Louis Fournier

Curriculum Vitae

✉ *louis.fournier.2016@polytechnique.org*
⌂ *fournierlouis.github.io*

Professional experience

2021 - 2024   **PhD thesis**, *MLIA, ISIR, Sorbonne Université, Paris.*

- Local and distributed methods for deep learning optimization. Supervised by Edouard Oyallon.
- Teaching assistant in mathematics in licence at Sorbonne Université.

2021/06–09   **Research engineer**, *MLIA, lip6, Sorbonne Université, Paris.*

- Research on simple learning architectures competing with convolutional networks, with dictionary of patches or kernel learning.

2020/03–09   **NLP Research Internship**, *INRIA CoML, Paris.*

- Study of the word analogy phenomenon in word embeddings. Issues of the analogy test and analogy demonstrations; studying new fairer metrics of linguistic regularities.

2019/03–05   **Vision Research Internship**, *Gleamer, Paris.*

- Improvement of an AI for bone fracture detection with multi-task learning and model explicability. Bone age regression and body part classification models. Unsupervised segmentation by study of the attention of a classifier. Conception of a clinical study.

2018/06–08   **Blockchain Development Internship**, *Ippon USA, Washington D.C.*

- Development on Ethereum of a decentralized tax credit exchange market application.

2016/12–04   **Military Internship**, *FFEAU, Abu Dhabi.*

- Work in the J2 Intelligence Office of the ALINDIEN General Staff, after training as a Land Army officer in the 4th Battalion of the Ecole Spéciale Militaire of Saint-Cyr.

Formation

2019–2020   **Master MVA (Maths, Vision, Learning)**, *ENS Paris-Saclay.*

- 1st semester: Object recognition, digital imaging, denoising. Deep learning, convex optimization, reinforcement learning, graphs in machine learning.
- 2nd semester: Speech and NLP, Sequential learning, Neuroscience, Deep learning in practice, Remote sensing, Audio analysis, Kernel methods.

2016–2020   **Ingénieur Polytechnicien Curriculum**, *École Polytechnique.*

- Major: Image, Vision, Learning

2019–2021   **18 months Ingénieur Curriculum**, *Télécom Paris.*

- AI, Computer Graphics. Joint curriculum: Master MVA.

2013–2016   **Preparatory Classes for the Grandes Ecoles**, *Lycée Sainte Geneviève.*

- MPSI - MPI* at Lycée Henri Wallon. MPI 5/2 at Lycée Privé Sainte Geneviève.

Publications

- Fournier Louis, Nabli Adel, Aminbeidokhti Masih, Pedersoli Marco, Belilovsky Eugene and Oyallon Edouard. "WASH: Train your Ensemble with Communication-Efficient Weight Shuffling, then Average". Preprint.
- Fournier Louis and Oyallon Edouard. "Cyclic Data Parallelism for Efficient Parallelism of Deep Neural Networks". Preprint.
- Nabli Adel, Fournier Louis, Erbacher Pierre, Serrano Louis, Belilovsky Eugene and Oyallon Edouard. "ACCO: Accumulate while you Communicate, Hiding Communications in Distributed LLM Training". Preprint.
- Rivaud Stéphane, Fournier Louis, Pumir Thomas, Belilovsky Eugene, Eickenberg Michael and Oyallon Edouard. "PETRA: Parallel End-to-end Training with Reversible Architectures". Preprint.
- Fournier Louis, Patel Adeetya, Eickenberg Michael, Oyallon Edouard and Belilovsky Eugene. "Preventing Dimensional Collapse in Contrastive Local Learning with Subsampling". In ICML 2023 Workshop on Localized Learning (LLW), Jul 2023.
- Fournier Louis, Rivaud Stéphane, Belilovsky Eugene, Eickenberg Michael and Oyallon Edouard. "Can Forward Gradient Match Backpropagation?". In Proceedings of the Fortieth International Conference on Machine Learning, Jul 2023.
- Fournier Louis and Dunbar Ewan. "Paraphrases do not explain word analogies". In Proceedings of the 14th Conference of the European Chapter of the Association for Computational Linguistics, 2021.
- Fournier Louis, Dupoux Emmanuel and Dunbar Ewan. "Analogies minus analogy test: measuring regularities in word embeddings". In Proceedings of the 24th Conference on Computational Natural Language Learning (pp. 365–375), 2020.

Langages

- **English:** C2 level
- **Spanish:** B1 level
- **Japanese:** A2 level