Europass
Curriculum Vitae

Personal information

First name / Surname	**Francesco Montorsi**
Address	MODENA (MO), 41122, ITALY
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E-mail	**francesco.montorsi@gmail.com**
LinkedIn	**http://www.linkedin.com/in/francescomontorsi**
Personal Website	**http://frm.users.sourceforge.net**
	https://github.com/f18m
Nationality	Italian (born in Modena)
Date of birth (dd/mm/yyyy)	02/04/1986

Work experience

Dates	Since Apr 2024
Occupation or position held	**Senior Staff Software Engineer [full remote]**
Main activities and responsibilities	I work in the Software Networking Team, which develops and operates orchestration software for Equinix data centers across the globe.

My role as Senior Staff SW Eng consists in the architectural design and in the implementation of microservices deployed in Kubernetes with CI/CD tools like ArgoCD that:

- provide **network observability** using tecnologies like gNMI for data acquisition, Prometheus/Grafana, OpenTelemetry (HoneyComb) for data presentation and Splunk for log aggregation;
- apply **network configurations** (e.g. on ToR switches) ensuring security, isolation across different customers, race-free atomic transactions; the configurations allow each server in a rack to enter a different network segment (L2 or L3) with bonded/unboded configurations, high-availability, etc;
- provide declarative APIs for networking and reconciliation loops to pro-actively detect drift between the intended and real state of the networks;

My focus is on the development of software (mostly in Golang) that works at scale and provides best-in-class operational experience. I also operate the software (DevOps approach: "you own what you develop") and I'm also regularly "on-call" to ensure 24h/7d availability of my team's software.

Name of employer	Equinix Inc.

Dates	Aug. 2014 – Mar 2024
Occupation or position held	**Software Architect (since 2023) [hybrid]** **Technical Leader (since 2019) [on-site]** **Software Engineer (since 2014) [on-site]**
Main activities and responsibilities	In 2014 I started with the development of Linux-based, high-throughput (up to 80 Gbit/s), multi-core (up to 72 cores) systems for probing and real-time analysis of core network traffic for mobile service providers, with particular emphasis on aspects like: kernel drivers for fast data transfer and filtering, custom hardware integration (e.g., cross-building for Tilera CPU), protocol analysis, data persistence, fast data indexing and retrieval. Since 2016 I worked on NFV transformation to enable inside Empirix products zero-touch automation of the whole packet processing service chain, integrating PUB/SUB networking, LXC/Docker deployment, Software-Defined-Networking (SDN) concepts, etc. Since 2019 I led, in the position of **Technical Leader,** a team composed up to 15 developers to transition the company products into cloud-native architectures, using technologies like Kubernetes, Helm, Istio and breaking up the monolithic products into smaller, elastic services. In Dec 2022 I obtained the certification of Kubernetes Application Developer (CKAD) from CNCF. In 2023 I was promoted to **Software Architect** and I worked with Product Management teams, Professional Support department to define next-generation architecture and evolve the stability, scalability and performances of the Infovista Ativa product. I designed high-performance, scalable, resilient microservices for cloud-native architectures; although coding is in my DNA, implementation activity was not 100% of my time in this position. In 2024 I started working on eBPF kernel and userspace programs to unlock observability into the Linux components of Infovista portfolio. Most of my software development at Infovista happened using object-oriented paradigm in Rust/C/C++ (some Java and Go as well) and several other scripting languages (Python, Bash, Ansible, etc). I am confident with toolkits/technologies like DPDK, ZeroMQ, Redis, Apache Kafka, Kubernetes, Docker, Helm and platforms like AWS, GKE, OpenStack, OpenVSwitch.
Name of employer	Empirix Italy s.p.a. (website: www.empirix.com), acquired by Infovista SaS in 2021 (website: www.infovista.com)

Dates	Feb. 2013 – July 2014
Occupation or position held	**Embedded System Engineer [on-site]**
Main activities and responsibilities	Development of Linux-based, low-power embedded systems for data collection and data processing. Development of low-power wireless sensor networks. Development of low-power, OEM radio modules for positioning applications. I have been involved in several projects employing some of the latest wireless technologies: Bluetooth Low Energy 4.0, ZigBee, IEEE 802.15.4, Wi-Fi (IEEE 802.11), etc. I worked on several microcontrollers (Texas Instruments, Atmel, ARM-based SoC, etc).
Name of employer	Embit s.r.l. (website: www.embit.eu)

Education and training

Dates	February-April 2018
Title of qualification awarded	**Algorithms Part I**, by Princeton University
Course organizer	Coursera
Principal subject	Sorting, Balanced Binary Search Trees, Symbol Tables, Algorithm Complexity

Dates	2010 - 2012
Title of qualification awarded	**PhD** in Information and Communication Technologies (ICT) (in Italian: "Dottorato di Ricerca in Tecnologie dell'Informazione e delle Comunicazioni")
Thesis	Localization and Tracking for Indoor Environments
Principal subject	Research on Technologies for Indoor and Outdoor Localization and Navigation Systems (website: www.commlab.unimo.it)
Organisation providing education	University of Modena and Reggio Emilia, ICT Doctorate School (website: www.ict.unimo.it)
Notes	During the PhD I spent 7 months (from Jan. 2011 till July 2011) at the Wireless Communication and Network Sciences Laboratory at **Massachusetts Institute of Technology** (MIT), Cambridge, MA, USA in quality of *PhD Visiting Student*.

