Luca Baldesi

Resume

Professional Experience

University of California, Irvine

Project Scientist, August 2023 - now.
- Smart home IoT analysis and fingerprinting
- Design and development of a smart home IoT testbed

Hamilton Medical, Switzerland

Team Lead for IoT/IoMT, January 2023 - July 2023.
- Cloud platform integration with medical devices
- Real time content distribution and processing from medical devices

Software Engineer for IoT/IoMT, April 2022 - January 2023.
- developing Linux device drivers
- developing and maintaining a custom code base of Yocto/open embedded for ARM32 architectures
- focusing on HL7/IHE device communication with hospital infrastructure

Wireless IoT Institute, Northeastern University, Boston, USA

Postdoctoral research associate, October 2020 - March 2022.
- Design and development of machine learning solutions for 5G and 802.11 spectrum sharing systems, including:
  - developing residual stack Deep Neural Networks targeting raw wireless I/Q samples in real-time.
  - prototyping with the linux kernel for OpenWiFi and Software Defined Radio systems.
  - contributing source code to the srsRAN project for 5G-and-beyond networks.
- Awarded a **best paper award** for *ChARM*, at IEEE International Conference on Computer Communications 2022.

MindMaze, France

Research and development engineer, October 2019 - February 2020.
- Developed signal processing software for real-time analog sensor acquisition.
- Developed embedded code (STM32 chipset) for real-time IoT devices.
- Contributed source code to the mmpack, a user-space packaging system.

University of Trento, Italy

Postdoctoral researcher, May 2018 - September 2019.
- Developed and released PeerStreamer-ng, a full-stack distributed real-time streaming platform, written in C, HTML, and Javascript. PeerStreamer-ng can establish peer-to-peer connections among users to exchange real-time media content through state-of-art algorithms.
- Proposed a content delay reception model, with analytically derived stochastic bounds in a mesh distribution network.
- Developed a BGP autonomous system graph generator. Contributed code to NetworkX Python library (ver. 2.4).

PhD. student, November 2014 - April 2018.
- Designed and built the PeerStreamer-ng platform (written in C, HTML, and Javacript), a distribution system meant to serve thousands of users. It has been designed to be fast, with very low system requirements and to minimize the latency.
- Proposed a decentralized model for a real-time distributed system and optimized it using network node PageRank centralities. This solution improves reception delay by 60% and packet loss by half, in simulated networks.
- Proposed a cross-layer optimization technique for reducing link bottlenecks and increase resource usage fairness in mesh networks. Emulated results on real-world networks include reduction of overall link usage wasting up to 66%.

University of California, Irvine, USA

Visiting PhD. student, March 2016 - December 2016.
- Proposed and developed a network generator targeting global structural properties, such as modularity and community structure. Contributed source code to NetworkX Python library (ver. 2.2).

Education

PhD. in Networked Systems (Computer Science), *2014 - 2018*, University of Trento, Italy.

M.S. in Computer Science Engineering, *2011 - 2013*, University of Florence, Italy.

B.S. in Computer Science Engineering, *2007 - 2011*, University of Florence, Italy.

Patents and Publications

Google Scholar profile, *17 peer-reviewed publications with 129 citations and h-index 8.*

Provisional Patent, *Channel-Aware Reactive Mechanism (ChARM)*, US 63/244,192.

Ancillaries

Languages, *Italian (C2), English (C2), French (A2), German (A2), Slovak (A1).*

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https://github.com/lucabaldesi/