Profile

Ph.D. graduated in Computer and Systems Engineering with a passion for technological innovation. His attitude in understanding and satisfying end-user needs allowed him to mature experience in different regional, industrial and European projects.

His research interests cover different topics in the area of the Internet of Things with special focus on innovative architectures and applications for food traceability, smart grids, smart cities, industrial processes, and smart health.

Address: <hidden-for-website> - Lecce - Italy
Date and place of birth: 15/10/1987, Brindisi
Phone and **Email**: please use the Contact form on the website
Personal website: www.teodoromontanaro.it
B Italian **driving licence**
ORCID: https://orcid.org/0000-0003-1750-8268

LANGUAGES

English:	**B2** (Fluent written and oral)
Italian:	Native speaker

CERTIFICATES

- Preparatory Italian courses to access teaching public competitions: Sep 2018
- **Machine learning** course on Coursera - Statement of Accomplishment: Apr 2015
- **FCE** certification (Cambridge): Jun 2014
- ECDL certification (AICA): Feb 2004

PERSONAL SKILLS

- **Project Planning**
- **Collaborative leadership**
- **R&D** (EU-proposal writing, task leading, networking, collaborative development)
- **Problem solving**
- **Product Innovation**

DIGITAL COMPETENCIES

- Relevant **programming languages and technologies**:
  Java, HTML5, CSS3, AJAX, JavaScript, MySQL, AngularJS, Objective-C, Node.js, JavaFX, OSGi, PHP, Python, Bash, SVG, XML, JSON, MongoDB, Android; **Block-chain and DLT**, Bitcoin, IOTA, Etherium
- Relevant used **frameworks**:
  PHP CodeIgniter, AngularJS, JQuery, Node.js, Jekyll, OSGi Felix, iPOJO;
- Relevant **Version Control Systems**:
  Git (expert), SVN (basic);
- **Machine Learning** tools:
  Weka, Scikit-learn;
- **Other tools**:
  Latex; Android Studio; Nginx, FIWARE inf. (Orion Context Broker, Keyrock IdM, PEP Proxy, AuthZForce); Gimp, Blender; Unity
- **Other competences**
- **Agile SCRUM**
- Computer Vision: OpenCV Library (used in Qt) and Point Cloud Library

EDUCATION

From November 2014 to October 2017

Ph.D. in Computer and Control Engineering, **Politecnico di Torino** and **TIM**

- **Thesis title**: IoT Notifications: from disruption to benefit - Architectures for the future of notifications in the IoT.

From March 2011 to March 2014

Master's degree in computer engineering, **Politecnico di Torino**

- **Thesis title**: Design and Implementation of WebSocket API for the Dog Gateway.

From September 2006 to March 2011

Bachelor's Degree in Computer Engineering, **Università del Salento**

- **Thesis title**: Benchmarking applied to climate models.

PROFESSIONAL EXPERIENCES

Università del Salento - Via Monteroni, Lecce

From September 2020 to *ongoing*

- o **Post-doc Researcher** on Internet of Things Systems and Services.
- o **Teaching activities:** Teaching Assistant for the course of IoT
- o **Teaching activities:** Teacher of a course on Blockchain for Ph.D. students

Links Foundation (previously ISMB) - Via Pier Carlo Boggio, 61, Torino

From November 2017 to *ongoing*

- o **EU Researcher** on Internet of Things Systems and Services.
  Worked on European projects as task-leader, internal project manager and developer. Active collaboration in writing new proposals, designing shared architectures (in IoT Large-Scale Pilots Programme) and representing the company in several consortium meetings and conferences.
- o **Teaching activities:** Teacher in professional courses regarding **IoT** and **Machine Learning** domain.

Politecnico di Torino in collaboration with TIM (previously Telecom Italia) - Corso Duca degli Abruzzi, 24, Torino

From November 2014 to November 2017

- o **Solutions engineer – activity performed within the collaboration with TIM**
  Design and development of IoT solutions with the aim of applying Intelligence (i.e., **Machine Learning** techniques) to the **IoT** domain (e.g., IoT notifications).
- o **Teaching activities**
  Teaching assistant for the courses: a) Ambient Intelligence and b) Social networking.

