

Francesco Betti Sorbelli

Curriculum Vitæ

Last update: March 24, 2021

Short Biography

I received the Bachelor and Master degrees *cum laude* in Computer Science from the University of Perugia, Italy, in 2007 and 2010, respectively, and my Ph.D. in Computer Science from the University of Florence, Italy, in 2018. From 2018 to 2019, I was a postdoc researcher at the Department of Computer Science, University of Perugia under the supervision of Cristina M. Pinotti. Recently, I was a postdoc researcher at the Department of Computer Science, Missouri University of Science and Technology, USA under the supervision of Sajal K. Das. My research interests include algorithms design, combinatorial optimization, unmanned vehicles.

Education

- 11/2014–03/2018 **Ph.D., Computer Science.** Thesis title: *"Localization of Terrestrial Objects Using a Drone with UWB Antennas"*. Advisor: Maria Cristina Pinotti, Dept. of Computer Science and Math., University of Florence (Italy). Judgment: *optimum*.
- 10/2007–02/2010 **M.Sc., Computer Science.** Thesis title: *"Coloring and Routing in Wireless Sensor Networks"*. Advisor: Maria Cristina Pinotti. Dept. of Computer Science and Math., University of Perugia (Italy). Judgment: *summa cum laude*.
- 10/2003–05/2007 **B.Sc., Computer Science.** Thesis title: *"Asynchronous Training in Wireless Sensor Networks: Two Level Algorithm and Cooperative Approach"*. Advisor: Ferruccio Barsi. Dept. of Computer Science and Math., University of Perugia (Italy). Judgment: *summa cum laude*.

Work Experience

Academic

- 02/2021–NOW **Lecturer.** Course "Informatica", Law, University of Perugia.

- 01/2020–01/2021 **Post-doctoral Fellow.** Advisor: Sajal K. Das. Department of Computer Science, Missouri Science and Technology University, Rolla, MO, USA.
- 11/2018–10/2019 **Post-doctoral Fellow.** Advisor: Maria Cristina Pinotti. Funded by POR UMBRIA FSE 2014-2020. Project title: *NALP-SAPR: Navigazione Autonoma e Localizzazione Precisa per Sistemi Aeromobili a Pilotaggio Remoto*. Dept. of Computer Science and Math., University of Perugia.
- 10/2014–02/2015 **Tutor.** Course “Informatica I”, B.Math, University of Perugia.
- 03/2008–07/2008 **Tutor.** Course “Algoritmi e Strutture Dati II”, B.Sc., University of Perugia.

Industry

- 05/2013–08/2014 **Java programmer.** Conesi Srl, Siena, Italy.
- 11/2012–04/2013 **Programmer/Sysadmin.** Elektron Srl, Bastia Umbra, Italy.
- 10/2011–11/2012 **Web developer.** NewCom Web Srl, Ponte San Giovanni, Perugia, Italy.
- 09/2010–10/2011 **Java programmer.** Conesi Srl, Siena, Italy.
- 05/2010–07/2010 **Web developer.** Media Division Srl, Perugia, Italy.
- 05/2010 **Sysadmin.** Desktop Srl, Ellera, Italy.

Research Interests

Algorithms Design, Combinatorial Optimization, Unmanned Vehicles.

Research Publications

Submitted (under review)

- [1] **Francesco Betti Sorbelli**, Stefano Carpin, Federico Corò, Sajal K. Das, Alfredo Navarra, and Cristina M. Pinotti. “Speeding up Routing Schedules on Aisle-Graphs with Single Access”. *IEEE Transactions on Robotics (T-RO)* 2021 (**Minor revision**).
- [2] Chengyi Qu, Rounak Singh, Alicia Esquivel Morel, **Francesco Betti Sorbelli**, Prasad Calyam, and Sajal K. Das. “Obstacle-Aware and Energy-Efficient Multi-Drone Coordination and Networking for Disaster Response”. *IEEE International Conference on Sensing, Communication and Networking (SECON)* 2021.

Journal Articles

- [1] **Francesco Betti Sorbelli**, Federico Corò, Sajal K. Das, and Cristina M. Pinotti. “Energy-Constrained Delivery of Goods with Drones Under Varying Wind Conditions”. In: *IEEE Transactions on Intelligent Transportation Systems (T-ITS)* (2021).
- [2] **Francesco Betti Sorbelli**, Sajal K. Das, Cristina M. Pinotti, and Giulio Rigoni. “A Comprehensive Investigation on Range-free Localization Algorithms with Mobile Anchors at Different Altitudes”. In: *Elsevier Pervasive and Mobile Computing (PMC)* 73 (2021), p. 101383.