Dates	2007 – 2009 (master), 2004 – 2007 (bachelor)
Title of qualification awarded	**Master** and Bachelor degree in Electrical Engineering (in Italian: "Laurea magistrale in Ingegneria Elettronica", classe 32/S - D.M. 509/1999 and : "Laurea triennale in Ingegneria Elettronica", classe 9 - D.M. 509/1999)
Level in national classification	110/110 cum laude (both)
Thesis	Development and implementation of a wideband digital modem Development and implementation of a frequency synchronization system for OFDM modems
Organisation providing education	University of Modena and Reggio Emilia, Faculty of Engineering (website: www.ingmo.unimore.it)

Competitions/Awards

Dates	December 2022
Award	**Certified Kubernetes Application Developer (CKAD)**
From	Cloud Native Computing Foundation (CNCF)
Brief Description	Certification obtained with grade of 95/100. Certificate ID Number: LF-mf9c2n70qk

Dates	January 2014
Award	**Certificate of Merit for Marked Contributions to National and International Scientific Research**
From	University of Modena and Reggio Emilia
Brief Description	I have been awarded for my scientific contributions during my PhD, in the field of telecommunications.

Dates	June 2013
Award	**Annual GTTI Award for PhD Theses in the field of Communication Technologies**
Organizer	Gruppo nazionale Telecomunicazioni e Tecnologie dell'Informazione (GTTI)
Brief Description	GTTI establishes an annual Award in recognition of the best PhD Theses de-fended at an Italian University in the areas of Communications Technologies (Signal Processing, Digital Communications, Networking). Each Award is constituted by a diploma and by a prize of 1,500€. I won the award for the best 2012 PhD thesis in "Digital Communications".

Dates	Apr. - Aug. 2007 and Apr. – Aug. 2006
Type of Competition	Software design competition **"Google Summer of Code"**
Organizer	Google Inc.
Brief Description	"The Google Summer of Code is an annual program, first held from May to August 2005, in which Google awards stipends to hundreds of students who successfully complete a requested free and open-source software coding project during the summer" (Wikipedia)
Details	I took part to the "Google Summer of Code 2007" competition and the "Google Summer of Code 2006" competition, both completed successfully. The software coding projects were "XTI Metadata Completion" (in 2007, supervised by Dr. Stefan Cmosor) and "wxWidgets components package manager" (in 2006, supervised by Dr. Julian Smart), both for the open-source software library wxWidgets (www.wxwidgets.org).

Personal skills and competences

Mother tongue(s)	**Italian**

Other language(s)

Self-assessment	Understanding		Speaking		Writing
European level (*)	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	B2	B2	C1
French	A1	B1	A1	A1	A2

(*) Common European Framework of Reference for Languages:
A1 = Breakthrough or beginner, A2 = Waystage or elementary,
B1 = Threshold or intermediate, B2 = Vantage or upper intermediate,
C1 = Effective Operational Proficiency or advanced, C2 = Mastery or proficiency

Social and Organisational skills and competences	Strong capabilities in planning the development of both theoretical and applied problems' solutions. Advisor of 6 Bachelor and Master Degree students' theses.
Technical skills and competences (software development)	- C/C++, Go, Python (very confident, used to develop production software) - Rust, Lua (not used in production software) - Linux kernel and Linux networking (PUB/SUB communication models, TCP/UDP kernel stack, etc); - design of scalable applications as Kubernetes microservices; - fast packet acquisition (data path; experience with toolkits like DPDK, ZeroMQ, Apache Kafka, etc); - parallel software development for SMP architectures (multithreading); - virtualized environments (VMWare, KVM, OpenStack and software-defined networking); - cloud-native environments (on-premise Kubernetes, AWS, GKE); - cellular networks systems and protocols (GSM, LTE and in particular NFV ecosystem);
Technical skills and competences (system modelling)	- statistical signal processing: linear and non-linear filtering (e.g., Kalman-based filtering), linear and non-linear detection and estimation problems; - modeling of dynamic systems using experimental data: model-based design and model-based performance assessment (e.g., using MATLAB/Simulink); - problem solving.