Augusto De Marco S.R.L. - Corso Umberto I, 90, Brindisi

From May 2014 to October 2014

- o **Solutions engineer**
  Design and implement custom management software, website and, software for interactive totem.

- **Università del Salento**
  o Jan 2023: Professor of a course (15h) for Ph.D. student "Blockchain and Distributed Ledger Technologies applied to IoT" course. Ph.D. course in "Engineering of Complex Systems and Material"
  o From March 2021 to ongoing: Teaching assistant for the "IoT" course for master students
- **DEUSTO University – Bilbao – Spain**
  o Nov 2022: Visiting Lecturer for Ph.D. students (12h course on Blockchain/DLTs applied to the IoT domain)
- **Links Foundation (previously ISMB)**
  From November 2017 to *ongoing*
  o Professional training courses
- **Politecnico di Torino**
  Academic Year 2015/2016 and 2016/2017

  o Teaching assistant for the course: Social networking
  o Teaching assistant for the course: Ambient Intelligence

(https://publons.com/researcher/2191528/teodoro-montanaro/)

- IEEE Internet of Things Journal (24)
- IEEE Access Journal (23)
- MDPI Sensors Journal (5)
- MDPI Electronics Journal (3)
- Elsevier Journal of Communication Software and Systems – FGCS (3)
- MDPI Future Internet Journal (2)
- IEEE Transactions on Mobile Computing (1)
- IEEE Transactions on Network and Service Management (1)
- MDPI Healthcare Journal (1)
- MDPI IoT Journal (1)
- MDPI Informatics (1)
- IEEE SPLITECH 2023 conference as Technical Program Committee of the "International Symposium on Internet of Things"
- IEEE WF-IoT 2022 conference as Technical Program Committee
- IEEE SPLITECH 2022 conference as Technical Program Committee of the "International Symposium on Internet of Things"
- IEEE COMPSAC 2020 Conference - help Program Committee in reviewing papers
- IEEE MLBD 2020 - help Program Committee in reviewing papers

EasySeller - via Villafranca 32, Brindisi
  From January 2012 to June 2012
    o **Website designer and developer**
      Design and implement a website for online auctions. The aim of users is: guess the price of a product

IMPES ENGINEERING S.R.L. - località Leggiadrezze, Taranto
  From September 2007 to March 2008
    o **PDS designer for the project "RUWAIS 3 NGL TRAIN" for "SNAMPROGETTI SPA"**
      CAD design and engineers' assistant in projects mainly related to energy production from waste

RESEARCH ACTIVITIES – PUBLICATIONS

Note: The paper [1], [15] to [17], from [25] to [26], from [38] to [40], and from [42] to [43] authors order is alphabetical for university authors, in my research group.

Journal Articles

[1] Bisanti G. M., Mainetti L., **Montanaro T.**, Patrono L., Sergi L., "Digital twins for aircraft maintenance and operation: A systematic literature review and an IoT-enabled modular architecture", Internet of Things, Volume 24, 2023, 100991, ISSN 2542-6605, DOI: 10.1016/j.iot.2023.100991.

[2] Shumba A.-T., **Montanaro T.**, Sergi I., Bramanti A., Ciccarelli M., Rispoli A., Carrizzo A., De Vittorio M., Patrono L. "Wearable Technologies and AI at the Far Edge for Chronic Heart Failure Prevention and Management: A Systematic Review and Prospects" (2023) Sensors, 23 (15), art. no. 6896, DOI: 10.3390/s23156896

[3] **Montanaro T.**, Sergi I., Stefanizzi I., Landi L., Di Donato L., Patrono L. IoT-Aware Architecture to Guarantee Safety of Maintenance Operators in Industrial Plants (2023) Applied System Innovation, 6 (2), art. no. 46, DOI: 10.3390/asi6020046

[4] Shumba A.-T., **Montanaro T.**, Sergi I., Fachechi L., De Vittorio M., Patrono L. Leveraging IoT-Aware Technologies and AI Techniques for Real-Time Critical Healthcare Applications (2022) Sensors, 22 (19), art. no. 7675, DOI: 10.3390/s22197675

