Zhuojun Yu

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Education

Case Western Reserve University (CWRU) **Cleveland, OH, US**
Ph.D. in Applied Mathematics *Aug. 2020–June 2024*
Supervisor: Peter J. Thomas
Thesis: Closed-Loop Control of Rhythmic Motor Behaviors

The Institute for Computational and Experimental Research in Mathematics (ICERM)
Brown University **Providence, RI, US**
Semester program in "Math + Neuroscience: Strengthening the Interplay Between Theory and Mathematics" *Sep. 2023–Dec. 2023*

Beijing Normal University (BNU) **Beijing, China**
Bachelor of Science in Mathematics and Applied Mathematics *Sep. 2016–July 2020*
Bachelor of Arts in English Language and Literature

Rutgers University -- New Brunswick **Piscataway, NJ, US**
Semester Program in Mathematics *Sep. 2018–Dec. 2018*

Professional Experience

Carnegie Mellon University **Pittsburgh, PA, US**
Postdoctoral Research Associate: Psychology & Neuroscience *July 2024–Present*
Supervisors: Timothy Verstynen & Jonanthan Rubin

Bibliography

Publications

1. **Yu, Z**., Rubin, J. E., & Thomas, P. J. (**2023**). Sensitivity to control signals in triphasic rhythmic neural systems: a comparative mechanistic analysis via infinitesimal local timing response curves. *Neural Computation*, 35(6), 1028-1085.
2. **Yu, Z.**, & Thomas, P. J. (**2022**). A homeostasis criterion for limit cycle systems based on infinitesimal shape response curves. *Journal of Mathematical Biology*, *84*(4), 1-23.
3. Riddle, S., Nourse, W. R., **Yu, Z.**, Thomas, P. J., & Quinn, R. D. (**2022**). A Synthetic nervous system with coupled oscillators controls peristaltic locomotion. In *Conference on Biomimetic and Biohybrid Systems* (pp. 249-261). Springer, Cham.
4. **Yu, Z.**, & Thomas, P. J. (**2021**). Dynamical consequences of sensory feedback in a half-center oscillator coupled to a simple motor system. *Biological Cybernetics*, *115*(2), 135-160.

In submission:

5. **Yu, Z.**, & Thomas, P. J. (**2024**). Variational analysis of sensory feedback mechanisms in powerstroke-recovery systems, **accepted** by *Biological Cybernetics.*

6. **Yu, Z.**, Wang, Y., Thomas, P. J., & Chiel, H. J., Tradeoffs in the energetic value of neuromodulation in a closed-loop neuromechanical system, **under review**.

In preparation*:*

7. Golabek, J., **Yu, Z.**, Thomas, P. J., Makowski, N., & Crago, P. E., Effects of functional electrical stimulation in a simple neuromuscular model.

Conference Talks

1. Mathematical Challenges in Neuronal Network Dynamics, ICERM Workshop at Brown University, Sep. 18 – 22, 2023.
2. 2023 American Mathematical Society Central Sectional Meeting, Session on "Mathematical Modeling in Biosciences", Apr. 15 – 16, 2023.
3. 2021 International Conference on Mathematical Neuroscience (ICMNS), Mini-symposium on "Phase-amplitude reduction: Koopman and control", June 28 – July 1, 2021.
4. 2021 Society for Mathematical Biology (SMB) Conference, Mini-symposium on "Biological Rhythms and Motor Control", June 13 – 17, 2021.
5. 2020 Virtual Workshop on Motor Control, Oct. 26 – 29, 2020.

Awards & Honors

- Nominated for CWRU 2023 Richard A. Zdanis Research Fellowship Award for outstanding Ph.D. candidates *May 2023*
- Meritorious Winner (global top 8% out of 14,108 teams), 2019 Mathematical Contest in Modeling *Jan. 2019*
- BNU Merit-Based Scholarship (top 5%) *2017, 2018, 2019*

Additional Engagements

- **Peer review**: White, A. J. (2022). Sensory feedback expands dynamic complexity and aids in robustness against noise. *Biological Cybernetics*, 116(3), 267-269.
- **Invited talk**: Neurophysics seminar, Humboldt University of Berlin, Germany, Dec. 6, 2020 (remote).
- **Organizations:** American Mathematical Society, Society for Industrial and Applied Mathematics, CWRU Association for Women in Mathematics.