

# GIANLUCA BIANCHIN

ICTEAM & Department of Mathematical Engineering  
Université catholique de Louvain

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URL: <http://gianlucabi.github.io>  
Google Scholar: [link](#)

## ACADEMIC POSITIONS

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| Sep 22 - Present | <b>Assistant Professor</b><br>ICTEAM & Department of Mathematical Engineering, University of Louvain, Belgium  |
| Apr 20 - Aug 22  | <b>Postdoctoral Researcher</b><br>Department of Electrical, Computer & Energy Engineering<br>University of Colorado Boulder, CO, USA<br>Advisor: Prof. Emiliano Dall'Anese |

## RESEARCH INTERESTS

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My research interests are centered around system theory, control, and optimization in complex, cyber-physical, and network systems, primarily with applications to transportation systems. Topics of recent interest are:

- data-driven control
- use of optimization methods for feedback control
- control and optimization in electrified transportation and mobility on demand
- security of cyber-physical systems

## EDUCATION

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| Sep 15 - Mar 20 | <b>Ph.D. in Mechanical Engineering</b><br>University of California Riverside, CA, USA<br>Advisor: Prof. Fabio Pasqualetti       |
| Oct 12 - Oct 14 | <b>M.Sc. in Controls Engineering</b> (awarded summa cum laude)<br>University of Padova, Italy<br>Advisor: Prof. Angelo Cenedese |
| Oct 09 - Jul 12 | <b>B.Sc. in Information Engineering</b><br>University of Padova, Italy<br>Advisor: Prof. Luca Schenato                          |

## RESEARCH EXPERIENCE

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|-----------------|---|
| Jun 19 - Sep 19 | <b>Research Intern</b><br>Robert Bosch LLC, Sunnyvale, CA, USA<br>Topic: Development and implementation of dynamical models for PEM fuel cells<br>Supervisor: Dr. Maksim Subbotin                 |
| Jun 18 - Sep 18 | <b>Graduate Student Intern</b><br>Pacific Northwest National Laboratory, Richland, WA, USA<br>Topic: Study and characterization of resilience in traffic networks<br>Supervisor: Dr. Soumya Kundu |
| Jan 15 - Sep 15 | <b>Visiting Scholar</b><br>University of California Riverside, CA, USA<br>Group: Cyber-Physical Systems and Distributed Computing Laboratory<br>Supervisor: Prof. Fabio Pasqualetti               |

## HONORS & AWARDS

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| 2019 | <b>Dissertation Year Program Award</b> , University of California Riverside, USA<br>(awarding most-promising dissertation in the department, single award department-wide)   |
| 2017 | <b>UC Riverside Green Grant Award</b> , University of California Riverside, USA<br>(awarding a research proposal on energy sustainability, one of three campus-wide awards)  |
| 2015 | <b>Dean's Distinguished Fellowship Award</b> , University of California Riverside, USA<br>(awarding top Ph.D. applicants in the College, one of five department-wide awards) |
| 2014 | M.Sc. degree awarded with honor from the University of Padova  |

## FUNDED PROJECTS AND PROPOSAL WRITING EXPERIENCE

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|------|---|
| 2022 | Control-Informed Learning of Physical Systems with Humans in the Loop<br>Funding Agency: UCLouvain Special Research Funds (FSR)<br>Status: <b>funded, €80K</b><br>PI: Gianluca Bianchin |
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As a postdoc and graduate student, I contributed to the writing of the following proposals:

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| 2020 | Closed-loop Optimization and Control of Physical Networks Subject to Dynamic Costs, Constraints, and Disturbances<br>Funding Agency: National Science Foundation (NSF), division CMMI<br>Status: <b>funded, \$300K</b><br>PI: Emiliano Dall'Anese, co-PI: Jorge Cortés |
| 2020 | Control-Theoretic Design of Data-Driven Policies for Containing Transmission of Infectious Diseases<br>Funding Agency: University of Colorado, AB Nexus<br>Status: <b>funded, \$50K</b><br>PI: Emiliano Dall'Anese, co-PIs: Andrea G. Buchwald, Jorge I. Poveda        |
| 2019 | Leveraging Connected Automated Vehicles to Guide Humans in Traffic Congestion<br>Funding Agency: United States Department of Energy (DOE)<br>Status: not funded<br>PI: Fabio Pasqualetti, co-PIs: Guoyuan Wu, Soumya Kundu   |

## TEACHING EXPERIENCE

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At the University of Louvain, I am the instructor for the following courses:

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| 2022 | LINMA 1510 – Linear control (Bachelor and Master) |
| 2022 | LINMA 2875 – System identification (Master)       |

As a postdoc at the University of Colorado Boulder, I served as a lecturer for the following course:

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| 2020 | ECEN 5008 – Coordinated Control of Multi-Agent Systems (graduate) |
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As a graduate student at UC Riverside, I was a Teaching Assistant for the following courses:

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|-------------|---|
| 2019        | ME 223 – Secure and Reliable Control Systems (graduate) |
| 2018        | ME 133 – Mechatronics (undergraduate)                   |
| 2017 & 2019 | ME 223 – Secure and Reliable Control Systems (graduate) |

As a graduate student at UC Riverside, I was the main instructor for the following workshop courses:

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| 2018 | Data Processing in Matlab (graduate)                              |
| 2017 | Course: Introduction to L <sup>A</sup> T <sub>E</sub> X(graduate) |

## ADVISING AND STUDENT MENTORING EXPERIENCE

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| 2021-2022 | Liliaokeawawa Cothren (graduate student), University of Colorado Boulder, USA<br>Project: Perception-based gradient flow for feedback control |
| 2021      | Molly Alvine (undergraduate student), University of Colorado Boulder, USA<br>Project: Control of mobility on demand systems with EVs          |

