# Ariel Kwiatkowski

# PhD Student in Artificial Intelligence at l'X Open-source developer at the Farama Foundation

redtachyon.me

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### PROFESSIONAL EXPERIENCE

## Present | Lead Developer, Co-Founder, FARAMA FOUNDATION, Remote

Jan 2022

Maintainer of the key open-source RL libraries

- > Making high-level design decisions for Gymnasium
- > Implementing and debugging crucial parts of new and legacy code

Python Jax GitHub

## Nov 2021 | Visiting Researcher, UBISOFT LA FORGE, Bordeaux

Sep 2021

Secondment via CLIPE ITN

> Created a Unity testbed for multi-objective reinforcement learning

Unity ML-Agents JetBrains Rider

## Jul 2020 Research Assistant, BITVILLE, Helsinki, Finland

Sep 2019

Research in association with the Probabilistic Machine Learning group at Aalto University

- > Built a multi-agent reinforcement learning environment in pycolab
- > Implemented a reinforcement learning Theory of Mind module

Python PyTorch RLlib TensorFlow pycolab PyCharm

## Dec 2018 | Machine Learning Engineer, WORKLYTICS, Remote

Mar 2018

Freelance contract work via SharpestMinds

> Implemented a machine learning algorithm for employee retention prediction

Python pandas scikit-learn TensorFlow GCP

#### Sep 2017 Data Scientist I, CODILIME/DEEPSENSE.AI, Warsaw, Poland

Jul 2017

> Compared machine learning algorithms, and performed feature engineering and selection, on the task of classifying time series of network connections

Python pandas scikit-learn TensorFlow

#### Sep 2016 | Deep Learning Intern, SEERIT, Warsaw, Poland

Jul 2016

> Developed a DL algorithm to detect damages in electric line insulation from drone footage

Python TensorFlow Keras



Present Doctoral Student, ÉCOLE POLYTECHNIQUE, Paris, France

Oct 2020 PhD program in CLIPE ITN, focused on applying Reinforcement Learning to Crowd Simulation

Project name: Scenario and interaction-ready agents

Supervised by Marie-Paule Cani, Julien Pettré & Vicky Kalogeiton

Machine Learning | Reinforcement Learning | Multiagent Systems | Crowd Simulation

Jul 2020 M.Sc. Autonomous Systems (ICT Innovation), KTH & AALTO UNIVERSITY, Stockholm & Helsinki

Double Degree via EIT Digital, specialization in Robotics and Artificial Intelligence Aug 2018

Thesis: Improving Ad-Hoc Cooperation in Multiagent Reinforcement Learning via Skill Modeling

Supervised by Alexander Ilin

Machine Learning | Bayesian Statistics | Reinforcement Learning | Robotics | Multiagent Systems | Agent-Based Modelling |

Jul 2018 B.Sc. Physics (Individual Track), UNIVERSITY OF WARSAW, Warsaw, Poland

Oct 2015 Individual Track is an advanced path with courses geared towards mathematical physics, covering

topics such as differential geometry or category theory on top of the standard physics content.

Thesis: 'High frequency airborne temperature measurements analyzed with AI techniques'

Supervised by Szymon Malinowski

C++ | Statistical Physics | Real & Complex Analysis | Differential Geometry | Category Theory | Abstract Algebra



Programming languages Python, Rust, Javascript, SQL, C++

> Frameworks PyTorch, Tensorflow 1/2, RLlib, Stable Baselines 3, Pandas, Flask, Node.js, ROS

Development tools PyCharm, git, Visual Studio Code, vim Operating systems MacOS, Fedora, Windows 10, Ubuntu

> Other Google Cloud Platform, Microsoft Azure



### Selected Publications and Others

#### Understanding reinforcement learned crowds

2023

Ariel Kwiatkowski, Vicky Kalogeiton, Julien Pettré, Marie-Paule Cani MIG 2022, Computers & Graphics

Reinforcement Learning | Crowd Simulation | Multiagent Systems

#### A SURVEY ON REINFORCEMENT LEARNING IN CHARACTER ANIMATION

2022

Ariel Kwiatkowski et al.

Eurographics 2022, Computer Graphics Forum

Reinforcement Learning | Character Animation | Crowd Simulation

#### OPENAI GYM, PETTINGZOO, GYMNASIUM

2021

Lead maintainer of Gym/Gymnasium, active contributor to other projects in the Farama Foundation

Python NumPy Pytest