Francesco Bronzino

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EDUCATION

École Normale Supérieure de Lyon 2024
Habilitation à Diriger des Recherches
Thesis title: "Bridging the Gap Between Machine Learning and Networked Systems"
Committee: I. Chrisment, M. Crovella, M. Dias de Amorim, A. Duda, M. Fiore, I. Guérin-Lassous

Rutgers University 2012 - 2016
Ph.D. in Electrical and Computer Engineering (GPA 3.9/4)
Thesis title: "Named-Object Based Services in the Future Internet Architecture"
Advisor: Prof. Dipankar Raychaudhuri

Università degli Studi di Torino 2009 - 2012
Laurea Magistrale in Computer Science (110/110 summa cum laude)
Advisors: Prof. Marco Grangetto and Prof. Giovanni Pau (UCLA)

Università degli Studi di Torino 2006 - 2009
Laurea in Computer Science (107/110)
Advisor: Prof. Matteo Sereno

RESEARCH TOPICS

Data driven network management. Design of systems and data driven models to advance the operationalization of machine learning for network management tasks.

Edge assisted network services. Design and analysis of solutions to support the distributed execution of network based services, *e.g.*, video analytics on heterogeneous edge computing resources.

Privacy oriented network systems. Performance analysis and design of network systems that preserve user privacy, *e.g.*, multi-party relay architectures.

Mobile Internet architectures. Design of name based networking solutions aimed at the deployment and support of advanced services in future Internet and mobile network architectures.

EXPERIENCE

École Normale Supérieure de Lyon 2022 - Now
Maître de conférences (Associate Professor). Computer Science department and LIP

NetMicroscope Inc. (University Spin-off) 2021 - Now
Co-founder and CTO. `https://www.netmicroscope.com`

Université Savoie Mont Blanc 2020 - 2022
Maître de conférences (Associate Professor). IAE Annecy and LISTIC

Nokia Bell Labs France 2018 - 2020
Research Scientist. AAAID Lab.

Inria, Paris, MiMove Research Group 2016 - 2018
Post-Doctoral Research Fellow. Mentor: Dr. Renata Cruz Teixeira.

WINLAB, Rutgers University, ECE Department 2012 - 2016
Graduate Research Assistant. Advisor: Prof. Dipankar Raychaudhuri.

Ericsson Research Fall 2015
Research Intern. Mentors: Icaro Da Silva, Gunnar Mildh.

FuturWei Technologies (Huawei Research Labs) Summer 2014
Research Intern. Mentor: Cedric Westphal.

NRL, University of California, Los Angeles, CS Department 2011 - 2012
Visiting Research Assistant. Advisor: Prof. Giovanni Pau

SELECTED PUBLICATIONS

Beyond Data Points: Regionalizing Crowdsourced Latency Measurements
T. Sharma, P. Schmitt, F. Bronzino, N. Feamster, and N. Marwell.

In ACM Sigmetrics 2025, Stony Brook, USA.

NetDiffusion: Network Data Augmentation Through Protocol-Constrained Traffic Generation
X. Jiang, S. Liu, A. Gember-Jacobson, A. Bhagoji, P. Schmitt, F. Bronzino, and N. Feamster.
In ACM Sigmetrics 2024, Venezia, Italy.

VideoJam: Self-Balancing Architecture for Live Video Analytics
Y. Faye, F. Faticanti, S. Jain, and F. Bronzino.
In ACM/IEEE SEC 2024, Rome, Italy.

OVIDA: Orchestrator for Video Analytics on Disaggregated Architecture
M. Singh, P. Rachuri, B. Cao, A. Sharma, V. Bhumireddy, F. Bronzino, S. Das, A. Gandhi, S. Jain.
In ACM/IEEE SEC 2024, Rome, Italy.

LEAF: Navigating Concept Drift in Cellular Networks
S. Liu, F. Bronzino, P. Schmitt, A. Nitin Bhagoji, N. Feamster, H. Garcia Crespo, T. Coyle, and B. Ward.
In ACM CoNEXT 2023, Paris, France.

Traffic Refinery: Cost-Aware Data Representation for Machine Learning on Network Traffic
F. Bronzino, P. Schmitt, S.Ayoubi, H. Kim, R. Teixeira, N. Feamster.
In ACM Sigmetrics 2022, Mumbai, India.

Inferring Streaming Video Quality from Encrypted Traffic: Practical Models and Deployment Experience.
F. Bronzino, P. Schmitt, S.Ayoubi, G. Martins, R. Teixeira, N. Feamster.
In ACM Sigmetrics 2020, Boston, USA.

NOVN: A Named-Object Based Virtual Network Architecture to Support Advanced Mobile Edge Computing Services.
F. Bronzino, S. Maheshwari, D. Raychaudhuri, I. Seskar.
Elsevier Pervasive and Mobile Computing Journal 69 (2020) 101261.

Scalability and Performance Evaluation of Edge Cloud Systems for Latency Constrained Applications.
S. Maheshwari, D. Raychaudhuri, I. Seskar, F. Bronzino.
In ACM/IEEE SEC 2018, Bellvue, USA.

