Bruno **Casella**

PHD IN MODELING AND DATA SCIENCE · DATA SCIENTIST · COMPUTER ENGINEER

via Gallinaro 7B, Aci Castello, Italy · via Antonio Pigafetta 9, Turin, Italy

(+39) 331-2373931 | casella0798@gmail.com, bruno.casella@unito.it | casellajr.github.io | CasellaJr | bruno-casella-76527a199/

Summary

Postdoctoral researcher at the University of Turin, currently working on Federated Learning as part of a project funded by the Italian National Recovery and Resilience Plan (PNRR). Graduated in Computer Engineering in 2020 with a thesis on the performance of the Reinforcement Learning algorithm AlphaZero for Chess under various game and resource scenarios. Received a Master's Degree in Data Science for Management in 2021 with a thesis on Federated Transfer Learning, proposing a novel technique based on test-time parameter aggregation of neural networks. Currently finalizing my PhD in Modeling and Data Science, funded by Leonardo Company, which I will defend in the upcoming months.

3+ years of software management experience.

Love for open source projects and big fan of Linux and macOS. Always interested in learning new technologies, tools and methods.

Work Experience

University of Turin
POSTDOCTORAL RESEARCHER
Turin, Italy
Nov. 2024 - current
- Associate fellow position for the research project: Federated Learning (PNRR)

Bar Pizzeria Via Caracciolo
WEB PROGRAMMER
Turin, Italy
Feb. 2022 - May. 2022
- https://barpizzeriaviacaracciolo.github.io/

Professional accounting studio "Giuseppe Casella"
SOFTWARE MANAGER
Catania, Italy
Oct. 2017 - July 2021
- In charge of processing accounting data via remote connection system.
- Continuously improved the infrastructure architecture of the studio since launching the service.

Education

University of Turin
PH.D. IN MODELING AND DATA SCIENCE
Turin, Italy
Nov. 2021 - Present
- Website https://dottorato-mds.campusnet.unito.it/do/home.pl
- Fields of interest:
  - Federated Learning
  - Transfer Learning
  - Confidential Computing
  - High Performance Computing
  - Deep Learning
  - Blockchain

University of Catania
M.S. IN DATA SCIENCE FOR MANAGEMENT
Catania, Italy
Oct. 2019 - Sep. 2021
- Graduated with a thesis on Federated Transfer Learning using Network Composition, proposing a novel technique based on test-time parameter aggregation of neural networks.
- Final grade 110L.

University of Catania
B.S. IN COMPUTER ENGINEERING
Catania, Italy
Oct. 2016 - Mar. 2020
- Graduated with a thesis on the evaluation of an AI Method based on Reinforcement Learning Method for the game of Chess.
- Final grade 100.

Non-Formal Education

2024	**7th Advanced Course on Data Science and Machine Learning**, Universities of Catania and Florida, link school
2023	**International Computer Vision Summer School**, University of Catania, link school
2022	**Deep Learning for Medical Imaging Summer School**, ETS, Montreal, link school
2022	**CIS Edge AI Summer School**, EPFL, Losanna link school
2021	**DEEP LEARNING WITH PYTORCH: ZERO TO GANS – Jovian.ai**, Jovian.ai link certificate
2021	**IMPROVING DEEP NEURAL NETWORKS: HYPERPARAMETER TUNING, REGULARIZATION AND OPTIMIZATION**, DeepLearning.AI, Coursera "Specialization" link certificate
2021	**NEURAL NETWORKS AND DEEP LEARNING**, DeepLearning.AI, Coursera "Specialization" link certificate
2021	**BLOCKCHAIN BASICS**, University of Buffalo, Coursera "Specialization" link certificate

