

Julian Paquerot

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EXPERIENCE

SNU Vision & Learning Lab

Seoul, South Korea

Graduate Student Researcher

September 2022 – September 2024

- Conducted reinforcement learning with human feedback (RLHF) experiments to enhance quality and alignment of unsupervised skill discovery in two embodied environments (iTHOR, Crafter). Fully implemented a graphical skill extraction model in JAX/Flax, achieving a 2–4x increase in training speed. Led lab-wide adoption of JAX, mentoring other researchers and driving ~25% adoption within a year.
- Led the design and development of an embodied reinforcement learning (RL) environment based on AI2THOR. Deployed Docker containers to run Unity simulations on a headless cluster, enabling efficient training of RL agents. Refined task evaluation algorithms, cutting overhead to 1.7% of the raw simulation runtime. Designed 14 complex RL tasks, increasing task completion rates by 80% compared to heuristic-based rewards.

Apex Solutions

Figeac, France

Research Internship

June 2022 – August 2022

- Prototyped a multi-agent simulation environment in Python (Gym/Gymnasium) to model intrusion scenarios in critical infrastructure. Developed a foundational framework still actively used for internal security research.
- Developed RL benchmarks for multi-agent capture-the-flag simulations with realistic limited information-sharing constraints (PyTorch, Stable-Baselines3). Optimized RL algorithms for red team (penetration) and blue team (defense) agents in multi-agent scenarios, improving adversarial training in security simulations.

EDUCATION

Seoul National University, College of Engineering | South Korea

September 2022 – July 2024

Master of Computer Science and Engineering (Double Degree)

- **Master Thesis:** RL-THOR: A Training Ground for Embodied Reinforcement Learning Agents on Compositional Household Tasks
- **Relevant Courses:** Machine Learning (ML), Natural Language Processing (NLP), Probabilistic Graphical Model, Advanced Computer Architecture.
- **Teacher Assistant Work:**
 - **Probabilistic Graphical Model (Graduate):** Designed and graded one midterm exam and regular quizzes for a class of ~40 students.
 - **Discrete Math (Undergraduate):** Designed, administered, and graded a 2-hour final exam and two major homework assignments for ~150 students.

École Nationale Supérieure des Mines de Saint-Étienne | France

September 2020 – September 2024

Master of Data Science; Diplôme d'Ingénieur Civil des Mines (ICM)

- **Relevant Courses:** Probability & Statistics, Statistical learning, Machine learning, Metamodeling and Optimization, Artificial Intelligence, Image Processing, Networks,
- **Award for Community Engagement:**
 - **President, Arts Council (Bureau des Arts):** Directed cultural programming and events, organizing three monthly events, including the school's annual gala featuring over 100 artists. Expanded arts engagement through regular music, dance, and theater classes, doubling participant numbers over one year.
 - **Sports Coordinator, Cartel des Mines 2022:** Directed the logistical and athletic planning of a 4-day inter-school multi-sport competition (14 sports, 1,800+ participants, \$160,000 budget), achieving high participant satisfaction.

PROJECTS

RL-THOR | [GitHub](#) 🐙

- Developed an open-source RL environment using AI2THOR, optimized for embodied AI research with highly customizable complex tasks based on object relations within the scene.

MusicBrainz2Notion | [GitHub](#) 🐙

- Built a CLI app to automate music metadata synchronization between MusicBrainz and Notion, streamlining database updates for music enthusiasts and archivists.

LANGUAGES AND INTERESTS

Language Proficiency: French (native), English (fluent – C1, TEPS 525/600, 2024), German and Korean (intermediate)

Interests: Sport climbing (certified instructor), dancesport (competitions), creative writing and directing