Andrea Pimpinella

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I am a positive, lively and outgoing person. At work, I am always passionate and committed to tasks and duties, willing to reach objectives and goals. I am used to team-works, and I believe in the power of sharing ideas and emotions. Regarding my interests, I am passioned with team Sports, especially with Football and Water Polo. I am also a keen scuba-diver and darts player, as I have always enjoyed testing and improving my coordination skills.

RESEARCH POSITIONS

01/12/2023 – 30/11/2026
Dalmine (BG),Italy

Junior Researcher (RTDA), DIGIP, Università di Bergamo

- Mobile Radio Data Analytics
  - Performance analysis of 4G & 5G KPIs.
  - Data-driven predictive strategies for network resources monitoring and management.
- Quality of Experience (QoE):
  - Predictive strategies for the monitoring of cellular users QoE.
  - QoE-oriented management of HTTP Adaptive Video Streaming applications.

16/06/2023 – 30/11/2023
Milan, Italy

Junior Researcher (RTDA), DEIB, Politecnico di Milano

- 3A – Italy Circular and Sustainable Made in Italy – MICS (PNRR)

01/11/2021 – 15/06/2023
Milan, Italy

Post-Doc Research Fellow, DEIB, Politecnico di Milano

RESEARCH COLLABORATIONS (C) & PROJECTS (P)

01/05/2021 – Today
Milan, Italy

Towards the Smart Villages of Italy (P)

- Role: Research Team Member
- Project awarded by MISTI Italy - Progetto Rocca with a grant of 16'500 Euro (01/05/2021 - 31/01/2023)
- **Visiting Scholar @ City Design and Development Group, MIT**, from 15/01/2023 to 15/03/2023
- Accepted for Exhibition : ***"X-Cities Extended Cities tra ambienti virtuali e fisici"*** (Spazio Mostre del Politecnico di Milano, September 2023)
- **Goal**: radio access KPIs data-driven approaches for the
  - Spatio-temporal characterization of cellular users presence in Italian inland areas.
  - Development of a profiler system for small, medium and large urban settlements.
  - Definition of strategic guidelines useful for local and regional entities to foster the eniovment of inland and rural areas.

01/02/2021 – Today
Milan, Italy

User-Centric Communication Networks Group, Wurzburg University (C)

- Proactive Management of HAS Applications:
  - Encrypted Traffic Analysis.
  - HTTP Request Classification (Audio/Video) and Arrival Time Prediction.
  - Live Session Modelling for Stalling Detection.

01/05/2018 – Today
Milan, Italy

Network Engineering and Delivery, Vodafone Group (C)

- Cellular Networks Management and Monitoring:
  - Mobile Network Busy Hour Traffic Forecasting.
  - Data-driven Approaches to Network Planning (e.g., capacity expansion, maintenance interventions, failures detection, etc.)
  - Mass Event-driven Peak Prediction in Cellular Networks.
- Analysis of Cellular Customers Quality of Experience (QoE)
  - Users QoE Prediction.
  - Performance Analysis of Radio Access Network KPIs.

01/07/2020 – 12/12/2021
Milan, Italy

BASE5G (P)

- Project Title: Techno-Economic Analysis of MEC-based Architectures in Cellular Networks
- Role : Research Team Member
- Funded by: Fondo Europeo di Sviluppo Regionale – Regione Lombardia
- Technological Partner: Vodafone.
- Goal: Data-driven strategies to optimize the deployment of MEC architectures considering KPIs that are both network-related (e.g., latency,traffic, etc.) and economic-related (i.e., cost).

OUTREACH AND OTHER ACTIVITIES

2018 - 2023

Presenter at National and International Conferences

- MedComNet 2023, “Towards Deep learning Approaches to Forecasting of Network Traffic Peaks with Football Events”, 13-16/06/2023, Ponza, Italy.
- GLOBECOM 2022, “Using the (Crystal) Ball: Forecasting Network Traffic Peaks with Football Events”, 04-08/12/2022, Rio de Janeiro, Brazil.
- ICC 2022, “Forecasting Busy-Hour Downlink Traffic in Cellular Networks”, 17-19/05/2022, Seoul, South Korea.
- INW 2022, “Machine Learning based Management and Monitoring of Next-Generation Communication Networks”, 17-19/01/2022, Courmayeur, Italy.
- CNSM 2021, “Machine-Learning Based Prediction of Next HTTP Request Arrival Time in Adaptive Video Streaming”, (Virtual), 29/10/2021.
- ICC 2020, Machine Learning based Localization of LoRaWAN Devices via Inter-Technology Knowledge Transfer”, (Virtual), 07/06/2020.
- IFIP-WMNC 2019, “Towards long-term coverage and video users’ satisfaction prediction in cellular networks”, 10-13/09/2019, Paris, France.

01/12/2018- 20/12/2021

Ph.D. Students Representative, DEIB, Politecnico di MIlano

- Member of Ph.D. Council Meetings.
- Organization of Ph.D. students networking events.

