Tommaso **Menara**

PhD Candidate · University of California, Riverside

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Research Interest

- Cyber-Physical Systems Theory and Control
- Systems and Network Neuroscience
- Synchronization Phenomena
- Network Control Theory

Education

University of California, Riverside — *Riverside, CA, USA*
PhD in Mechanical Engineering — *2016 - present*

University of Pisa — *Pisa, Italy*
Laurea Magistrale (M.Sc. equivalent) in Robotics and Automation Engineering — *2013 - 2016*

University of Padova — *Padova, Italy*
Laurea (B.Sc. equivalent) in Mechatronics Engineering — *2010 - 2013*

Honors & Awards

2020	**IEEE CSS 2020 Roberto Tempo Award**, IEEE Conference on Decision and Control	*Jeju Island, S. Korea*
2020	**Dissertation Year Program Award**, University of California, Riverside	*Riverside, USA*
2019	**Best Student Paper Award**, American Control Conference	*Philadelphia, USA*
2016	**Dean's Distinguished Fellowship**, University of California, Riverside	*Riverside, USA*

Publications

Preprints

(P1) *Phase-Amplitude Coupling in Neuronal Oscillator Networks*
Y. Qin, **T. Menara**, D. S. Bassett, F. Pasqualetti
https://arxiv.org/abs/2012.04217

Journal Papers

(J6) *Brain Network Dynamics Fingerprints Are Resilient to Data Heterogeneity*
T. Menara, G. Lisi, F. Pasqualetti, A. Cortese
Journal of Neural Engineering, In Press (Early Access)

(J5) *Brain network dynamics during working memory are modulated by dopamine and diminished in schizophrenia*
U. Braun, A. Harneit, G. Pergola, **T. Menara**, A. Schaefer, R. F. Betzel, Z. Zang, J. I. Schweiger, K. Schwarz, J. Chen, G. Blasi, A. Bertolino, D. Durstewitz, F. Pasqualetti, E. Schwarz, A. Meyer-Lindenberg, D. S. Bassett, H. Tost
Nature Communications, In Press (accepted). ArXiv version available at arXiv:1906.09290

(J4) *Conditions for Feedback Linearization of Network Systems*
T. Menara, G. Baggio, D.S. Bassett, F. Pasqualetti
IEEE Control Systems Letters, 2020, vol. 4, no. 3, pp. 578-583, Jul 2020

(J3) *Stability Conditions for Cluster Synchronization in Networks of Heterogeneous Kuramoto Oscillators*
T. Menara, G. Baggio, D.S. Bassett, F. Pasqualetti
IEEE Transactions on Control of Network Systems, vol. 7, no. 1, pp. 302-314, Mar 2020

(J2) *White Matter Network Architecture Guides Direct Electrical Stimulation Through Optimal State Transitions*
J. Stiso, A. N. Khambhati, **T. Menara**, A. E. Kahn, J. M. Stein, S. R. Das, R. Gorniak, J. Tracy, B. Litt, K. A. Davis, F. Pasqualetti, T. Lucas, D. S. Bassett
Cell Reports, vol. 28, no. 10, pp. 2554-2566, Sep 2019

(J1) *Structural Controllability of Symmetric Networks*
T. Menara, D.S. Bassett, F. Pasqualetti
IEEE Transactions on Automatic Control, vol. 64, no. 9, pp. 3740-3747, Sep 2019

Conference Proceedings

(C6) *Conditions for Feedback Linearization of Network Systems*
T. Menara, G. Baggio, D.S. Bassett, F. Pasqualetti
Presentation only, as part of IEEE L-CSS submission, Dec 2020

(C5) *A Framework to Control Functional Connectivity in the Human Brain*
T. Menara, G. Baggio, D.S. Bassett, F. Pasqualetti
Proceedings of the IEEE Conference on Decision and Control. Nice, France, Dec 2019, pp 4697-4704
2020 Roberto Tempo Award

(C4) *Exact and Approximate Stability Conditions for Cluster Synchronization of Kuramoto Oscillators*
T. Menara, G. Baggio, D.S. Bassett, F. Pasqualetti
Proceedings of the American Control Conference. Philadelphia, USA, Jul 2019, pp 205-210
Best Student Paper Award

(C3) *The Structured Controllability Radius of Symmetric (Brain) Networks*
T. Menara, V. Katewa, D.S. Bassett, F. Pasqualetti
Proceedings of the American Control Conference. Milwaukee, USA, Jun 2018, pp 2802-2807

(C2) *On the Number of Strongly Structurally Controllable Networks*
T. Menara, G. Bianchin, M. Innocenti, F. Pasqualetti
Proceedings of the American Control Conference. Seattle, USA, May 2017, pp 340-345

(C1) *Procoagulant control strategies for the human blood clotting process*
M. Laurino, **T. Menara**, A. Stella, M. Betta, A. Landi
Proceedings of the Annual Conference of the IEEE Engineering in Medicine and Biology Society. Milan, Italy, Aug 2015, pp 4439-4442

Teaching

2021 **ME223,** Teaching assistant for the class *Secure and Reliable Control Systems* *UCR*
2019 **ME121,** Teaching assistant for the class *Feedback Control* *UCR*

