

Federica Bertoni

PERSONAL INFORMATION

Surname Bertoni
Name Federica
E-mail Federica.bertoni@polimi.it
Nationality Italian
Date of birth 31/12/1992

EDUCATION

August 2018 – October 2018 **Cornell University**
Visiting PhD candidate Ithaca (NY), USA
Dept. of Civil and Environmental Engineering

July 2016 **Politecnico di Milano**
MSc (with honors) in Environmental and Land Planning Milan, I
Engineering

February 2016 – June 2016 **Technical University of Denmark (DTU)**
MSc thesis research training Kgs. Lyngby, DK
Supervisor: Prof. Peter Bauer-Gottwein

September 2015 – January 2016 **Technical University of Denmark (DTU)**
Erasmus Program Kgs. Lyngby, DK
Teaching language: English

September 2014 **Politecnico di Milano**
BSc (with honors) in Environmental and Land Planning Milan, I
Engineering

PROFESSIONAL EXPERIENCE

Current position

November 2016 – **Politecnico di Milano**
PhD candidate - Information Technology Milan, I
Dept. of Electronics, Information, and Bioengineering
Integrated design and control of water resources systems
Supervisor: Prof. Andrea Castelletti

Past positions

August 2018 – October 2018 **Cornell University**
Visiting PhD candidate Ithaca (NY), USA
Dept. of Civil and Environmental Engineering

RESEARCH PROJECTS

2016 – 2020: *DAFNE Project – Decision Analytic Framework to explore the water-energy-food Nexus in complex transboundary water resource systems of fast developing countries*. Project funded by the Horizon 2020 programme WATER 2015 of the European Union, GA no. 690268. Role: PhD student modeller and optimization algorithm developer in the research unit at Politecnico di Milano.

TEACHING ACTIVITY

Student supervision – MSc students

2017 – 2018: Sara Cazzaniga, *How does uncertainty affect cooperation strategies in transboundary water resources systems? A case study on the Zambezi River Basin* (co-supervisor)

2016 – 2017: Luca Gianelli and Paolo Redo Bianchi, *Water-related disease control via dam operation: Balancing hydropower production and malaria spreading on Kariba reservoir* (co-supervisor)

2016 – 2017: Angelo Carlino, *Hydro-energy systems modeling in the Zambezi River Basin: Exploring benefits from soft model integration* (co-supervisor)

2016 – 2017: Barbara Benigni and Sebastian Raimondo, *Robust planning of agricultural expansion in Zambezi River Basin under climate and socio-economic changes* (co-supervisor)

LANGUAGES

ITALIAN: native

ENGLISH: C1 level – 2013, Test of English as a Foreign Language (TOEFL)

SPANISH: basic knowledge

COMPUTER SKILLS

Operating Systems: Microsoft Windows, Mac OS X, GNU/Linux

Programming Languages: Matlab, C++, R

Microsoft Software: Office suite

Geographic Information System: ArcGIS, QuantumGIS

Others: Latex, Adobe Illustrator

AWARDS

International

2018: *Outstanding Student Poster and PICO (OSPP) Award* – European Geosciences Union (EGU) General Assembly 2018

National

2015: *Erasmus scholarship*

PUBLICATIONS

Journal papers

[A.1] **Bertoni, F.**, Castelletti, A., Giuliani, M., & Reed, P. M. (2019). Do we understand performance dependencies, trade-offs, and robustness in dam design and operation? *Earth's Future*, under review.

[A.2] **Bertoni, F.**, Giuliani, M., & Castelletti, A. (2019). Integrated design of dam size and operations via Reinforcement Learning. *Journal of Water Resources Planning and Management*, under review.

[A.3] Payet-Burin, R., **Bertoni, F.**, Davidsen, C., & Bauer-Gottwein, P. (2018). Optimization of regional water-power systems

under cooling constraints and climate change. *Energy*, 155, 484-494.

Conference proceedings

- [B.1] **Bertoni, F.**, Giuliani, M., and Castelletti, A. (2017). Scenario-based fitted Q-iteration for adaptive control of water reservoir systems under uncertainty. In: *Proceedings of the 20th World Congress of the International Federation of Automatic Control (IFAC 2017)*, Toulouse, FR, 9-14 July 2017.

Abstracts/Extended abstracts

- [C.1] **Bertoni, F.**, Castelletti, A., and Lautze, J. (2019). Balancing hydropower revenue and malaria control via dam operation: A case study in the Zambezi River Basin. In: *1st IFAC Workshop on Control Methods for Water Resource Systems*, Delft, Netherlands, 19-20 September 2019 (oral).
- [C.2] **Bertoni, F.**, Castelletti, A., Giuliani, M., and Reed, P. M. (2019). Do we understand performance dependencies, trade-offs, and robustness in dam design and operation? In: *EGU General Assembly 2019*, Vienna, Austria, 7-12 April 2019 (oral).
- [C.3] Zatarain Salazar, J., **Bertoni, F.**, Giuliani, M., Castelletti, A. (2019). Optimal infrastructure sequencing and management in the Zambezi River Basin. In: *EGU General Assembly 2019*, Vienna, Austria, 7-12 April 2019 (poster).
- [C.4] Cazzaniga, S., **Bertoni, F.**, Giuliani, M., and Castelletti, A. (2019). How does uncertainty affect cooperation strategies in transboundary water resources systems? A case study on the Zambezi River Basin. In: *EGU General Assembly 2019*, Vienna, Austria, 7-12 April 2019 (poster).
- [C.5] Bianchi, P. R., Gianelli, L., **Bertoni, F.**, Castelletti, A., and Lautze, J. (2018). Water-related disease control via dam operation: balancing hydropower production and malaria spreading on Kariba reservoir. In: *EGU General Assembly 2018*, Vienna, Austria, 8-13 April 2018 (poster).
- [C.6] Carlino, A., **Bertoni, F.**, and Castelletti, A. (2018). Hydro-energy systems modelling in the Zambezi River Basin: exploring benefits from soft-model integration. In: *EGU General Assembly 2018*, Vienna, Austria, 8-13 April 2018 (poster).
- [C.7] **Bertoni, F.**, Giuliani, M., and Castelletti, A. (2018). An inverse-nested approach to optimize planning and operation of water reservoir systems. In: *EGU General Assembly 2018*, Vienna, Austria, 8-13 April 2018 (poster).
- [C.8] **Bertoni, F.**, Giuliani, M., and Castelletti, A. (2017). Integrating operation design into infrastructure planning to foster robustness of planned water systems. In: *EGU General Assembly 2017*, Vienna, Austria, 23-28 April 2017 (poster).
- [C.9] **Bertoni, F.**, Giuliani, M., and Castelletti, A. (2017). Scenario-based fitted Q-iteration for adaptive control of water reservoir systems under uncertainty. In: *EGU General Assembly 2017*, Vienna, Austria, 23-28 April 2017 (oral).

Theses

- [D.1] **Bertoni, F.**, Exploring the water-energy nexus in the Iberian Peninsula under climate change: A deterministic optimization approach, MSc Thesis (Supervisor: Prof. Andrea Castelletti), Politecnico di Milano, 2016.
- [D.2] **Bertoni, F.**, Modello eco-idrologico individual-based di trasmissione della malaria (Eco-hydrological, individual-based model for malaria transmission), BSc Thesis (Supervisor: Prof. Carlo De Michele), Politecnico di Milano, 2014.