[5] Catarinucci, L., Colella, R., Corcione, C.E., Ingrosso, C., Greco, A., Ferrari, F., Curri, M.L., Leo, C.G., Mandriota, G., Molinaro, V., **Montanaro, T.**, Patrono, L., Sabina, S., Sergi, I., Shumba, A.T., Spedicato, L., Striani, R. Smart IoT system empowered by customized energy-aware wireless sensors integrated in graphene-based tissues to improve workers thermal comfort (2022) Journal of Cleaner Production, 360, art. no. 132132. DOI: 10.1016/j.jclepro.2022.132132

[6] **Montanaro, T.**, Sergi, I., Motroni, A., Buffi, A., Nepa, P., Pirozzi, M., Catarinucci, L., Colella, R., Chietera, F.P., Patrono, L. An IoT-Aware Smart System Exploiting the Electromagnetic Behavior of UHF-RFID Tags to Improve Worker Safety in Outdoor Environments (2022) Electronics (Switzerland), 11 (5), art. no. 717. DOI: 10.3390/electronics11050717

[7] **Montanaro, T.**, Sergi, I., Basile, M., Mainetti, L., Patrono, L. An IoT-Aware Solution to Support Governments in Air Pollution Monitoring Based on the Combination of Real-Time Data and Citizen Feedback. Sensors. 2022; 22(3):1000. https://doi.org/10.3390/s22031000

[8] Bilbao-Jayo, A.; Cantero, X.; Almeida, A.; Fasano, L.; **Montanaro, T.**; Sergi, I.; Patrono, L. "Location Based Indoor and Outdoor Lightweight Activity Recognition System". Electronics 2022, 11, 360. DOI: 10.3390/electronics11030360

[9] Malagnino, A., **Montanaro, T.**, Lazoi, M., Sergi, I., Corallo, A., Patrono, L., "Building Information Modeling and Internet of Things integration for smart and sustainable environment: A review" In Journal of Cleaner Production

Volume 312, 2021, 127716, ISSN 0959-6526, DOI: 10.1016/j.jclepro.2021.127716

[10] **Montanaro, T.**, Sergi, I., Bisanti, G., Cambò, A., Patrono, L., "Fast-prototyping Approach to Design and Validate Architectures for Smart Home," in Journal of Communications Software and Systems, vol. 17, no. 2, pp. 177-184, June 2021, DOI: 10.24138/jcomss-2021-0005

[11] Bilbao-Jayo A., Almeida A, Sergi I., **Montanaro T.**, Fasano L., Emaldi M., Patrono L., "Behavior Modeling for a Beacon-Based Indoor Location System" Sensors 21, no. 14: 4839. DOI: 10.3390/s21144839

[12] Tolcha, Y., Kassahun, A., **Montanaro T.**, Conzon, D., Schwering, G., Maselyne, J., and Kim, D., "Towards Interoperability of Entity-Based and Event-Based IoT Platforms: The Case of NGSI and EPCIS Standards". In IEEE Access Journal – March 2021, vol. 9, pp 49868-49880. DOI: 10.1109/ACCESS.2021.3069194

[13] Sergi, I.; **Montanaro, T.**; Benvenuto, F.L.; Patrono, L. "A Smart and Secure Logistics System Based on IoT and Cloud Technologies". Sensors 2021, 21, 2231. DOI: 10.3390/s21062231

[14] Verdouw, C.; Sundmaeker, H.; Tekinerdogan, B.; Conzon, D.; **Montanaro, T.** "Architecture framework of IoT-based food and farm systems: A multiple case study". In Computers and Electronics in Agriculture Journal, Volume 165, 2019. DOI: 10.1016/j.compag.2019.104939

[15] Corno, F and De Russis, L. and **Montanaro, T.** "XDN: Cross-Device Framework for Custom Notifications Management". In COMPUTING Journal - November 2019, Volume 101, Issue 11, pp 1735–1761. DOI: 10.1007/s00607-018-0686-6

