Franco Terranova

Ph.D. Student, Université de Lorraine / INRIA, Nancy, France
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RESEARCH INTERESTS

Deep Learning, Reinforcement Learning, Representation Learning, Graph Neural Networks, Computer Vision, Meta Learning, Federated Learning, Internet of Things, Game Theory, Cybersecurity

EDUCATION

Université de Lorraine & INRIA, Nancy, France — 10/2023 — 10/2026
Ph.D. in Computer Science
Thesis Title: Reinforcement Learning-Based Approaches for Automated Security Analysis of Networked Systems

University of Pisa, Pisa, Italy — 09/2021 — 09/2023
Master's Degree in Artificial Intelligence and Data Engineering — Final Grade: (110/110) cum laude
Thesis Title: Self-driving Telescopes - Reinforcement Learning for Planning Astronomical Observations

University of Pisa, Pisa, Italy — 09/2018 — 07/2021
Bachelor's Degree in Computer Engineering — Final Grade: (110/110) cum laude
Thesis Title: Artificial Intelligence for Emotion Recognition using Data Gathered from a Wearable Sensor Network

EXPERIENCE

Fermi National Accelerator Laboratory — Chicago, Illinois
Master Degree Thesis Research — 05/2023 — 08/2023
Project: Self-driving Telescopes - Reinforcement Learning for Planning Astronomical Observations

- Application of Deep Reinforcement Learning to the telescope domains using offline datasets as environment
- Application of Evolutionary Strategies and Genetic Algorithms
- Development of a Framework for training AI-based Self-driving Telescopes on Customized Dataset

European Space Agency (ESA) — Köln, Germany
AI/ML Engineer Intern — 11/2022 - 04/2023
Project: Deep Learning techniques for the detection of the Spaceflight Associated Neuro-ocular Syndrome (SANS)

- Deep Convolutional Neural Networks for Classification
- Federated Learning Architecture for Distributed Training
- Artificial Intelligence of Things (AIoT) for a Smart Regolith Transportation System

Fermi National Accelerator Laboratory — Chicago, Illinois
Summer Intern — 07/2022 — 09/2022
Project: Flexible Pilot Jobs Framework for Distributed High Throughput Computing

- ML-based techniques for job/site matching
- Design of a flexible, modular and customizable structure of the worker node software
- Redesign of custom script management of the workload management system

PROJECTS

Internet of Things for a Smart Regolith Transportation System — Golden, Colorado
Over The Dusty Moon Challenge - Colorado School of Mines / Lockheed Martin — Website - 12/2022 — 06/2023

- Internet of Things for Regolith Transportation Monitoring
- Convolutional Neural Networks for Rocks Detection
- Project Management & Website Developer

Convolutional Neural Networks for Galaxy Classification and Detection — Pisa, Italy
University of Pisa — 11/2022 — 01/2023

- Convolutional Neural Networks for Galaxy Classification
- Transfer Learning on Object Detection Pre-trained Models for Galaxy Detection

PUBLICATIONS

Conference papers

- Terranova, F., Voetberg, M., Nord, B. & Pagul, A. (2023). "Self-Driving Telescopes: Autonomous Scheduling of Astronomical Observation Campaigns with Offline Reinforcement Learning," in Proceedings of the Machine Learning and the Physical Sciences Workshop, 37th Conference on Neural Information Processing Systems (NeurIPS).
- Ritter, S., Terranova, F., Stern, C., Tuohy, E., Cowley, A., Drescher, J. & Sznitman, R. (2023). "Federated Learning for Space Medicine Research and its application for Spaceflight Associated Neuro-ocular Syndrome (SANS)", in Proceedings of the International Astronautical Congress 2023, Baku, Azerbaijan, Oct 2023.
- Ritter, S., Terranova, F., Stern, C., Tuohy, E., Cowley, A., Drescher, J. & Sznitman, R. (2023). "An Artificial Intelligence Method for Autonomous Monitoring of the Retina for Medical Applications in Space and Extreme Environments", in Proceedings of the International Astronautical Congress 2023, Baku, Azerbaijan, Oct 2023.

SELECTED COURSES

Master's Courses

- Computational Intelligence and Deep Learning
- Symbolic and Evolutionary Artificial Intelligence
- Information Retrieval and Computer Vision
- Data Mining and Machine Learning
- Mobile and Social Sensing Systems
- Internet of Things
- Optimization Methods and Game Theory
- Distributed Systems and Middleware Technologies

Bachelor's Courses

- Foundation of Systems and Control Theory
- Software Engineering
- Computer Networks & Computer Networks Design
- Advanced Programming

AWARDS

ISSNAF Scholarship for Master Thesis Research in North America Pisa, Italy
Italian Scientists and Scholars in North America Foundation (ISSNAF) 12/2022

National Winner of the High School Program "Code the Rules" Rome, Italy
Italian Ministry of Education 06/2018

OTHER EXPERIENCES

- President of SEDS (Students for the Exploration and Development of Space) federation at the University of Pisa (2023)
- Mentee for the LeadTheFuture Mentorship Program for Italian Students
- Mentee for the Young ISSNAF (Italian Scientists & Scholars in North America Foundation) Mentoring Program for Students
- Mentee for the SGAC Summer 2023 Mentorship Program

SKILLS

- **Programming:** Java, Python, Erlang, PHP, C, C++, R, Verilog, Matlab, JavaScript, CSS, HTML, SQL, Cypher Query Language, Assembly, UML, XML, JSON
- **AI/ML Libraries and Frameworksç** Tensorflow, Keras, PyTorch, TensorFlow Object Detection API, PyTorch Agent-Net, Stable-Baselines, scikit-learn, Matplotlib, NLTK, Numpy, Pandas, Scipy, Gym
- **Networking:** TCP/IP protocol suite, Ethernet, DHCP, DNS, ACL, NAT, VLAN and Trunking, Routing Protocols, Cloud, IoT, Network Security
- **Cloud Technologies:** OpenStack, Docker, Kubernetes, Hadoop, Spark, QEMU, Virsh
- **Database Technologies:** MySQL, MongoDB, LevelDB, Neo4J, Redis

CERTIFICATES & COURSES

- Cisco Certified Network Associate (CCNA), Cisco Systems, Inc., Mar 2022, Expiration: Mar 2025.
- TOEFL iBT Test, ETS, Oct 2021, Expiration: Oct 2023, Grade: 101/120.
- CyberChallenge.IT, Cybersecurity National Lab, Mar 2019.
- Huawei Seeds for the Future, Huawei Technologies Co., Ltd, Nov 2020.
- Samsung Innovation Camp, Samsung Electronics, Oct 2018.