Lorenzo Sani

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Education

Oct. 22–Jul. 25 *PhD in Computer Science*, **University of Cambridge**

- Second-year student in the Machine Learning Systems group. Supervised by Dr Nicholas Lane.

`Machine Learning` `Federated Learning` `Distributed Systems` `Python` `PyTorch` `Slurm`

Dec. 19–Mar. 22 *Master degree in Applied Physics*, **University of Bologna**

- Thesis titled "Unsupervised Clustering of MDS data using federated learning". Supervised by Prof. Enrico Giampieri and Prof. Gastone Castellani

`Machine Learning` `Federated Learning` `Complex Systems` `Bioinformatics` `Python` `PyTorch` `TensorFlow`

Sep. 16–Dec. 19 *Bachelor degree in Physics*, **University of Bologna**

- Thesis titled "Correzioni relativistiche negli atomi idrogenoidi e struttura fine". Supervised by Prof. Roberto Zucchini

`Physics` `Quantum Mechanics` `C++` `ROOT` `LabSim`

Publications

Submitted to MLSys (24) **Lorenzo Sani***, Pedro Porto Buarque Gusmão*, Alex Iacob*, Zhao Wanru, Xinchi Qiu, Yan Gao, Javier Fernandez-Marques, and Nicholas Lane. "Pollen: High-throughput simulation of federated learning via resource-aware client placement".

Submitted to MLSys (22) Daniel J. Beutel, Taner Topal, Akhil Mathur, Xinchi Qiu, Javier Fernandez-Marques, Yan Gao, **Lorenzo Sani**, Kwing Hei Li, Titouan Parcollet, Pedro Porto Buarque Gusmão, Nicholas D. Lane. "Flower: A Friendly Federated Learning Research Framework"

Dec. 21 Álvarez Federico, Zazo Santiago, Parras Juan, Almodóvar Alejandro, Alonso Patricia, Giampieri Enrico, Castellani Gastone, **Sani Lorenzo**, Rollo Cesare, Sanavia Tiziana, Krogh Anders, Prada-Luengo Íñigo, Kanterakis Alexandros, Sfakianakis Stelios, Cremonesi Francesco. "D6.2 - Preliminary conclusions about Federated Learning applied to clinical data" `https://zenodo.org/record/5862591#.YqCt4tJByEI`

Teaching Experience

Oct. 23–Dec. 23 **Teaching Assistant**, *Dept. of Computer Science and Technology, University of Cambridge*

- L46 - Principles of Machine Learning Systems.
  We covered the principles and methodologies of scalable and efficient machine learning systems, covering algorithms and system techniques for training models across diverse computing environments.

Jan. 23–Mar. 23 **Teaching Assistant**, *Dept. of Computer Science and Technology, University of Cambridge*

- L361 - Federated Learning. (**first-ever university-level course on federated learning**)
  We expanded students' machine learning expertise by examining the manifestation of concepts in decentralized settings, encompassing theoretical aspects like decentralized optimization and practical considerations like networking efficiency.

Supervisor

Jun. 23–Sep. 23 **Summer Intern**, *Dept. of Computer Science and Technology, University of Cambridge*

- I supervised **Allen Cong** during his Summer Internship. The project was related to optimising a CV task on a Rock64 Rock Pi 4 SE equipped with an Intel RealSense camera.

Nov. 23–Jun. 24 **MPhil Thesis**, *Dept. of Computer Science and Technology, University of Cambridge*

- I co-supervised **Bao Nguyen** during his MPhil Thesis project. The work investigated the possibility of applying sheaf neural networks in the context of federated learning.

Oct. 23–Mar. 24 **Master's Thesis**, *Dept. of Computer Science and Technology, University of Cambridge*

- I supervised **Adriano Guastella** (from the University of Bologna) during his Master's Thesis project when he was visiting the Computer Laboratory. The work investigated the intersection between Powerpropagation, Sparse Weight Activation Training, and federated learning.

Reviewer

Dec. 23 *Journal reviewer* for "**IEEE Internet of Things Journal**", `https://ieee-iotj.org/`

May 23–Jan. 24 *Journal reviewer* for **IMWUT** – "Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies", `https://dl.acm.org/journal/imwut`

Work Experience

Mar. 20–Jun. 20 **Software Specialist**, *Oppent, Milan*

- Development of an Android service app for AGV navigation system interaction.

`C++` `Python` `Java`

Additional Information

Website	`https://relogu.github.io/`
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Interests	Rock Music, Football