

# Maxence Hussonnois

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I am a PhD student at the Applied Artificial Intelligence Institute at Deakin University, Australia. In my current research, I'm focused on intrinsic motivation for reinforcement learning agents, particularly how to bring context awareness to diversity-based intrinsic motivation.

## Education

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- **$A^2I^2$ , Deakin University** **Geelong, Australia**  
○ *PhD Reinforcement Learning* *April 2022 - present*
  - Advisor: Dr. Thommen Karimpanal George and Dr. Santu Rana
  - Thesis title: A Toolkit for Modulating Diversity in Skill Discovery
- **Ecole Centrale d'Electronique** **Paris, France**  
○ *Master's degree in Engineering* *Sept 2018 – Aug 2021*
  - Courses : Deep Learning, Robotics, Reinforcement Learning.
- **Lycée Chaptal** **Paris, France**  
○ *Classe Préparatoire au Grandes Ecoles* *Sept 2016 – Aug 2018*
  - Two-year undergraduate intensive course in mathematics and physics to prepare for nationwide competitive examination.

## Work Experience

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- **Naver Labs Europe** **Grenoble, France**  
○ *Research Intern* *Feb 2021 -Aug 2021*
  - Research on Reinforcement Learning for Document Layout Analysis.
  - The project is to formulate the problem of understanding the structure of a document layout in such a way that we can use sequential decision-making optimization methods such as Reinforcement Learning.
  - Proposed the first of its kind approach with Reinforcement Learning to this problem.
- **Ecole Centrale d'Electronique** **Paris, France**  
○ *Research Intern* *April 2020 – Sept 2020*
  - Research on autonomous driving with Reinforcement Learning.
  - The project is to work on autonomous driving in a end-to-end approach.
  - Proposed an implementation of Deep Reinforcement Learning state-of-the-art algorithms for autonomous driving in 3D simulation.

## Publications

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- **Maxence Hussonnois**, Thommen Karimpanal George, and Santu Rana. *Controlled Diversity with Preference : Towards Learning a Diverse Set of Desired Skills*, AAMAS, 2023 (Accepted).

## Projects

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- **Autonomous driving with reinforcement learning** *Sept 2020 - Feb 2021*
  - The project consists of the further development of work on autonomous driving with Reinforcement Learning.
  - Proposed an improvement of the perception of the environment with the generation of a Bird-Eye-View.
  - Proposed an improvement of the Reinforcement Learning training with an incorporation of prior knowledge with Behavior Cloning.

## Implementation of Reinforcement Learning algorithms

*Feb 2020 – Feb 2021*

- Implementation of : DQN, D2QN, D3QN, PER, APE-X with Python and Pytorch

## Skills

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- Programming Languages:: Python, C, C++.
- Programming tools: ROS, Gazebo, Docker, Gym, Git.
- Machine learning librairies: Pytorch, Numpy, Pytorch-geometric, Tensorflows.
- English : TOEIC(965), TOEFL(98/120)

## Extra-curricular

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- Running, Melbourne's Half-Marathon(2022), Paris's Marathon (2021), Paris's Half-Marathon (2021), 20km of Paris (2017, 2018, 2019)