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

In Preparation

(P3) *Functional Control of Oscillator Networks*
T. Menara, G. Baggio, D. S. Bassett, F. Pasqualetti

(P2) *Relay Interactions Enable Remote Synchronization in Networks of Phase Oscillators*
T. Menara, Y. Qin, D. S. Bassett, F. Pasqualetti

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 State Stability During Working Memory is Explained by Network Control Theory, Modulated by Dopamine D1/D2 Receptor Function, 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

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

Presentations

2020 July	**E-Poster,** International Conference on Mathematical Neuroscience	*Virtual*
2020 May	**Talk,** Mechanical Engineering Symposium. University of California, Riverside	*UCR*
2019 Sep	**Talk,** Kokusaino meeting. Advanced Telecommunications Research Institute International	*Kyoto, Japan*
2019 May	**Talk,** SoCal Control Workshop. University of Southern California	*USC*
2018 Nov	**Poster,** Computational Neuroimaging and Neuroengineering Symposium. University of California, Riverside	*UCR*
2018 Apr	**Talk,** Mechanical Engineering Symposium. University of California, Riverside	*UCR*
2016 Jun	**Poster,** Workshop on Brain Dynamics and Neurocontrol Engineering. Washington University in St. Louis	*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
- **Member of Societies**: 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

Graduate Student Association

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

University of California Riverside — *Sep 2017 - Present*

- *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

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

Volunteering

- **Engineering Fair Judge**: Judge for the 2021 Riverside Unified Science and Engineering Fair, annual event organized by the Riverside Unified School District
- **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. Sergio Pequito**, Assistant Professor
  Delft Center for Systems & Control, Delft University of Technology
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