- [3] **Francesco Betti Sorbelli**, Cristina M Pinotti, Simone Silvestri, and Sajal K Das. “Measurement Errors in Range-based Localization Algorithms for UAVs: Analysis and Experimentation”. In: *IEEE Transactions on Mobile Computing (TMC)* (2020).
- [4] **Francesco Betti Sorbelli**, Cristina M. Pinotti, and Vldy Ravelomanana. “Range-Free Localization Algorithm Using a Customary Drone: Towards a Realistic Scenario”. In: *Elsevier Pervasive and Mobile Computing (PMC)* 54 (2019), pp. 1–15.
- [5] **Francesco Betti Sorbelli**, Sajal K. Das, Cristina M. Pinotti, and Simone Silvestri. “Range based Algorithms for Precise Localization of Terrestrial Objects using a Drone”. In: *Elsevier Pervasive and Mobile Computing (PMC)* 48 (2018), pp. 20–42.
- [6] Pericle Perazzo, **Francesco Betti Sorbelli**, Mauro Conti, Gianluca Dini, and Cristina M Pinotti. “Drone Path Planning for Secure Positioning and Secure Position Verification”. In: *IEEE Transactions on Mobile Computing* 16.9 (2017), pp. 2478–2493.
- [7] Alfredo Navarra, Cristina M Pinotti, Vldy Ravelomanana, **Francesco Betti Sorbelli**, and Roberto Ciotti. “Cooperative training for high density sensor and actor networks”. In: *IEEE Journal on Selected Areas in Communications* 28.5 (2010), pp. 753–763.
- [8] Ferruccio Barsi, Alan A Bertossi, **Francesco Betti Sorbelli**, Roberto Ciotti, Stephan Olariu, and M Cristina Pinotti. “Asynchronous Corona Training Protocols in Wireless Sensor and Actor Networks”. In: *IEEE Transactions on Parallel and Distributed Systems* 20.8 (2009), pp. 1216–1230.

Conference and Workshop Proceedings

- [1] Aakash Khochare, Yogesh Simmhan, **Francesco Betti Sorbelli**, and Sajal K. Das. “Heuristic Algorithms for Co-scheduling of Edge Analytics and Routes for UAV Fleet Missions”. In: *IEEE International Conference on Computer Communications (INFOCOM)*, 10-13 May. 2021.
- [2] **Francesco Betti Sorbelli**, Stefano Carpin, Federico Corò, Alfredo Navarra, and Cristina M Pinotti. “Optimal Routing Schedules for Robots Operating in Aisle-Structures”. In: *2020 IEEE International Conference on Robotics and Automation (ICRA)*, May 31-4 June. 2020.
- [3] **Francesco Betti Sorbelli**, Mauro Conti, Cristina M. Pinotti, and Giulio Rigoni. “UAVs Path Deviation Attacks: Survey and Research Challenges”. In: *2020 17th Annual IEEE International Conference on Sensing, Communication, and Networking (SECON workshop)*, June 22-25. IEEE. 2020, pp. 1–6.
- [4] **Francesco Betti Sorbelli**, Federico Corò, Sajal K. Das, Alfredo Navarra, and Cristina M. Pinotti. “Speeding-up Routing Schedules on Aisle-Graphs”. In: *International Conference on Distributed Computing in Sensor Systems (DCOSS) 2020*, June 15-17. 2020.
- [5] **Francesco Betti Sorbelli**, Cristina M. Pinotti, and Giulio Rigoni. “Range-free Localization Algorithms with Mobile Anchors at Different Altitudes: A Comparative Study”. In: *Proceedings of the 21st International Conference on Distributed Computing and Networking, ICDCN 2020, Kolkata, India, January 4-7 (best paper award)*. 2020.
- [6] Luca Bartoli, **Francesco Betti Sorbelli**, Federico Corò, Cristina M. Pinotti, and Anil Shende. “Exact and Approximate Drone Warehouse for a Mixed Landscape Delivery System”. In: *2019 IEEE International Conference on Smart Computing (SMARTCOMP 2019)*, Washington, DC, USA, 12-14 June 2019. 2019.
- [7] **Francesco Betti Sorbelli**, Federico Corò, Cristina M. Pinotti, and Anil Shende. “Automated Picking System Employing a Drone”. In: *15th International Conference on Distributed Computing in Sensor Systems, DCOSS workshop 2019, Santorini, Greece, May 29-31, 2019*. 2019, pp. 633–640.