[16] Corno, F and De Russis, L. and Marcelli, A. and **Montanaro, T.** "An Unsupervised and Non-Invasive Model for Predicting Network Resource Demands". In IEEE Internet of Things Journal, vol. 5, no. 6, pp. 4342-4350, Dec. 2018. DOI: 10.1109/JIOT.2018.2860681

[17] Corno, F.; **Montanaro, T.**; Migliore, C.; Castrogiovanni, P., "SmartBike: an IoT Crowd Sensing Platform for Monitoring City Air Pollution". In: INTERNATIONAL JOURNAL OF ELECTRICAL AND COMPUTER ENGINEERING, vol. 7 n. 6. DOI: 10.11591/ijece.v7i6.pp3602-3612

Conference Proceedings

[18] **Montanaro, T.**, Sergi, I., Quarta, A., Manrique, M.E., Ione Sainz Bedoya, N., De Ipiña, D.L., De Artaza, G., Patrono, L. "The combined use of IoT and Blockchain in Logistics: a comparative experiment" (2023) 2023 8th International Conference on Smart and Sustainable Technologies, SpliTech 2023, DOI: 10.23919/SpliTech58164.2023.10193357

[19] Sergi, I., **Montanaro, T.**, Shumba, A.T., De Fazio, R., Visconti, P., Patrono, L. "An IoT-based Platform for Remote Monitoring of Patients with Heart Failure: an Overview of Integrable Devices" (2023) 2023 8th International Conference on Smart and Sustainable Technologies, SpliTech 2023, DOI: 10.23919/SpliTech58164.2023.10193686

[20] Gammariello, M.C., Sergi, I., **Montanaro, T.**, Shumba, A.T., Mazzeo, P.L., Patrono, L., Distante, C. "SpO2 Estimation Using Deep Neural Networks: A Comparative Study" (2023) 2023 8th International Conference on Smart and Sustainable Technologies, SpliTech 2023, DOI: 10.23919/SpliTech58164.2023.10193267

[21] Sergi, I., **Montanaro, T.**, Shumba, A.T., Bramanti, A., Ciccarelli, M., Carrizzo, A., Visconti, P., De Vittorio, M., Patrono, L. "An IoT-aware system for remote monitoring of patients with chronic heart failure" (2023) 2023 8th International Conference on Smart and Sustainable Technologies, SpliTech 2023, DOI: 10.23919/SpliTech58164.2023.10193338

[22] Vergine, V., Sergi, I., **Montanaro, T.**, Shumba, A.T., Luca Benvenuto, F., Patrono, L. "Leveraging Internet of Things and Distributed Ledger Technology for Cold Chain Management in Freight Transportation" (2023) 2023 8th International Conference on Smart and Sustainable Technologies, SpliTech 2023, DOI: 10.23919/SpliTech58164.2023.10193248

EXTRA WORK ACTIVITIES

- Development of amateur projects that go beyond the simple theoretical knowledge;
- Implementation of apps for Windows Phone 7 (Affinity pair, *stopwatch and sirens)*
- Implementation of a website (www.rosario49.it/multisms) that lets users send free sms to every Italian number simultaneously (developed by using **PHP, MySQL, JavaScript and AJAX**)
- Implementation of an app for iOS**:** iUnisalento
- Swimming activities Instructor. Patents owned: Instructor and Lifeguard
- Volunteering: Animator and educator in a Salesian Oratory (experience with children and teenagers: organization of events and education activities)

[23] **Montanaro, T.**, Sergi, I., Shumba, A.-T., Pizzolante, M., Pirozzi, M., Patrono, L. "BLE-based IoT Proximity Warning System for Guaranteeing the Operators' Safety in Outdoor Working Environments" (2023) 2023 8th International Conference on Smart and Sustainable Technologies, SpliTech 2023, DOI: 10.23919/SpliTech58164.2023.10193165

[24] Del Fiore, G., **Montanaro, T.**, Sergi, I., Cardone, N., Matino, L., Patrono, L. "A Microservice-based Software Architecture to Enhance Collaboration among heterogenous stakeholders operating in the Research Domain" (2023) 2023 8th International Conference on Smart and Sustainable Technologies, SpliTech 2023, DOI: 10.23919/SpliTech58164.2023.10193055

