Pierre Marza

Postdoctoral Researcher

Biomathematics, MICS
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Education

2020 – 2024 **PhD, Embodied AI**, *LIRIS/CITI*, INSA Lyon, France.
- Embodied AI, Computer Vision, Deep Learning, Reinforcement Learning

Advisors : **Laetitia Matignon** (*Personal Web-page*), **Olivier Simonin** (*Personal Web-page*), **Christian Wolf** (*Personal Web-page*)

2017–2020 : **Master in Computer Science**, *INSA Lyon*, France.
- Research & Development Specialization
- Exchange Semester at KTH, Stockholm, Sweden (Courses about Machine Learning, Deep Learning, Reinforcement Learning)

2015–2017 : **Preparatory classes (Scientific common core)**, *INSA Lyon*, France.

Papers/Patents

2024 Pierre Marza, Laetitia Matignon, Olivier Simonin, and Christian Wolf. Task-conditioned adaptation of visual features in multi-task policy learning. *Computer Vision and Pattern Recognition (CVPR)*, 2024.

2024 Pierre Marza, Laetitia Matignon, Olivier Simonin, Dhruv Batra, Christian Wolf, and Devendra Singh Chaplot. Autonerf: Training implicit scene representations with autonomous agents. *International Conference on Intelligent Robots and Systems (IROS)*, 2024.

2023 Pierre Marza, Laetitia Matignon, Olivier Simonin, and Christian Wolf. Multi-object navigation with dynamically learned neural implicit representations. *International Conference on Computer Vision (ICCV)*, 2023.

2022 Pierre Marza, Laëtitia Matignon, Olivier Simonin, and Christian Wolf. Teaching agents how to map: Spatial reasoning for multi-object navigation. *International Conference on Intelligent Robots and Systems (IROS)*, 2022.

2022 Pierre Marza, Corentin Kervadec, Grigory Antipov, Moez Baccouche, and Christian Wolf. An experimental study of the vision-bottleneck in vqa. *arXiv*, 2022.

2021 Sean Moran, Pierre Marza, Steven McDonagh, Sarah Parisot, and Gregory Slabaugh. A device and method for image processing. *WO Patent*, 2021.

2020 Sean Moran, Pierre Marza, Steven McDonagh, Sarah Parisot, and Gregory Slabaugh. Deeplpf: Deep local parametric filters for image enhancement. *Computer Vision and Pattern Recognition (CVPR)*, 2020.

Experience

January, 2025 – Present ***Postdoctoral Researcher***, *CentraleSupelec (MICS lab)*, Gif-Sur-Yvette, France.
- Deep Learning, Computer Vision
- Medical Imaging

June, 2022 – Oct., 2022 ***Research intern - Embodied AI***, *Meta AI (FAIR)*, Menlo Park, California, US.
- Embodied active learning
- Semantic Neural Radiance Fields

Advisors : **Devendra Singh Chaplot** (*Personal Web-page*), **Dhruv Batra** (*Personal Web-page*)

Feb., 2020 – Aug., 2020 ***Research intern - Visual Question Answering***, *ORANGE LABS*, Rennes, France.
- Object Detection in images - Attention mechanisms
- Guiding detection of salient regions with textual information

Advisors : **Corentin Kervadec** (*Personal Web-page*), **Grigory Antipov** (*Google Scholar*), **Moez Baccouche** (*Google Scholar*), **Christian Wolf** (*Personal Web-page*)

May, 2019 – Dec., 2019 ***Research Intern - Computer Vision***, *HUAWEI Noah's Ark Lab*, London.
- Research work on Image Quality Enhancement (deblurring, denoising, demosaicing) with Deep Learning
- Neural Architecture Search (NAS)
- Main contributor to a WO Patent for a Deep Learning Image Enhancement architecture
- 2nd author of a paper accepted to CVPR 2020 (DeepLPF)

Advisors : **Sean Moran** (*Personal Web-page*), **Greg Slabaugh** (*Personal Web-page*)

June, 2018 – August, 2018 ***Python development - Neural Networks***, *SOGETI High Tech*, Lyon.
Chatbot - Recurrent Neural Networks (Seq2Seq, LSTM)

Challenges

Feb., 2021 ***Multi-Object Navigation Challenge***, *Embodied AI Workshop*, CVPR 2021.
- Introducing auxiliary tasks to guide the emergence of spatial reasoning abilities
- Training an agent equipped with projective mapping to predict the distance to, direction towards a target to reach, and estimate if the current goal has already been seen within the episode
- Our solution ranked 1^{st}

Dec., 2018 ***HUAWEI Deep Learning Experience***, *HUAWEI*, Stockholm.
- Semi-supervised image classification
- 24h Deep Learning Competition - Team of 4 people - Ranked 2^{nd} among a few teams in Stockholm

Projects

2019–2020 ***Sim2Real Domain Transfer***, *INSA Lyon*.
- Sim2Real Domain Transfer for Deep Reinforcement Learning

Advisor : **Christian Wolf** (*Personal Web-page*)

2018–2019 ***Brain ML***, *KTH*, Stockholm.
- Brain inspired neural network to perform multi-modal learning
- Unsupervised clustering of images and associated captions
- Sparse representations - Autoassociative Memory

Advisor : **Pawel Herman** (*Personal Web-page*)

Reviewing

2021-2023 **TPAMI**.

2022 **ICML (Outstanding reviewer)**.

2023 **ICLR, ICCV, NeurIPS**.

2024 **ICLR, ECCV (Outstanding reviewer), IROS**.

Teaching

2021–2022 **Deep Learning and Differentiable Programming**, INSA Lyon.
Labs (CNN, RL) and a project (semi-supervised image classification).

2022–2023 **Introduction to Deep Learning**, EPITA Lyon.
Lectures (CNN, RNN, Transformer), labs (CNN, RNN, Transformer) and a project (rigorous comparison of CNNs, RNNs and Transformers on a movie review sentiment classification problem).

2023–2024 **Artificial Intelligence and Data Analysis**, Université Lyon 1.
Lectures (CNN, RNN), labs (CNNs) and a project (image classification, RL).

2024–2025 **Reinforcement Learning**, CentraleSupelec.
Labs.