

Antoni-Joan Solergibert

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EDUCATION

École Polytechnique Fédérale de Lausanne

Master's Thesis in the Machine Learning Optimization Laboratory

Lausanne, Switzerland

Jan. 2024 - July 2024

Universitat Politècnica de Catalunya

Master in Innovation and Research in Informatics - High Performance Computing

Barcelona, Spain

Sep. 2022 - July 2024

Universitat Politècnica de Catalunya

Bachelor of Telecommunications Engineering - Major in audiovisual systems

Barcelona, Spain

Sep. 2017 - July 2022

RESEARCH PROJECTS

LLM Research Associate | 3D Parallelism, Distributed Training, Instruction Tuning

Jan. 2024 – Now

- Carrying out my MSc Thesis in the [Meditron project](#) under the supervision of Professor Mary-Anne Hartley and Professor Martin Jaggi. Collaborating with the [SWISS AI Initiative](#)
- Develop Instruction Tuning pipelines for 8B & 70B models using the Hugging Face Stack and DeepSpeed for sharding the models among several nodes
- Develop efficient input data pipelines for Nanotron. The pipelines support recovering from failures, Data, Tensor and Pipeline parallelism, and tests to verify its functionality [[GitHub PR](#)], [[Blog](#)]
- Conduct a scaling study of the cluster to find the optimal configuration for model training. Benchmark of the effects of activation checkpointing, different optimizers, and several types of precision, among others
- Optimize the software stack and develop guidelines for running distributed PyTorch applications among several nodes for the EPFL cluster with the runai scheduler

Transformers In Supercomputers [[Blog](#)] | NLP, Distributed Training, Supercomputing

Sep. 2023 – Dec. 2023

- Configure the software stack for training transformers across multiple nodes on the MareNostrum4 supercomputer
- Utilized the Hugging Face ecosystem, PyTorch, and Slurm for job orchestration
- Implement modifications in the source code for compatibility with parallel filesystems
- Conduct experiments with various training parameters and analyze results focusing on device throughput and speedup across multiple nodes
- Development of a new laboratory assignment for the Supercomputer Architecture course in the MIRI-FIB master's program

Computer Vision Research Associate | Computer Vision, Competitive project

August 2022 – March 2023

- Member of the [UPC - Providence+](#) team participating in the [XPRIZE: Rainforest](#) competition. During my stay in the project, I carried out my bachelor's thesis under the supervision of Professor Ferran Marqués and Professor Xavier Giró-i-Nieto
- Research of synthetic data generation techniques. Develop an end-to-end pipeline to generate synthetic datasets with pixel-level segmentations based on SOTA techniques
- Train models to classify images between +1000 animal species with contrastive learning techniques
- Accelerate model training with multiple GPUs, enabling data parallelism, developing efficient input data pipelines and mixed precision

EXPERIENCE

Network Operation Center Engineer Intern

Cellnex Telecom

April 2021 – March 2022

Barcelona, Spain

- Prioritize incidents in the Cellnex network according to their risk and act remotely to avoid their impact, completing their resolution by coordinating local operations if necessary
- Active supervision of the Cellnex network to anticipate breakdowns
- Employing software for remote configuration of Cisco, NEC, Siae and Marconi equipment among others

TECHNICAL SKILLS

Languages: Experienced: Python | Bash | C **Familiar:** CUDA | C++

Developer Tools: Slurm | Docker | Tensorboard | Git | W&B

Libraries: PyTorch | Hugging Face Stack | OpenMP | Open MPI | TensorFlow

LANGUAGE SKILLS

Native: Spanish | Catalan

Advanced: English

OTHER CERTIFICATIONS

Deep Learning Specialization program

deeplearning.ai | Certification ID: YH8DTTGKVT6H

October 2020

TensorFlow Developer Specialization Program

deeplearning.ai | Certification ID: YFNHRSH6MD8D

September 2020

B2 Cambridge FCE

Score: 169/190

May 2015