[25] Catarinucci, L., Cecchi, G., Chietera, F.P., Cecchini, M., Colella, R., Gabbrielli, R., Landi, L., Marrazzini, L., Monarca, D., **Montanaro, T.**, Motroni, A., Nepa, P., Patrono, L., Pirozzi, M., Puri, D., Rossi, P., Sergi, I., Tavanti, E., Vita, L. "Enhancing Worker Safety in Unmanned Agricultural Environments through the Integration of RFID, RTK, UWB, and LIDAR: Insights from Research Projects" (2023) 2023 8th International Conference on Smart and Sustainable Technologies, SpliTech 2023, DOI: 10.23919/SpliTech58164.2023.10193236

[26] Catarinucci, L.; Chietera, F. P.; Colella, R.; Di Donato, L.; **Montanaro, T.**; Patrono, L.; Sergi, I.; "An IoT smart system to ensure safety in industrial working environments through a 2.4 Ghz radio controllable interface", 2022 7th International Conference on Smart and Sustainable Technologies (SpliTech), 2022 - July 5-8, 2022, DOI: 10.23919/SpliTech55088.2022.9854227

[27] **Montanaro, T.**; Sergi, I.; Basile, M.; Matera, M.; Giangreco, E.; Patrono, L., "An Innovative Decision Support System for Smart Cities Government based on Sentiment Analysis and IoT technologies", 2022 7th International Conference on Smart and Sustainable Technologies (SpliTech), 2022 - July 5-8, 2022, DOI: 10.23919/SpliTech55088.2022.9854247

[28] **Montanaro, T.**; Sergi, I.; Shumba, A. T.; Luggeri, M.; Solida, A.; Patrono, L., "A Survey on the combined use of IoT and Edge AI to improve Driver Monitoring systems", 2022 7th International Conference on Smart and Sustainable Technologies (SpliTech), 2022 - July 5-8, 2022, DOI: 10.23919/SpliTech55088.2022.9854220

[29] **Montanaro, T.**; Sergi, I.; Shumba, A. T.; Gammariello, M. C.; Imperiale, E.; Patrono, L., "A Literature Review on Outdoor Localization Systems based on the Bluetooth Technology", 2022 7th International Conference on Smart and Sustainable Technologies (SpliTech), 2022 - July 5-8, 2022, DOI: 10.23919/SpliTech55088.2022.9854361

[30] Shumba, A. T.; **Montanaro, T.**; Sergi, I.; Fachechi, L.; De Vittorio, M.; Patrono, L., "Embedded Machine Learning: Towards a Low-Cost Intelligent IoT edge", 2022 7th International Conference on Smart and Sustainable Technologies (SpliTech), 2022 - July 5-8, 2022, DOI: 10.23919/SpliTech55088.2022.9854248

[31] Jayo, A.B., Cantero, X., Almeida, A., Fasano, L., **Montanaro, T.**, Sergi, I., Patrono, L. "A lightweight semantic-location system for indoor and outdoor behavior modelling" (2021) 2021 6th International Conference on Smart and Sustainable Technologies, SpliTech 2021. DOI: 10.23919/SpliTech52315.2021.9566408.

[32] **Montanaro, T.**, Sergi, I., Corvaglia, S., Mainetti, L., Vilei, A., Rossi, B., Palmieri, A., Patrono, L. "Blockchain technology based on algorand applied to low-power and low-cost IoT devices" (2021) 2021 6th International Conference on Smart and Sustainable Technologies, SpliTech 2021 DOI: 10.23919/SpliTech52315.2021.9566464

[33] **Montanaro, T.**, Sergi, I., Limelli, S., Patrono, L. "Fog computing: Implementation of a simple fog scenario through IoT public services" (2021) 2021 6th International Conference on Smart and Sustainable Technologies, SpliTech 2021. DOI: 10.23919/SpliTech52315.2021.9566323

