Olivier Belan

PhD Student
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Summary

Originally from Paris, a Kent and Epitech graduate, I'm currently advancing my PhD in Artificial Intelligence at the University of Kent, England. My research interests include NeuroEvolution, Spiking Neural Networks, Neuromorphic Computing, and Reinforcement Learning, though I am always keen to expand my knowledge in other areas. I am currently seeking an internship and would be happy to connect and collaborate on innovative projects!

Open Project

Evo-Sim
github.com/OlivierBelan/Evo-Sim

- Evo-Sim, developed from scratch, simulator for Spiking and Artificial Neural Networks, optimized for CPU multi-threading and GPU. Supports diverse evolutionary simulation algorithms and neural network techniques, including GA, NEAT, HyperNEAT, MAP-ELITE, NSLC, CMA-ES, NES, OpenES, ARS, or ES-HyperNEAT.

SNN-Sim
github.com/OlivierBelan/SNN-Sim

- SNN-Sim, an advanced Spiking Neural Network simulator designed in Cython and Python, specifically optimized for evolutionary techniques and CPU multi-threading. It supports various learning paradigms, including supervised and reinforcement learning, and is compatible/optimized with NeuroEvolution algorithms such as NEAT, CMA-ES, NES, among others.

Education

University of Kent — Canterbury, United Kingdom
Philosophiae Doctor, School of Computing — *2021 -*

- Conducting research on NeuroEvolution and Spiking Neural Networks within Neuromorphic systems for Reinforcement Learning challenges, guided by Dr. Dominique Chu and Dr. Marek Grzes.

University of Kent — Canterbury, United Kingdom
Master of Science in Advanced Computer Science (Computational Intelligence) — *2020 - 2021*

- Master thesis: NeuroEvolution and Spiking Neural Network (Distinction), Supervised by Dr. Dominique Chu
- MSc specialized curriculum focusing on Artificial Intelligence (Distinction)

Epitech — Paris, France
Master's Degree, School of Computing — *2020 - 2021*

- Final Project and Dissertation: "Polaris/Toi-même" - Developed an ecosystem for mental disorder research, in collaboration with the Pasteur Institute and Brain and Spine Institute, Paris. Achieved finalist status in a nationwide competition among Epitech schools - (Distinction).

Epitech — Paris, France
Bachelor's Degree, School of Computing — *2017 - 2020*

- Specialized in low-level programming, with a focus on developing a strong foundational skill set in C and C++ languages.

Experience

Researcher & Graduate Teaching Assistant Sep. 2021 –
Univsersity of Kent *Canterbury, United Kingdom*

- Artificial Intelligence and Data Analytics (AIDA) Group: As a contributing member, I engage in research and projects aimed at pushing the boundaries of AI and data analytics, focusing on developing cutting-edge solutions.
- Teaching Assistant: Leading classes for both undergraduate and postgraduate students, covering essential modules such as Cognitive Neural Networks, Programming for AI, Advanced OOP and Functional Programming.

Research and Development Software Developer Jun 2020 - Feb 2022
Pasteur Institute and Brain & Spine Institute *Paris, France*

- "Toi-même" - An ecosystem for mental disorder research, in collaboration with the Pasteur Institute and Brain and Spine Institute, Paris. My role involved dedicating my free time to enhance the software tools of the Toi-même Solution.

Teaching Assistant Sep 2019 - Mar 2020
Web@cademie by Epitech *Paris, France*

- Teaching in Programming and Project Management, developing students professionalism and leadership abilities. Actively supported first and second-year undergraduates towards achieving their career aspirations.

Teaching Assistant Sep 2019 - Mar 2020
Coding academy by EPITECH *Paris, France*

- Role reflected responsibilities similar to those at Web@cademie, albeit for a different institution with different student profiles.

Software Developer Jul 2018 - Dec 2018
Dt Consulting *Paris, France*

- Tasked with contributing to the product roadmap for a C# ticketing solution tailored to sports venues, enhancing functionality and user experience.

Papers

Fragmented Sinusoidal Waves for Spiking Neural Network 2024
University of Kent *Canterbury, United Kingdom*

Energy Distribution for Spiking Neural Network 2024
University of Kent *Canterbury, United Kingdom*

Spikes Augmentation Decoder for Spiking Neural Network 2024
University of Kent *Canterbury, United Kingdom*

Combinatorial Encoder for Spiking Neural Network 2024
University of Kent *Canterbury, United Kingdom*

Benchmark: NeuroEvolution and Spiking Neural Network in RL 2023
University of Kent *Canterbury, United Kingdom*

Conferences

NCN, Neuromorphic Computing Netherlands September 2024
Eindhoven University of Technology

IEEE/ACM ICONS, International Conference On Neuromorphic Systems August 2024
George Mason University

Funding & Scholarship

PhD Scholarship - Graduate Teaching Assistant - 20 000£ Sep 2021 - Sep 2024
University of Kent *Canterbury, United Kingdom*

Service and voluntarism

UKC French Society - Head of Logistic 2023 - 2024
University of Kent *Canterbury, United Kingdom*

- The French Society at the University of Kent serves as a vibrant hub for those interested in French culture, whether they're fluent speakers or just beginning to delve into the language.

  Our aim was to promote and celebrate the richness of French traditions through a diverse array of events. From culinary showcases of French cuisine to French cinema nights and insightful discussions on literature, we offer a myriad of opportunities for members to connect, learn, and immerse themselves.

  As Head of Logistics, I planned and executed events, managed resources, liaised with vendors, and ensured memorable experiences for attendees

Coding Club By Epitech - Teaching 2017 - 2020
Epitech *Paris, France*

- The Coding Club is a recurrent workshop that introduces programming and development. The sessions are led in a fun way through various activities, such as developing video games, solving puzzles or cyber security activities, and more!

Technical Skills

Languages: Python, Cython, C++, C, C#, Java
Libraries/Frameworks: Pytorch, Numba, Jax, Numpy, Cupy, Cuda C++, Ray
Developer Tools: Git, Docker

Languages & Passion

Languages: French (native), English (Fluent)
Passion: Apéro, Wine, Martial Arts, Rugby, Football (Soccer)

References

Dominique Chu: d.f.chu@kent.ac.uk
Marek Grzes: m.grzes@kent.ac.uk
Howard Bowman: bowmanh@adf.bham.ac.uk
Fabrice Marco: fabrice.marco@epitech.eu
Daniel Soria: d.soria@kent.ac.uk