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| 2021 | Killian Wood (graduate student), University of Colorado Boulder, USA<br>Project: Stochastic optimization with decision-dependent distributions |
| 2020 | Felipe Galarza-Jimenez (graduate student), University of Colorado Boulder, USA<br>Project: Hybrid methods in online optimization               |
| 2017 | Yin-Cen Liu (graduate student), University of California Riverside, USA<br>Project: RSSI-Aided Trajectory Planning Against GPS Spoofing        |
| 2016 | Tommaso Menara (graduate student), University of California Riverside, USA<br>Project: Strong Structural Controllability of networks           |

## PROFESSIONAL AFFILIATIONS

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| 2015 - Present | IEEE Control Systems Society (IEEE CSS)<br>Institute for Electrical and Electronics Engineers (IEEE)<br>Society for Industrial and Applied Mathematics (SIAM) |
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## PROFESSIONAL SERVICE

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| 2022           | <b>Co-organizer of department's weekly seminar</b><br>ICTEAM seminar series, University of Louvain   |
| 2018           | <b>Co-organizer of department's yearly symposium</b><br>Department of Mechanical Eng. Graduate Symposium, University of California Riverside   |
| 2017 - 2018    | <b>Vice President of Graduate Student Association</b><br>Department of Mechanical Engineering, University of California Riverside  |
| 2016           | <b>Student volunteer</b><br>IEEE Conference on Decision and Control, Las Vegas, NV, USA  |
| 2015 - Present | <b>Journal papers reviewer</b><br>• IEEE Transactions on Automatic Control • Automatica • IEEE Transactions on Control of Network Systems • IEEE Control Systems Letters • IEEE Transactions on Control Systems Technology • Systems & Control Letters • SIAM Journal on Control and Optimization • IEEE Transactions on Intelligent Transportation Systems • Journal of Urban Technology • IEEE Robotics and Automation Letters • Journal of Selected Topics in Signal Processing • IEEE Transactions on Smart Grid |
| 2015 - Present | <b>Conference papers reviewer</b><br>• IEEE Conference on Decision and Control • American Control Conference • European Control Conference • IFAC World Congress • IFAC Workshop on Distrib. Estimation and Control in Netw. Systems • Conference on Automation Science and Engineering  |

## TALKS, SEMINARS, AND PRESENTATIONS

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| June 2022  | 2022 American Control Conference, Atlanta, GA, USA<br>Title: <i>"Online Stochastic Optimization with Decision-Dependent Distributions"</i>   |
| March 2022 | University of Michigan, Ann Arbor, MI, USA<br>Title: <i>"Learning to Optimize Network Systems with Applications to Traffic Control"</i>  |
| Feb 2022   | Washington State University, Pullman, WA, USA<br>Title: <i>"Data-driven online optimization for network control"</i>   |
| Jan 2022   | University of Louvain, Louvain-la-Neuve, Belgium<br>Title: <i>"Learning to Optimize Network Systems via Online Optimization and Control"</i>   |
| Dec 2021   | 2021 IEEE Conference on Decision and Control, Austin, TX, USA<br>Title: <i>"Data-Driven Synthesis of Optimization-Based Controllers for Regulation of Unknown Systems"</i>   |
| Sep 2021   | 2021 Automatica.it Workshop, Catania, Italy<br>Title: <i>"Time-Varying Optimization of LTI Systems via Projected Primal-Dual Flows"</i>  |
| Apr 2021   | Meeting of the Colorado COVID-19 modeling group, Boulder, CO, USA<br>Title: <i>"When can we safely return to normal? A novel method for identifying safe levels of NPIs in the context of COVID-19 vaccinations"</i> |

- Apr 2021      GIPSA-lab, Grenoble, France  
Title: *“Analysis and Design of Robust Traffic Networks: from Static to Dynamic Schemes”*
- Dec 2020      2020 IEEE Conference on Decision and Control, Jeju Island, Republic of Korea  
Title: *“Routing Apps May Cause Oscillatory Congestion in Traffic Networks”*
- May 2020      National Renewable Energy Laboratory (NREL), Golden, CO, USA  
Title: *“Stability and Robustness of Traffic Networks with App-Informed Vehicle Routing”*
- Dec 2019      2019 IEEE Conference on Decision and Control, Nice, France  
Title: *“Secure Navigation of Robots in Adversarial Environments”*
- Sep 2019      GE Global Research, Niskayuna, NY, USA  
Title: *“Towards Dependable CPS: Network-Wide Optimization and Secure Control”*
- Sep 2019      Robert Bosch LLC, Sunnyvale, CA, USA  
Title: *“PEM Fuel Cell Modeling and State Observers: A Control-Systems Perspective”*
- Jul 2019      2019 American Control Conference, Philadelphia, PA, USA  
Title: *“Resilience of Traffic Networks With Partially Controlled Routing”*
- Dec 2018      2018 IEEE Conference on Decision and Control, Miami Beach, FL, USA  
Title: *“A Network Optimization Framework for the Control of Traffic Dynamics”*
- Sep 2018      Pacific Northwest National Laboratory (PNNL), Richland, WA, USA  
Title: *“The Role of Partially Controlling Routing in Traffic Networks”*
- May 2018      35<sup>th</sup> Southern California Control Workshop, Riverside, CA, USA  
Title: *“A Network Optimization Approach for the Optimization of Intersection Signaling”*
- Jul 2016      2016 American Control Conference, Boston, MA, USA  
Title: *“The Observability Radius of Networks”*
- May 2015      28<sup>th</sup> Southern California Control Workshop, Los Angeles, CA, USA  
Title: *“The Role of the Diameter in the Controllability of Complex Networks”*