Yuzhen Qin | Curriculum Vitae

Address: WCH 228, 900 University Avenue, Riverside, CA 92521, USA

+1 951 4706397 • yuzhenq@ucr.edu • yuzhenqin90.github.io/
Google Scholar • YuzhenQin • ORCiD: 0000-0003-1851-1370

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Current Employment

- **University of California, Riverside (UCR)** — **USA**
  Postdoctoral Researcher, — *Jan. 2020–present*

Education

- **University of Groningen (Rug)** — **Netherlands**
  Ph.D. in Systems and Control; advisor: Prof. Ming Cao, — *Oct. 2015–Dec. 2019*
  (Contact: University of Groningen, PO Box 72, 9700 AB Groningen,the Netherlands, Tel: +31 50 363 9111)
- **Wuhan University** — **China**
  M.Eng. in Control Theory and Engineering, — *Sep. 2012–Jun. 2015*
- **Hohai University** — **China**
  B.Eng. in Automation Engineering, — *Sep. 2008–Jun. 2012*

Research Interests

- Analysis and Control of Coordinated Behaviors in the Brain
  - **Phase-Amplitude Coupling:** Cross-frequency phase-amplitude coupling (PAC) is thought to play crucial roles in learning, cognitive processes, and motor function. We build network models to understand the theoretical mechanisms that underlie PAC.
  - **Partial Synchrony:** Synchronization is thought to facilitate communication between cortical regions. By contrast, excessive synchrony is often accompanied by various brain diseases. From a perspective of control systems, we characterize how the brain regulates the emergence of various partial synchrony patterns of neural activity .
- Representation Learning for Multitask Decision-Making and Adaptive Control
  We study how learning and exploiting low-dimensional common features (representations) shared by tasks contributes to efficient online decision-making and fast construction of adaptive control strategies.
- Other interests
  Control of networked systems, stability analysis of slow-fast systems and stochastic systems, modeling and analysis of behaviors in social networks

Presentations

- **Poster**, ICML Workshop on Reinforcement Learning Theory, virtual, 2021
- **Talk**, the 59th IEEE Control and Decision Conference, virtual, 2020
- **Talk**, the 57th IEEE IEEE Control and Decision Conference, Miami Beach, FL, USA, 2018
- **Talk**, IEEE European Control Conference, Limassol, Cyprus, 2018
- **Talk**, the 36th Benelux Meeting on Systems and Control, Spa, Belgium, 2018
- **Talk**, the 20th IFAC Congress, Toulouse, France, 2017
- **Talk**, the 35th Benelux Meeting on Systems and Control, Soesterberg, the Netherlands, 2017

Teaching

Teaching Assistant — **University of Groningen**
Modelling and Analysis of Complex Networks, course code TBMACN-11, — *Feb. 2016-Apr. 2019*

Publications

Under Review

[R3] **Y. Qin**, T. Menara, S. Oymak, S. Ching, F. Pasqualetti. "Non-Stationary Representation Learning in Sequential Linear Bandits", *the IEEE Open Journal of Control systems*, under review.

[R2] **Y. Qin**, T. Menara, S. Oymak, S. Ching, and F. Pasqualetti, "Representation Learning for Context-Dependent Decision-Making", *the 2022 American Control Conference*, under review.

[R1] O. Portoles, **Y. Qin**, J. Hadida, M. Woolrich, Ming Cao, M. van Vugt, "Fluctuations of local synchrony lead to resting-state alpha-band-envelope connectivity in a parsimonious large-scale brain model", *PLOS ONE*, under review.

Peer-Reviewed Journal Papers

[J9] **Y. Qin**, Y. Kawano, M. Cao, and B. D. O. Anderson. "Partial exponential stability analysis of slow-fast systems via periodic averaging." *IEEE Transactions on Automatic Control*, In Press.

[J8] T. Menara, **Y. Qin**, D. S. Bassett, and F. Pasqualetti "Relay interactions enable remote synchronization in networks of phase oscillators", *IEEE Control Systems Letters*, 6:500-505, 2022.

