

Raffaele Galliera

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

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USA

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 deployment 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