Raffaele Galliera
Ph.D. Student in Intelligent Systems and Robotics
Web LinkedIn GitHub
Citizenship: Italian

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Work Experience

Research & Development Intern

04/2024 - 10/2024
Apple
Wireless Technologies and Ecosystems
San Diego, California, USA

Achievements/Tasks:

- (Multi-Agent) Reinforcement Learning applied to wireless communications
- Inter-process communication
- Planning, management, and control of large-scale experiments
- Software containerization

Research Assistant

08/2021 - Present
Institute for Human and Machine Cognition (IHMC)
University of West Florida
Pensacola, Florida, USA

Achievements/Tasks:

- RL and MARL applications to different network optimization problems
- Presented at NeurIPS and AAAI workshops in 2023
- Accepted into the 29th AAAI/SIGAI Doctoral Consortium at AAAI 2024
- Appointed Member of the NATO IST-194 Research Group on Adaptive Networks at the Tactical Edge
- Containerization of distributed DL/RL applications
- Deployment of DL models at the edge

Graduate Assistant

08/2020 - 08/2021
University of West Florida
Pensacola, Florida, USA

Achievements/Tasks:

- Workshops on memory optimization for undergraduate students and utilization of Jupiter Notebooks for AI projects
- Teaching Assistant (grading and tutoring)
- Achieved 3rd Place at the nationwide competition AI Tracks at Sea

Software Developer

03/2018 - 08/2020
Enrian Partners
Prague, Czech Republic

Achievements/Tasks:

- Full-stack software developer
- Software infrastructure
- Agile project management

Education

Ph.D. - Intelligent Systems & Robotics

08/2021 - 12/2025
University of West Florida
Pensacola, Florida, USA

My Ph.D. research is exploring the optimization of communication tasks with (Multi-Agent) Reinforcement Learning (RL/MARL) in dynamic Point-to-Point and Group Communication (GC) networks. I'm investigating different aspects concerning the agents' communication and their learned strategies, designing new methods to improve cooperation. I am also interning as a Research Assistant at the NOMADS lab (IHMC) in close contact with researchers and developers of communication protocols for challenged networking environments, where we collaborate to deploy learned policies on real protocols and networks.

Master's Degree - Computer Science

08/2020 - 08-2021
University of West Florida
Pensacola, Florida, USA

Bachelor's Degree - Electronics and Computer Science Engineering
09/2014 - 09/2019
University of Ferrara
Ferrara, Italy

Organizations and Achievements

Accepted into the 29th AAAI/SIGAI Doctoral Consortium at AAAI 2024

02/2024
https://aaai.org/aaai-conference/dc-24-program/.

Appointed Member of the NATO IST-194 Research Group on Adaptive Networks at the Tactical Edge

02/2023 - Present
The main objective of this group is to develop a novel network architecture with methods and protocols that can adapt, manage, and control existing radio technologies in heterogeneous networks for increased robustness and optimized planning and use of the available network resources.

Achieved 3rd Place at the national competition "AI Tracks at Sea"

01/2021
This challenge solicited software solutions to automatically generate georeferenced tracks of maritime vessel traffic based on data recorded from a single electro-optical camera imaging the traffic from a moving platform. https://www.doncio.navy.mil

Vice-President and President of the Artificial Intelligence and Data Analysis organization

08/2020 - 08/2022
University of West Florida

Publications

Marine Vessel Tracking using a Monocular Camera

06-2021 (Co-First Author)
2nd International Conference on Deep Learning Theory and Applications (DeLTA)

DOI: 10.5220/0010516000170028

An Introduction to Data Encryption and Future Trends in Lightweight Cryptography and Securing IoT Environments

12-2021
(Journal) Transactions on Engineering and Computer Sciences

DOI: 10.14738/tmlai.102.11939

Object Detection at the Edge: Off-the-shelf Deep Learning Capable Devices and Accelerators

09-2022 (First-Authored)
2022 International Conference on Military Communication and Information Systems (ICMCIS)

DOI: 10.1016/j.procs.2022.09.025

A Machine Learning Approach to the Determination of Value of Information to Operators and Applications on the Tactical Edge

09-2022
2022 International Conference on Military Communication and Information Systems (ICMCIS)

DOI: 10.1016/j.procs.2022.09.015

MARLIN: Soft Actor-Critic based Reinforcement Learning for Congestion Control in Real Networks

05-2023 (First-Authored)
Presented at the AAAI 2023 Workshop on Reinforcement Learning Ready for Production
Published at NOMS 2023 IEEE/IFIP Network Operations and Management Symposium

DOI: 10.1109/NOMS56928.2023.10154210

Learning to Sail Dynamic Networks: The MARLIN Reinforcement Learning Framework for Congestion Control in Tactical Environments

10-2023 (First-Authored)
MILCOM 2023 - 2023 IEEE Military Communications Conference (MILCOM)

DOI: 10.1109/MILCOM58377.2023.10356270

RoamML: Distributed Machine Learning at the Tactical Edge

10-2023
MILCOM 2023 - 2023 IEEE Military Communications Conference (MILCOM)

DOI: 10.1109/MILCOM58377.2023.10356274

A Performance Cost/Benefit Analysis of Adaptive Computing in the Tactical Edge

04-2024
2024 International Conference on Military Communication and Information Systems (ICMCIS)

DOI: 10.1109/ICMCIS61231.2024.10541027

Distributed Autonomous Swarm Formation for Dynamic Network Bridging

05-2024 (First-Authored)
IEEE INFOCOM 2024 - IEEE Conference on Computer Communications Workshops

DOI: 10.1109/INFOCOMWKSHPS61880.2024.10620774

Collaborative Information Dissemination with Graph-based Multi-Agent Reinforcement Learning

10-2024 (First-Authored)
Presented at the NeurIPS 2023 Workshop on Machine Learning for Systems
The 8th International Conference on Algorithmic Decision Theory

DOI: 10.1007/978-3-031-73903-3_11

Community Services

- Co-chair of the Workshop on Distributed AI/ML at the Resource-Constrained Edge at MILCOM 2024
- Chair of the Workshop on Reinforcement Learning for Communications and Network Optimization (RECON) at MILCOM 2023
- Reviewer: AAMAS24, MILCOM2024, ICMCIS24

Implementation Skills

- Software Development and Software Engineering
- Containerization of RL and ML environments
- Python, C, C++, Java, Haskell, Ruby, SQL, Git
- Experienced in major (MA)RL and DL libraries and frameworks

Languages

- English - Full Professional Proficiency
- Italian - Native or Bilingual Proficiency

Interests

- Artificial Intelligence and Machine Learning
- (Multi-Agent) Reinforcement Learning
- Multi-Agent Systems
- Distributed Systems
- Communication Networks
- Computer Vision
- ML at the Network Edge