors: Eve J. Lee (McGill), Clark Verbrugge (McGill)

- Researched multi-threaded computational methods for debris disk simulation, rendering 10^7 particles at 60 FPS.

WORK EXPERIENCE

Software Engineer. Electronic Arts, Vancouver, Canada JUL 2023 - SEP 2025

- Designed and implemented a high-performance Entity-Component-System library, optimizing memory layout for cache-efficient data access in highly parallelized simulations.
- Optimized cross-platform networking for fast replication, interpolation and prediction, reducing memory usage.
- Developed a spec-test framework, enabling scalable automated validation and improving system resilience.

Associate Programmer. Relic Entertainment (SEGA), Vancouver, Canada JUN 2022 - JUN 2023

- Developed data-oriented simulation systems, enforcing strict data locality to maximize CPU cache utilization.
- Implemented spatial partitioning and HFSM structures to accelerate nearest-neighbour queries on 1600+ entities.
- Optimized multi-threaded state tree data structures by 25%+, for highly performant squad-based AI systems.

Software Engineer Intern. Microsoft, Vancouver, Canada MAY 2021 - AUG 2021

- Profiled UE5's physics systems, running performance analysis & benchmarks to optimize simulation on Xbox & PC.

Generalist Programmer Intern. Ubisoft, Montreal, Canada JUN 2020 - AUG 2020

- Designed a voxel-based fluid simulation algorithm for real-time buoyancy within a data-oriented architecture.

PERSONAL PROJECTS

Pico-Banana | Python, PyTorch

- Built a 10M-parameter diffusion model (DDPM) featuring a U-Net with sinusoidal embeddings and attention.
- Optimized training stability using an EMA update strategy and a cosine noise schedule to improve sample fidelity.

Cart-Pole Reinforcement Learning Agents | C++

- Implemented PPO and REINFORCE agents from scratch in C++, reaching 500 maximum reward in sub 250 batches.
- Built Adam, SGD, and SGD with momentum optimizers, running comparative analysis on variance and convergence.

Tiny-LLM | Python, PyTorch

- Built and trained a 51M-param transformer in PyTorch, achieving a perplexity of 34 on WikiText-103 after 50k iters.

GPU-Accelerated Raytracer | C++, CUDA, OpenGL

- Built a raytracer with CUDA and OpenGL interoperability, with progressive rendering for real-time visual feedback.
- Implemented anti-aliasing, depth of field, HDR tone mapping, a procedural skybox, and physically-based materials.

SKILLS

Python, PyTorch, C++, CUDA, C, Rust, Bash, Java, C#, TensorFlow, OpenGL, Unreal Engine, Unity, Git, Linux