FUNDING AS PRINCIPAL INVESTIGATOR

ANR GTTP: Global Tracking Transfer Protocol
Project developing an unified privacy-first geolocalization infrastructure. With Inria and Sentiens. **233k€ (out of project total 501k€), 2025-2028**

ANR-NSF MINT: Modeling Modern Network Traffic: From Data Representation to Automated Machine Learning
Project studying new methods to represent and model traffic for machine learning driven network management and inference. With University of Chicago and Stanford University. **219k€ (out of project total 602k€), 2021-2025**

ANR PARFAIT: Planning and Learning for AI-Edge Computing
Project studying distributed allocation schemes based on Markov decision processes and Reinforcement Learning for edge computing infrastructures tailored for AI-intensive processing tasks. With Avignon Université, Inria, and CNAM. **135k€ (out of project total 559k€), 2022-2025**

FIL INTERFERE: Stressing Systems Security Through On-the-fly Network Traffic Generation
Project studying the generation of real-time network traffic to create auditing tools for stressing systems and their security. With INSA Lyon **10k€, 2023-2025**

AAP USMB: Decentralized Live Video Analytics at the Network Edge
Project studying how to integrate mobile video sources into the video analytics processing infrastructure using heterogeneous compute resources at the edge of the network. **3k€, 2022**

FUNDING AS PROJECT MEMBER

ANR NEMIOT: Planning and Learning for AI-Edge Computing
Project studying the network behavior of IoT devices. With Inria and École Polytechnique. **172k€ (out of project total 372k€), 2024-2027**

Four grants through France And Chicago Collaborating in The Sciences (FACCTS)
With the University of Chicago. Four separate grants of **$22.5k, $15k, $15k, and $15k, 2021-2024**

Industrial contract with CELESTE
Project studying how to automatically extract network configurations satisfying client constraints using machine learning solutions that learn from past configurations rules and apply them to future cases. **Half a PhD thesis funding, 84k€, 2021-2024**

TEACHING

École Normale Supérieure de Lyon 2022 - Now

- Networks
- Network measurements
- Performance Evaluation
- Architectures and Operating Systems

IAE, Université Savoie Mont Blanc 2020 - 2022

- Intro to programming
- Machine learning
- Computer networks
- Operating systems

WINLAB, Rutgers University, ECE Department 2013 - 2016

- Rutgers ECE 544: Designed and graded the software project for the course Communication Networks II.
- Rutgers ECE 127: Instructed course laboratories for the course Introduction to Computers for Engineers.

ADVISING

Ph.D. Students

- Saloua Naama 2021 - Now
  "New network systems mechanisms to support Massive Machine Learning". With Prof. Salamatian (USMB).
- Youssouph Faye 2022 - Now
  "Distributed Edge Cloud Architecture for Executing AI-Based Applications". With Prof. Salamatian (USMB).
- Johann Hugon 2022 - Now
  "Modeling Modern Network Traffic for Automated Machine Learning in Network Systems". With Prof. Busson (U Lyon).
- Razanne Abu-Aisheh 2020 - 2023
  "Context-Aware Information Gathering and Processing Towards Supporting Autonomous Systems in Industry 4.0 Scenarios". With Dr. Thomas Watteyne (Inria) and Dr. Myriana Rifai (Nokia Bell Labs).

Interns

- Ciro Guida, Jules Marmier, Malo Jaffré, Gaetan Nodet, Duncan Bordin, Hakim Ouhida, Setareh Nouri, Ayoub Ben Ameur.

AWARDS AND HONORS

- 2016/2017 recipient of the "ECE Graduate Program Academic Achievement Award" from the ECE department at Rutgers University.
- Recipient of two best paper awards.
- Wall Street Journal Front Page Feature (August 19, 2019, "The Truth About Faster Internet: It's Not Worth It").
- Recipient of the George Shultz Innovation Fund ($200k Startup Fund)

PRESS

- "The Truth About Faster Internet: It's Not Worth It". The Wall Street Journal, Aug 21st 2019 front page print and online editions.
- "SES and Rutgers University test satellite content delivery network for streaming, OTT, and 5G". SES Blog.
- "WINLAB develops infrastructure for potential new internet", The Daily Targum, Nov 2nd 2016

PROFESSIONAL SERVICE

Editor: Area editor for Elsevier Computer Communications 2021-Now.

Technical Program Committee Member: ACM Sigmetrics 2025, ACM IMC 2025, USENIX NSDI 2025, IEEE Infocom 2025, ACM IMC 2024, ACM CoNEXT 2024, IEEE Infocom 2024, IEEE MedComNet 2024, CoRes 2024, ACM Sigmetrics 2023, IEEE Infocom 2023 (Distinguished Member), CoRes 2023, IEEE MedComNet 2023, IEEE Smartcomp 2023, IEEE CloudCom 2023, IEEE Infocom 2022 (Distinguished Member), IEEE MedComNet 2022, IEEE Smartcomp 2022, IEEE MedComNet 2021, ACM GoodIT 2021, ITC 33, IEEE Infocom 2021, IEEE Infocom 2020, ACM FRUGALTHINGS 2020 Workshop, IEEE Infocom 2019 (Distinguished Member), IEEE VTC2018-Fall, ACM NEAT 2018 Workshop, ACM MMSys 2018, ACM MobiMWareHN 2017 Workshop, ACM S3 2016 Workshop.

Organization Committee Member: IEEE CloudCom 2023, IEEE SMARTCOMP 2020, IEEE CCNC 2018, IEEE CCNC 2017, ACM MobiMWareHN 2017 Workshop, IEEE CCNC 2016, ACM MobiCom 2016, ACM MobiSys 2015.

Reviewer: IEEE TMC, IEEE TSC, ACM TOMM, Elsevier Computer Networks, etc.

MAIN REFERENCES

Dipankar Raychaudhuri, Distinguished Professor, Rutgers University, ray@winlab.rutgers.edu
Renata Cruz Teixeira, Senior Researcher at Inria and Visiting Scholar at Netflix, rteixeira@netflix.com
Nick Feamster, Neubauer Professor, University of Chicago, feamster@uchicago.edu