[34] Sergi, I., **Montanaro, T.**, Gammariello, M.C., Patrono, L. The use of bluetooth mesh networking in IoT-aware applications" (2021) 2021 6th International Conference on Smart and Sustainable Technologies, SpliTech 2021. DOI: 10.23919/SpliTech52315.2021.9566430

[35] Sergi, I., Catarinucci, L., **Montanaro, T.**, Colella, R., Shumba, A.T., Del Ferraro, S., Lenzuni, P., Patrono, L. "An IoT-aware smart system to detect thermal comfort in industrial environments" (2021) 2021 6th International Conference on Smart and Sustainable Technologies, SpliTech 2021 DOI: 10.23919/SpliTech52315.2021.9566378

[36] Shumba, A.T., **Montanaro, T.**, Sergi, I., De Vittorio, M., Patrono, L. "A smart IoT-aware backyard poultry farming exploiting low-cost and low-power technologies" (2021) 2021 6th International Conference on Smart and Sustainable Technologies, SpliTech 2021. DOI: 10.23919/SpliTech52315.2021.9566396

[37] Vandenbussche, C., Renzi, F., **Montanaro, T.**, Mertens, K., Conzon, D., Briene, P., De Wit, K., Aarts, D., Klont, R., Maselyne, J., "Unlocking the value of data via Internet of Things in the fattening pig sector", Abstracts of the 70th Annual Meeting of the European Federation of Animal Science. Book DOI: 10.3920/978-90-8686-890-2 - ISBN (Print): 978-90-8686-339-6 - ISBN (Electronic): 978-90-8686-339-6

[38] Cagliero, L. and De Russis, L. and Farinetti, L and **Montanaro, T.**, "Improving the effectiveness of SQL learning practice: a data-driven approach". In 2018 IEEE 42nd Annual Computer Software and Applications Conference (COMPSAC), Tokyo, 2018, pp. 980-989. DOI: 10.1109/COMPSAC.2018.00174

[39] Corno, F.; De Russis, L.; **Montanaro, T.**, "XDN: Cross-Device Framework for Custom Notifications Management". In: The 9th ACM SIGCHI Symposium on Engineering Interactive Computing Systems, Lisbon (Portugal), June 26-29, 2017. DOI: 10.1145/3102113.3102127

[40] Corno F., De Russis L., **Montanaro T.**, "Estimate User Meaningful Places through Low-Energy Mobile Sensing", in SMC 2016: IEEE International Conference on Systems, Man, and Cybernetics, Budapest, October 9-12, 2016, DOI: 10.1109/SMC.2016.7844703

[41] Ghajargar, M.; Zenezini, G.; **Montanaro, T.** (2016). "Home delivery services: innovations and emerging needs". In: 8th IFAC Conference on Manufacturing Modelling, Management and Control MIM 2016, Troyes, France, 28—30 June 2016. pp. 1371-1376. DOI: 10.1016/j.ifacol.2016.07.755

[42] Corno F., De Russis L., **Montanaro T.**, "A Context and User Aware Smart Notification System", in IEEE 2nd World Forum on Internet of Things (WF-IoT), Milan, Italy, 14-16 December 2015, pp. 645-651. DOI: 10.1109/WF-IoT.2015.7389130

[43] Corno F., De Russis L., **Montanaro T.**, Castrogiovanni P., "IoT Meets Exhibition Areas: a Modular Architecture to Improve Proximity Interactions", in FiCloud 2015: The 3rd International Conference on Future Internet of Things and Cloud, Roma, 24-26 August, 2015, pp. 293-300, DOI: 10.1109/FiCloud.2015.25

[44] **Montanaro, T.** (2015), "SWARM Joint Open Lab Politecnico Di Torino, Italy". In: CROSSROADS, vol. 22 n. 2, pp. 70-71, DOI: 10.1145/2845137

[45] Atzeni A.; Su T.; **Montanaro T.** (2014), "Lightweight Formal Verification in Real World, A Case Study". In: WISSE 2014: 4th International Workshop on Information Systems Security Engineering, Thessaloniki (Greece), 17 June 2014. pp. 335-342, DOI: 10.1007/978-3-319-07869-4_31