- [8] **Francesco Betti Sorbelli** and Cristina M Pinotti. “Ground Localization with a Drone and UWB Antennas: Experiments on the Field”. In: *2019 IEEE 20th International Symposium on "A World of Wireless, Mobile and Multimedia Networks" (WoWMoM workshop)*. IEEE. 2019, pp. 1–7.
- [9] **Francesco Betti Sorbelli**, Sajal K. Das, Cristina M. Pinotti, and Simone Silvestri. “On the Accuracy of Localizing Terrestrial Objects Using Drones”. In: *IEEE International Conference on Communications, ICC 2018, Kansas City, MO, USA, 20-24 May 2018*. 2018.
- [10] **Francesco Betti Sorbelli**, Sajal K. Das, Cristina M. Pinotti, and Simone Silvestri. “Precise Localization in Sparse Sensor Networks using a Drone with Directional Antennas”. In: *Proceedings of the 19th International Conference on Distributed Computing and Networking, ICDCN 2018, Varanasi, India, January 4-7, 2018*. 2018, 34:1–34:10.
- [11] **Francesco Betti Sorbelli** and Cristina M. Pinotti. “On the Localization of Sensors using a Drone with UWB Antennas”. In: *CEUR Workshop Proceedings, GEOSAFE Workshop on Robust Solutions for Fire Fighting (RSFF’18), July 19-20, 2018, L’Aquila, Italy*. 2018.
- [12] **Francesco Betti Sorbelli**, Cristina M. Pinotti, and Vlady Ravelomanana. “Range-Free Localization Algorithm Using a Customary Drone”. In: *2018 IEEE International Conference on Smart Computing (SMARTCOMP 2018), Taormina, Sicily, Italy, 18-20 June 2018*. 2018.
- [13] Cristina M Pinotti, **Francesco Betti Sorbelli**, Pericle Perazzo, and Gianluca Dini. “Localization with Guaranteed Bound on the Position Error using a Drone”. In: *Proceedings of the 14th ACM International Symposium on Mobility Management and Wireless Access, MobiWac 2016, Malta, November 13-17, 2016*. ACM. 2016, pp. 147–154.
- [14] Amitabha Bagchi, **Francesco Betti Sorbelli**, Cristina Maria Pinotti, and Vinay Ribeiro. “Connectivity of a Dense Mesh of Randomly Oriented Directional Antennas Under a Realistic Fading Model”. In: *LNCS*. Vol. 9536. 2015, pp. 13–26.
- [15] **Francesco Betti Sorbelli**, Roberto Ciotti, Alfredo Navarra, Maria Cristina Pinotti, and Vlady Ravelomanana. “Cooperative Training in Wireless Sensor and Actor Networks”. In: *QSHINE*. Vol. 9. Springer. 2009, pp. 569–583.
- [16] Ferruccio Barsi, Alan A Bertossi, **Francesco Betti Sorbelli**, Roberto Ciotti, Stephan Olariu, and Cristina M Pinotti. “Asynchronous Training in Wireless Sensor Networks”. In: *International Symposium on Algorithms and Experiments for Sensor Systems, Wireless Networks and Distributed Robotics*. Springer. 2007, pp. 46–57.
- [17] Ferruccio Barsi, **Francesco Betti Sorbelli**, Roberto Ciotti, Cristina M Pinotti, Alan A Bertossi, and Stephan Olariu. “Asynchronous Training in SANET”. In: *Proceedings of the First ACM workshop on Sensor and actor networks*. ACM. 2007, pp. 43–50.

Other

- [1] **Francesco Betti Sorbelli**. *Localization of Terrestrial Objects Using a Drone with UWB Antennas*. PhD Thesis: <http://hdl.handle.net/2158/1118248>. University of Florence, Italy. 2018.
- [2] **Francesco Betti Sorbelli** and Cristina M. Pinotti. *Localization in Sparse Sensor Networks using a Drone with Directional Antennas*. 3rd Italian Conference on ICT for Smart Cities and Communities, I-CiTies 2017. 2017.

Miscellaneous Experience

Visiting periods abroad

- 09/2019–01/2020 **Visiting Scholar**, Missouri Science and Technology University, Rolla, MO, USA (Sep. 16th 2019 – Jan 20th 2020).
- 04/2018 Université de Corse Pascal-Paoli, Corte, France (Apr. 16th – 19th 2018).
- 08/2016–01/2017 **Visiting Scholar**, Missouri Science and Technology University, Rolla, MO, USA (Aug. 30th 2016 – Jan 23rd 2017).