[J7] **Y. Qin**, T. Menara, D. S. Bassett, and F. Pasqualetti, "Phase-amplitude coupling in neuronal oscillator networks", *Physical Review Research*, 3.2: 023218, 2021.

[J6] Y. Zhai, Z.W. Liu, M.Fe Ge, G. Wen, X. Yu, and **Y. Qin**, "Trusted-region subsequence reduction for designing resilient consensus algorithms", *IEEE Transactions on Network Science and Engineering*, vol. 8, no. 1, pp. 259-268, 2021

[J5] **Y. Qin**, Y. Kawano, O. Portoles and M. Cao. "Partial phase cohesiveness in networks of networks of Kuramoto oscillators." *IEEE Transactions on Automatic Control*, vol. 66, no. 12, pp. 6100-6107, 2021.

[J4] **Y. Qin**, M. Cao, B. D.O. Anderson, D. S. Bassett, and F. Pasqualetti, "Mediated remote synchronization of Kuramoto-Sakaguchi oscillators: the number of mediators matters", *IEEE Control Systems Letters*, 5(3): 767-772, 2020.

[J3] **Y. Qin**, M. Cao, and B. D. O. Anderson, "Lyapunov criterion for stochastic systems and its applications in distributed computation." *IEEE Transactions on Automatic Control*, vol. 65, no.2, pp. 546-560, 2019.

[J2] M. Ye, **Y. Qin**, A. Govaert, B. D. O. Anderson, and M. Cao. "An influence network model to study discrepancies in expressed and private opinions," *Automatica*, 107: 371-381, 2019.

[J1] W. Li, H. Zhou, Z. Liu, **Y. Qin**, Z. Wang, "Impulsive coordination of nonlinear multi-agent systems with multiple leaders and stochastic disturbance", *Neurocomputing* 171, 73-81, 2016.

Peer-Reviewed Conference Papers

[C5] **Y. Qin**, M. Cao, B. D.O. Anderson, D. S. Bassett, and F. Pasqualetti, "Mediated remote synchronization of Kuramoto-Sakaguchi oscillators: the number of mediators matters", in Proceeding of the *59th IEEE Conference on Decision and Control*, Virtual, 2020.

[C4] **Y. Qin**, Y. Kawano, and M. Cao, "Stability of remote synchronization in star networks of Kuramoto oscillators," in Proceeding of the *57th IEEE Conference on Decision and Control*, Miami Beach, FL, USA, 2018.

[C3] **Y. Qin**, Y. Kawano, and M. Cao, "Partial phase cohesiveness in networks of communitinized Kuramoto oscillators," in Proceeding of *IEEE European Control Conference*, Limassol, Cyprus, 2018, pp. 2028-2033.

[C2] A Govaert, **Y. Qin**, and M. Cao. "Necessary and sufficient conditions for the existence of cycles in evolutionary dynamics of two-strategy games on networks," in Proceeding of *IEEE European Control Conference*, Limassol, Cyprus, 2018, pp. 2182-2187.

[C1] **Y. Qin**, M. Cao, and B. D. O. Anderson, "Asynchronous agreement through distributed coordination algorithms associated with periodic matrices," in Proceeding of the *20th IFAC World Congress*, Toulouse, France, 2017, 50(1): 1742-1747.

Peer-Reviewed Extended Abstract

[A1] **Y. Qin**, T. Menara, S. Oymak, S. Ching, F. Pasqualetti. "Non-Stationary Representation Learning in Sequential Multi-Armed Bandits", *ICML Workshop on Reinforcement Learning Theory*, virtual 2021.

Professional Services

Reviewer:

- **Journals:** IEEE Transactions on Automatic Control; Automatica; Systems and Control Letters; IEEE Transactions on Industrial Electronics; IEEE Transactions on Systems, Man and Cybernetics; IEEE Control Systems Letters;
- **Conferences:** IEEE Conference on Decision and Control; American Control Conference; European Control Conference

Membership:

Institute of Electrical and Electronics Engineers (IEEE), IEEE Control Systems Society (CSS)

Languages

- **English**, professional working proficiency (CEFR C1/C2)
- **Chinese**, native