TEACHING

01/11/2018 – 30/11/2023
Milan, Italy

Politecnico di Milano

ASSISTANT LECTURER (246 Lecture Hours)

- Exercise Sessions (“Fondamenti di Comunicazioni e Internet”, Corso di Laurea Triennale in Ingegneria Informatica, 2019 - 2020 - 2021 - 2023) (78 hours).
- Python & Packet Tracer Laboratory (“Fondamenti di Internet e Reti”, Corso di Laurea Online in Ingegneria Informatica 2018 - 2019 - 2020 - 2021 - 2022) (60 hours).
- Laboratory on TLC Basics (“Tecnologie Digitali”, Corso di Laurea Triennale in Ingegneria Gestionale, 2020 - 2021 - 2022) (58 hours).
- Laboratory on Data Analysis for LTE Cellular Networks ("Mobile Radio Networks”, MoC Course, 2020 – 2021 - 2022) (32 hours).
- Laboratory on Video Streaming Traffic Analysis ("Laboratory Experience", MoC Course, 2021; “Network Measurements Laboratory”, MoC Course, 2022) (18 hours).

01/11/2018 – 30/11/2023
Milan, Italy

Master Thesis Co-Supervisor

- QoE-Oriented, Crowdsourcing based Monitoring of Cellular Networks.
- Video Quality and Audio Codec Detection in HAS applications.
- Machine-Learning based Radio Map Augmentation.
- Forecasting of Busy Hour Traffic in Cellular Networks.

01/11/2018 – 30/11/2023
Milan, Italy

Poli-College

- Sessions: 2020-2021-2022-2023 (36 hours)
- Project of Innovative Teaching to offer Top Ranked High School Students advanced classes on Internet Networks Fundamentals.

PUBLICATIONS

Journals

2022 — A. PIMPINELLA, et al., “Unsatisfied Today, Satisfied Tomorrow: a simulation framework for performance evaluation of crowdsourcing-based network monitoring” Com. Comms. 182, 184-197

2019 — A. PIMPINELLA, et. al, “Walk This Way! An IoT-based Urban Routing System”, Com. Net. 162, 106857

Conferences

2023 — F. Loh, A. PIMPINELLA, et al., “Uplink-based Live Session Model for Stalling Prediction in Video Streaming”, NOMS 2023, 1-9.

2022 — A. PIMPINELLA, et al., “Using the (Crystal) Ball: Forecasting Network Traffic Peaks with Football Events”, GLOBECOM 2022, 4334-4339

2022 — A. PIMPINELLA, et al., “Forecasting Busy-Hour Downlink Traffic in Cellular Networks”, ICC 2022, 436-4341

2021 — A. PIMPINELLA, et al., "Machine-Learning Based Prediction of Next HTTP Request Arrival Time in Adaptive Video Streaming".

2021 — A. PIMPINELLA, et al., “Crowdsourcing or Network KPIs? A twofold perspective for QoE prediction in Cellular Networks”, WCNC 2021, 1-6”.

2020 — A. PIMPINELLA, et al., "Machine learning based localization of LoRaWAN devices via inter-technology knowledge transfer", ICC 2020, 1-6.

2020 — A. PIMPINELLA, et al., "Towards long-term coverage and video users satisfaction prediction in cellular networks", WMNC 2019, 146-53.

2018 — A. PIMPINELLA, et al., "Load balancing and performance optimization in wM-Bus smart meter networks”, Med-Hoc-Net 2018, 1-8.

EDUCATION

01/04/2023- 15/07/2023
Online

Data Science and Machine Learning: Making Data Driven Decisions, MIT Schwarzman College of Computing

- Professional Update on Data Science and Machine Learning related concepts

01/11/2018 – 11/02/2022
Milan, Italy

Ph.D in Information Technology, Politecnico di Milano

- 5 Conference Publications, 2 Journal Publications
- **Thesis**: Machine Learning based Management and Monitoring of Next-Generation Communication Networks (Supervisor: Prof. A.E.C. Redondi, Politecnico di Milano)
- **Final Grade**: Awarded Cum Laude

2019 - 2021

Ph.D Schools

- Lake Como Sc. of Advanced Studies, “Complex Networks and Communications”, 04-10/07/2021, Como, Italy
- “5G Italy”, 01-05/12/2019, Rome, Italy
- Intl. Summer Sc. for Scientific Research on Ntwk. and Comp. Sciences - "Can a Network Learn? Machine Learning Methodologies and Applications for Next-Generation Networking”, 07-13/07/2019, Lipari, Italy

16/10/2015– 19/04/2018
Milan, Italy

MSc in Telecommunications Engineering, Politecnico di Milano

- Winner of Merit Scholarship (D.Dir. 649 prot. n. 11114)
- **Thesis**: Load Balancing and Performance Optimization in wM-Bus Smart Meter Networks
- **Final Grade**: 110/110 Cum Laude

01/03/2017– 16/03/2017
Shenzen-Beijing, China

Seeds for the Future, Huawei

- Lectures on selected TLC topics & Lab. Activities (Huawei Head-Quarter)
- Lectures on Chinese Culture and Heritage (BLC University)

01/10/2016– 28/02/2017
Munich, Germany

ERASMUS, Technische Universität München

01/10/2012– 15/10/2015
Rome, Italy

BA in Electronics Engineering, La Sapienza University

- Honour Programme Award (2 Years)
- **Thesis**: Analysis of E.M. Scattering from Red Blood Cells
- **Final Grade**: 110/110 Cum Laude

PROGRAMMING AND DIGITAL SKILLS

Programming Skills:

- Python (Confident): Exploratory Data Analysis (EDA), Machine Learning Pipeline, Time Series Processing and Analysis. Most Used Libraries: Numpy, Pandas, Scikit-Learn, Keras, TensorFlow, Matplotlib
- MATLAB (Good)
- Other: SQL, AMPL

Tools: Packet Tracer, Wireshark

Operative Systems: Windows, iOS, Ubuntu