

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. Facilitated lab-wide adoption of the JAX framework by introducing and supporting other researchers in its application, achieving 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-based simulations on a headless cluster, enabling efficient training of RL agents. Optimized task evaluation algorithms, reducing overhead to 1.7% of the raw AI2THOR simulation runtime. Designed 14 complex RL tasks, demonstrating 80% relative improvement in task completion with a predicate-based reward signal.

Apex Solutions

Figeac, France

Research Internship

June 2022 – August 2022

- Initiated the development of a multi-agent environment to simulate intrusion scenarios in critical infrastructure (Python, Gym/Gymnasium). Delivered a base environment still actively used in subsequent research projects.
- Designed and implemented reinforcement learning (RL) benchmarks for multi-agent capture-the-flag simulations with limited information-sharing constraints (PyTorch, Stable-Baselines3). Adapted RL algorithms for red team (penetration) and blue team (defense) agents to optimize performance in multi-agent scenarios.

EDUCATION

Seoul National University, College of Engineering | South Korea

September 2022 – July 2024

Master of Computer Science and Engineering (Double Degree)

- **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 with over 100 individual 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, multi-sport competition with over 1,800 participants from top French engineering schools, and \$160,000 budget with high participant satisfaction.

PROJECTS

RL-THOR | [GitHub](#) 📄

- RL environment using AI2THOR household scenes simulator. Enables researchers to customize the environment and define complex tasks based on relations between objects within the scene. Provides 30+ predefined tasks of varying difficulty level.

MusicBrainz2Notion | [GitHub](#) 📄

- Launched a CLI app to synchronize music metadata databases between MusicBrainz and Notion.

LANGUAGE AND INTERESTS

Languages Proficiency: Fluent in English, native in French, intermediate in German and Korean

Interests: Dance (dancesport, contemporary), sport climbing (instructor), writing and staging productions