Publications

CONFERENCE

2022	**Transfer Learning via Test-Time Neural Networks Aggregation**, B. Casella, A. B. Chisari, S. Battiato, M. V. Giuffrida, VISAPP	*Online*
2022	**Benchmarking FedAvg and FedCurv for Image Classification Tasks**, B. Casella, R. Esposito, C. Cavazzoni, M. Aldinucci, ITADATA	*Milan, Italy*
2022	**Federated Learning meets HPC and Cloud**, I. Colonnelli, B. Casella, G. Mittone, Y. Arfat, B. Cantalupo, R. Esposito, A. R. Martinelli, D. Medic, M. Aldinucci, ML4ASTRO	*Catania, Italy*
2023	**Predicting Cryptocurrencies Market Phases Through On-Chain Data Long-Term Forecasting**, B. Casella, L. Paletto, ICBC	*Dubai, United Arab Emirates*
2023	**Experience Replay as an Effective Strategy for Optimizing Decentralized Federated Learning**, M. Pennisi, F. Proietto Salanitri, G. Bellitto, B. Casella, M. Aldinucci, S. Palazzo, C. Spampinato, First Workshop on Visual Continual Learning, ICCV23	*Paris, France*
2023	**Architecture-based FedAvg for Vertical Federated Learning**, B. Casella, S. Fonio, IEEE/ACM International Conference on Utility and Cloud Computing, DML-ICC Workshop 2023	*Taormina, Italy*
2024	**A Performance Model for Confidential Federated Learning**, B. Casella, I. Colonnelli, G. Mittone, R. Birke, W. Riviera, A. Sciarappa, C. Cavazzoni, M. Aldinucci, Deep Learning Security and Privacy Workshop, IEEE Security and Privacy 2024	*San Francisco, CA*
2024	**Federated Time Series Classification with ROCKET features**, B. Casella, M. Jakobs, M. Aldinucci, S. Buschjaeger, ESANN 2024	*Bruges, Belgium*
2024	**Federated Learning in a Semi-Supervised Environment for Earth Observation Data**, B. Casella, A. B. Chisari, M. Aldinucci, S. Battiato, M. V. Giuffrida, ESANN 2024	*Bruges, Belgium*
2025	**Decentralized Time Series Classification with ROCKET features**, B. Casella, M. Jakobs, M. Aldinucci, S. Buschjaeger, submitted to KDD	*Toronto, Canada*

JOURNAL

2023	**Predictors of target lesion failure after treatment of left main, bifurcation, or chronic total occlusion lesions with ultrathin-strut drug-eluting coronary stents in the ULTRA registry**, O. de Filippo et al., CCI	*CCI*
2023	**MERGE: a model for multi-input biomedical Federated Learning**, B. Casella, W. Riviera, M. Aldinucci, G. Menegaz, Cell Patterns	*Cell Patterns*
2023	**FedER: Federated Learning through Experience Replay and Privacy-Preserving Data Synthesis**, M. Pennisi, F. Proietto Salanitri, G. Bellitto, B. Casella, M. Aldinucci, S. Palazzo, C. Spampinato, Computer Vision and Image Understanding	*CVIU*
2024	**Protocol for training MERGE: A federated multi-input neural network for COVID-19 prognosis**, B. Casella, W. Riviera, M. Aldinucci, G. Menegaz	*STAR Protocols*
2024	**Experimenting with Normalization Layers in Federated Learning on non-IID scenarios**, B. Casella, R. Esposito, A. Sciarappa, C. Cavazzoni, M. Aldinucci, IEEE Access	*IEEE Access*

Service

ORGANIZATION

| 2023 | **Organizer**, FEDMEDW: Workshop on Federated Learning in Medical Imaging and Vision, `https://fedmedw.github.io/` | *Udine, ICIAP23* |

COMMITTEE MEMBERSHIPS

2023	**Program Committee**, 3rd Workshop on Distributed Machine Learning for the Intelligent Computing Continuum (DML-ICC), `http://www.lrc.ic.unicamp.br/dml-icc/`	*Taormina, IEEE/ACM UCC 2023*
2023	**Program Committee**, Workshop on Advancements in Federated Learning, `https://sites.google.com/view/wafl-ecml2023`	*Turin, ECML PKDD*
2023	**Program Committee**, 1st Workshop on Federated Learning Technologies, `https://flw.di.unito.it/`	*Austin, TheWebConf23*
2023	**Subreviewer**, Euro-Par 2023 Workshops and Minisymposia, `https://2023.euro-par.org/`	*Limassol, Euro-Par 2023*

Honors

2024	**Honorable Mention Award**, Premio Internazionale Galileo Galilei per la promozione della Ricerca Umanistica e Scientifica riservato a giovani studiosi	*Stresa, Italy*

Language skills

Italian
MOTHER TONGUE

English
PROFICIENT

English
BEGINNER

Digital skills

Gimp | Adobe Photoshop | DaVinci Resolve
PHOTO AND VIDEO EDITING