Conferences and Workshops

AAAS 2019 (2019), the AAAS Science, Technology and Human Rights Conference 2019, Washington, DC, USA, 23-25 October 2019 [**speaker**]

IEEE SMARTCOMP (2019), the 5th IEEE International Conference on Smart Computing, Washington, DC, USA, 12-14 June 2019 [**speaker**]

IEEE SwarmNet (2019), the 1st IEEE WoWMoM Workshop on Wireless Networking, Planning, and Computing for UAV Swarms, Washington, DC, USA, 10-12 June 2019 [**speaker**]

IEEE Wi-DroIT (2019), the 1st International Workshop on Wireless sensors and Drones in Internet of Things, Santorini Island, Greece, 29-31 May 2019 [**speaker**].

RSFF (2018), the 1st GEOSAFE Workshop on Robust Solutions for Fire Fighting, L'Aquila, Italy, 19-20 July 2018 [**speaker**].

IEEE SMARTCOMP (2018), the 4th IEEE International Conference on Smart Computing, Taormina, Sicily, Italy, 18-20 June 2018 [**speaker**].

ACM ICDCN (2018), the 19th International Conference on Distributed Computing and Networking, Varanasi, India, 4-7 January 2018 [**speaker**].

I-CiTies (2017), the 3rd Italian Conference on ICT for Smart Cities & Communities, Bari, Italy, 27-29 September, 2017 [**speaker**].

PRIN 2015 Projects Meeting, Bertinoro, Italy, 4-6 February 2015.

Awards and Achievements

Award, Best paper in 2020 International Conference on Distributed Computing and Networking (ICDCN 2020).

Award, Finanziamento GNCS Partecipazione a Convegni, Scuole, Workshop e Seminari 2019 (Travel Grant).

Achievement, Best paper candidate in 2018 IEEE International Conference on Smart Computing (SMARTCOMP 2018).

Award, Finanziamento GNCS Giovani Ricercatori 2017 (Travel Grant).

General Chair

IEEE Wi-DroIT (2021).

Technical Program Committee Member

ACM MobiWac (2021).

IEEE IAUV (2019, 2020).

IEEE Wi-DroIT (2019, 2020).

IEEE WPSN (2020).

IEEE WoWMoM (2021).

HKSRA ICoIV (2020).

IARIA SENSORCOMM (2020).

Web Chair

IEEE Wi-DroIT (2020, 2021).

Publicity Chair

IEEE Wi-DroIT (2019, 2020).

ALGOSENSORS (2020).

Reviewer activity

Journals

ACM Transactions on Sensor Networks (TOSN).

Elsevier Expert Systems with Applications (ESWA).

Elsevier Pervasive and Mobile Computing (PMC).

Elsevier Theoretical Computer Science (TCS).

IEEE Access.

IEEE Transactions on Intelligent Transportation (T-ITS).

IEEE Transactions on Mobile Computing (TMC).

IEEE Transactions on Emerging Topics in Computational Intelligence (TETCI).

Springer Applied Network Science (ANS).

Workshops and Conferences

ACM EmeRTeS (2020).

ACM ICDCN (2020).
 ACM MobiWac (2018, 2019).
 IEEE WCNC (2021).
 AAMAS (2021).
 IEEE PerCom 2021 (2021).
 SENSORCOMM 2021 (2021).
 ALGOSENSORS (2020).
 IEEE COMSNETS (2020).
 IEEE DCOSS (2019, 2020).
 IEEE GLOBECOM (2019, 2020).
 IEEE IAUV (2019).
 IEEE ICNC (2018).
 IEEE INFOCOM (2019, 2020, 2021).
 IEEE SMARTCOMP (2020).
 IEEE Wi-DroIT (2019, 2020).
 IEEE WIFS (2018).
 IEEE WoWMoM (2018).
 IEEE WPSN (2020).
 GPC (2019).
 HKSRA ICoIV (2020).

Other

2018–NOW	Cultore della materia , Course “Algoritmi e Strutture Dati”, University of Perugia, Italy.
2016–NOW	Affiliation , Research institution (INdAM), GNCS Group.

Skills

Computer

OS	Android, Linux, Microsoft Windows.
CODING	Bash, C, C++, Java, JavaScript, EL TEX, MATLAB, Python, PHP, SQL.
FRAMEWORK	MyBatis, Spring.
DATABASES	MySQL, PostgreSQL, SQLite.
WEB	jQuery, Ajax, JSON, Drupal.

SERVER	JBoss, Tomcat, Apache.
CSV	Gitorius, Mercurial, Subversion.
IDE	Eclipse, KDevelop, NetBeans.
SOFTWARE	Gimp, Inkscape, Libreoffice, VirtualBox.

Languages

ITALIAN	Mother tongue.
ENGLISH	B1 Level.