Publications

Scientific Journals	**Montorsi, F.**; Vitetta, G.; "On the Performance Limits of Pilot-Based Estimation of Bandlimited Frequency-Selective Communication Channels," IEEE Transactions on Communications, vol. 59, no. 99, pp.1-6, Nov. 2011. **Montorsi, F.**; Pancaldi, F.; Vitetta, G.; "Statistical Characterization and Mitigation of NLOS Bias in UWB Localization Systems," Advances in Electronics and Telecommunications, no. 4, pp. 11-17, ISSN 2081-8580, Apr 2011. **Montorsi, F.**; Mazuelas S.; Vitetta, G.; Win M. Z.; "On the Performance Limits of Map-Aware Localization," IEEE Transactions on Information Theory, vol. 59, no. 8, pp. 5023-5038, Aug. 2013. **Montorsi, F.**; Pancaldi, F.; Vitetta, G.; "Map-Aware Models for Wireless Indoor Localization Systems: An Experimental Study," IEEE Transactions on Wireless Communications, vol. 13, no. 5, pp. 2850-2862, May 2014. **Montorsi, F.**; Pancaldi, F.; Vitetta, G.; "Reduced-Complexity Algorithms for Indoor Map-Aware Localization Systems," Hindawi International Journal of Navigation and Observation Volume 2015 (2015), Article ID 562680. Vitetta, G.; Sirignano, E.; **Montorsi, F**.; "Particle Smoothing for Conditionally Linear Gaussian Models as Message Passing Over Factor Graphs" IEEE Transactions on Signal Processing, Volume: 66, Issue: 14, July 2018
Conferences	**Montorsi, F.**; Pancaldi, F.; Vitetta, G.; "Statistical characterization and mitigation of NLOS errors in UWB localization systems," 2011 IEEE International Conference on Ultra-Wideband (ICUWB), pp. 86-90, 14-16 Sept. 2011. **Montorsi, F.**; Mazuelas S.; Vitetta, G.; Win M. Z.; "On the Impact of A Priori Information on Localization Accuracy and Complexity," 2013 IEEE International Conference on Communication (ICC) , pp. 5792-5797, 9-13 June 2013. **Montorsi, F.**; Pancaldi, F.; Vitetta, G.; "Map-Aware RSS Localization Models and Algorithms Based on Experimental Data," 2013 IEEE International Conference on Communication (ICC) , pp. 5798-5803, 9-13 June 2013. **Montorsi, F.**; Pancaldi, F.; Vitetta, G.; "Design and Implementation of an Inertial Navigation System for Pedestrians Based on a Low-Cost MEMS IMU," 2013 IEEE International Conference on Communication (ICC) , pp. 57-61, 9-13 June 2013. **Montorsi, F.**; Pancaldi, F.; Vitetta, G.; "Reduced-Complexity Techniques for Indoor Map-Aware Localization," 2015 IEEE International Conference on Communications (ICC) - Workshop on Advances in Network Localization and Navigation
Others	Contributor and Internal Reviewer of "Final Report: Seamless Positioning Techniques in Wireless Communications", Deliverable DB.4, NewCom++ European project. Available online at http://www.newcom-project.eu/public-deliverables. **Montorsi, F.**; "Efficient Cross-Platform Development: Real-Time Video Processing," Software Developer Journal, Issue 5/2012 (10), ISSN: 1734-3933, available online at http://en.sdjournal.org/.

Memberships in Professional Societies

Member of IEEE Communications Society (website: http://www.comsoc.org/) from 2007 to 2012.
I served as a reviewer for "IEEE Transactions on Wireless Communications", "IEEE Transactions on Signal Processing", "IEEE Wireless Communications Letters" and several IEEE conferences.

Member of CNIT ("Consorzio Nazionale Interuniversitario per le Telecomunicazioni", the Italian association for telecommunications; website: http://www.cnit.it/) from 2010 to 2012.
Member of Softech-ICT (University lab for applied research, technology transfer and technology commercialisation; website: http://www.softech.unimore.it/) from 2010 to 2012.

ITALIAN ONLY: abilitato all'esercizio della professione di Ingegnere nella seconda sessione dell'anno solare 2009, sezione A.

Partecipation in Open Source projects

Since high-school (roughly around 2000) I have been collaborating on several Open Source projects contributing code and ideas.
The list of projects I took part in is very long, see https://frm.users.sourceforge.net/prog.html .
During years 2000-2010 I focused on the UI toolkit wxWidgets which allowed me to create software related to electronic projects.
After 2010 I shifted my interest on videogames (Unity framework mostly).
After 2015 I contributed to the community some tools related to telecommunication world (see e.g. http://github.com/f18m/large-pcap-analyzer) and C/C++ high-performance computing and container monitoring (see e.g. https://github.com/f18m/malloc-benchmarks , https://github.com/f18m/boost-intrusive-pool , https://github.com/f18m/cmonitor).
More recently I'm active in the HomeAssistant community with projects like e.g. https://github.com/f18m/ha-addon-dnsmasq-dhcp-server.

LEGAL DISCLAIMER (ITALIAN ONLY):

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".

Firma   FRANCESCO MONTORSI