Presentations

2020 Dec	**Talk,** IEEE Conference on Decision and Control – "*Conditions for Feedback Linearization of Network Systems*"	*Virtual*
2020 July	**E-Poster,** International Conference on Mathematical Neuroscience – "*Analysis and Control of Collective Dynamics in Oscillatory Brain Networks*"	*Virtual*
2020 May	**Talk,** Mechanical Engineering Symposium – "*Cluster Synchronization in Networks of Kuramoto Oscillators*"	*UCR*
2019 Dec	**Talk,** IEEE Conference on Decision and Control – "*A Framework to Control Functional Connectivity in the Human Brain*"	*Nice, France*
2019 Sep	**Talk,** Kokusaino meeting. Advanced Telecommunications Research Institute International – "*Data-driven Models of Brain Network Dynamics*"	*Kyoto, Japan*
2019 June	**Talk,** American Control Conference – "*Cluster Synchronization of Kuramoto Oscillators for the Analysis and Control of Neurological Disorders*"	*Philadelphia, PA*
2019 May	**Talk,** SoCal Control Workshop. University of Southern California – "*Cluster Synchronization of Kuramoto Oscillators for the Analysis and Control of Functional Connectivity in the Human Brain*"	*USC*
2018 Nov	**Poster,** Computational Neuroimaging and Neuroengineering Symposium. University of California, Riverside – "*From Cluster Synchronization of Oscillators to Functional Connectivity*"	*UCR*
2018 June	**Talk,** American Control Conference – "*Controllability of Symmetric Brain Networks*"	*Milwaukee, WI*
2018 Apr	**Talk,** Mechanical Engineering Symposium. University of California, Riverside – "*Cluster Synchronization in Networks of Kuramoto Oscillators*"	*UCR*
2017 June	**Talk,** American Control Conference – "*On the Number of Strongly Structurally Controllable Networks*"	*Seattle, WA*
2016 Jun	**Poster,** Workshop on Brain Dynamics and Neurocontrol Engineering. Washington University in St. Louis – "*Structural Controllability of Symmetric Brain Networks*"	*WUSTL*

Professional Service

- **Referee/Reviewer**
  - Journals: Elsevier NeuroImage, PLOS One, IEEE Transactions on Automatic Control (IEEE-TAC), IEEE Transactions on Control of Networked Systems (IEEE-TCNS), IEEE Control Systems Letters (IEEE L-CSS), IFAC Automatica, SIAM Journal on Control and Optimization (SICON). Elsevier European Journal of Control (EJCON). Springer Nonlinear Dynamics (NODY)
  - Conferences: IEEE Conference on Decision and Control (CDC), American Control Conference (ACC), European Control Conference (ECC), International Conference on Control, Decision and Information Technologies (CoDIT), Conference on Control Technologies (CCTA), IFAC World Congress
- **Memberbership**: Institute of Electrical and Electronics Engineers (IEEE), IEEE Control Systems Society (CSS), IEEE Brain Community, IEEE Young Professionals, IEEE CSS Technical Committee on Healthcare and Medical Systems (TC-HCMS), Society for Industrial and Applied Mathematics (SIAM), Network Science Society (NetSci)

Experience

Intern

2-2-2 Hikaridai, Seika-cho, Soraku-gun, Kyoto, Japan

Advanced Telecommunications Research Institute International (ATR) *July 2019 - October 2019*

- Project on data-driven models for the analysis of multi-site resting-state fMRI datasets and the appraisal of neurofeedback treatments

Graduate Student Association

HUB 203, 900 University Ave, Riverside, CA, 92521, USA

University of California Riverside — *Sep 2017 - June 2020*

- *Public Relations Officer* (2018-2020): Responsible of organizing campus-wide social events. Management of the budget for social events, memorabilia, and public lectures
- *International Student Affairs Officer* (2017-2018): Monitoring of campus issues and legislative developments that affect international graduate students. Member of the standing committee for international education of the academic senate
- *Mechanical Engineering Representative* (2016-2017): voting member and representative for the department of mechanical engineering in the general graduate student council

HUB Governing Board

900 University Ave, Riverside, CA, 92521, USA

University of California Riverside — *Sep 2018 - Present*

- *Chair* (2019-2020) and *Vice-Chair* (2018/2019): Member of the student governing board that controls the Highlander Union and reports to the Vice Chancellor of Student Affairs. The board develops all facility operations and usage policies, approves all budgetary aspects, and provides comment on HUB Programming, initiatives, operations, etc. In recognition for my services, my name is signed on the final steel beam of the newly constructed Student Success Center

Volunteering

- **Engineering Fair Judge**: Judge for the 2021 annual Riverside Unified Science and Engineering Fair
- **ISO Leader**: International Student Orientation leader at University of California, Riverside, in 2018
- **Volunteer staff**: Volunteer staff for the 2016 IEEE CDC conference held in Las Vegas, NV, USA
- **Volunteer staff**: Volunteer staff for the MTS/IEEE OCEANS15 conference held in Genova, Italy

References

- **Dr. Fabio Pasqualetti**, Associate Professor
  Department of Mechanical Engineering, University of California, Riverside
  +1 (951) 827-2327 fabiopas@engr.ucr.edu homepage
- **Dr. Jorge Cortés**, Professor
  Department of Mechanical and Aerospace Engineering, University of California, San Diego
  +1 (858) 822-7930 cortes@ucsd.edu homepage
- **Dr. Mitsuo Kawato**, Director
  Computational Neuroscience Laboratories, ATR Institute International
  +81 774-95-1058 kawato@atr.jp homepage