

# Chengrui Li 李宸睿

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🌐 <https://JerrySoybean.github.io>

🎓 <https://scholar.google.com/citations?user=SXR3RXIAAAAJ>

🐙 <https://github.com/JerrySoybean>



## Research Interests

Computational neuroscience, neural latent variable models, statistical machine learning.

Eye tracking experiment and data analysis.

Fractional calculus signal processing.

## Education

2021.08 – present

📌 **Ph.D. in Computational Science & Engineering.**

**M.Sc. in Mathematics** on 2023.12.

Georgia Institute of Technology (Georgia Tech), Atlanta, USA.

GPA: **4.00**/4.00

Advisor: Prof. Anqi Wu

2018.08 – 2019.05

📌 **Non-Degree Exchange Student.**

University of Tennessee, Knoxville (UTK), TN, USA.

GPA: **4.00**/4.00

2016.09 – 2020.06

📌 **B.Eng. in Software Engineering (Computational Biology);**

**B.Sc. in Biological Sciences.**

Wu Yuzhang Honors College, Sichuan University (SCU), Chengdu, China.

GPA: **3.94**/4.00; Rank: **1**/28

Advisor: Prof. Yifei Pu & Prof. Wei Deng

Thesis title: *The application of fractional order image enhancement in computational neuroscience.*

## Honors and Awards

2023 📌 **Runner-up Poster Award in the Neuro Next Initiative Launch Event**, Georgia Tech.

2020 📌 **Outstanding Undergraduate Thesis**, SCU.

📌 **Outstanding Graduates**, SCU.

2019 📌 **Finalist** (<0.3%) + **Frank Giordano Award** (the only 1 out of 14,000), Mathematical Contest in Modeling (MCM/ICM), Consortium for Mathematics and Its Applications.

2018 📌 **“Tang Lixin” Lifetime Scholarship**, Tang Lixin Education Development Foundation.

📌 **First Grade Scholarship**, SCU.

2017 📌 **National Scholarship**, Ministry of Education of the People’s Republic of China.

📌 **First Grade College Mathematical Contest**, SCU.

## Research Publications

### Peer Reviewed Conference Proceedings

- C3** **Chengrui Li**, Yule Wang, Weihang, Li, and Anqi Wu. “Forward  $\chi^2$  Divergence Based Variational Importance Sampling”. *The Twelfth International Conference on Learning Representations (ICLR)*, 2024. [spotlight 5%]
- C2** **Chengrui Li**, Soon Ho Kim, Chris Rodgers, Hannah Choi, and Anqi Wu. “One-hot Generalized Linear Model for Switching Brain State Discovery”. *The Twelfth International Conference on Learning Representations (ICLR)*, 2024.
- C1** Yule Wang, Zijing Wu, **Chengrui Li**, and Anqi Wu. “Extraction and Recovery of Spatio-Temporal Structure in Latent Dynamics Alignment with Diffusion Model”. *Advances in Neural Information Processing Systems 35 (NeurIPS)*, 2023. [Spotlight: 3%]






## Journal Articles

- J1** **Chengrui Li** and Anqi Wu. “Inverse Kernel Decomposition”. *Transactions on Machine Learning Research (TMLR)*, 2023. [under review]

## Preprints



- P1** **Chengrui Li** and Bruce J. MacLennan. “Continuous-time systems for solving 0-1 integer linear programming feasibility problems”. *arXiv:1905.04612*, 2019.

## Invited Talks and Other Presentations


- 2024.02  **Chengrui Li**, Soon Ho Kim, Chris Rodgers, Hannah Choi, and Anqi Wu. “One-hot Generalized Linear Model for Switching Brain State Discovery”. Poster presentation @ The 20th anniversary of Computational and Systems Neuroscience (COSYNE 2024), Lisbon, Portugal.
-  Yule Wang, Zijing Wu, **Chengrui Li**, and Anqi Wu. “Extraction and recovery of spatio-temporal structure in neural alignment via diffusion models”. Poster presentation @ The 20th anniversary of Computational and Systems Neuroscience (COSYNE 2024), Lisbon, Portugal.
- 2023.10  **Chengrui Li**, Soon Ho Kim, Chris Rodgers, Hannah Choi, and Anqi Wu. “One-hot Generalized Linear Model for Switching Brain State Discovery”. Poster presentation @ Neuro Next Initiative Launch Event, Georgia Tech.
- 2023.08  **Chengrui Li**. “Latent Variable Models for Neural Spike Train Data”. Invited talk @ Affiliated Mental Health Center, Zhejiang University School of Medicine (Hangzhou Seventh People’s Hospital), Hangzhou, China.
- 2018.12  **Chengrui Li** and Wei Deng. “The Power and Beauty of Mathematics: A Prospect of Nature Inspiration & Computational Model from the Interdisciplinary View”. Oral presentation @ *The 11th International Conference on Brain Informatics (BI 2018)*, Arlington, TX, USA.

## Miscellaneous Experience

### Teaching Experiences




- Fall 2023  **Teaching assistant**. CSE 6740 Computational Data Analysis @ Georgia Tech.
- Spring 2023  **Teaching assistant**. CSE 6740 Computational Data Analysis @ Georgia Tech.

### Summer Schools

- 2020.08  **CNeuro 2020: Theoretical and Computational Neuroscience Summer School**, Tsinghua University.

- 2018.08        **The Chinese University of Hong Kong Summer Workshop**, Hong Kong SAR, China.
- 2018.07        **Cognitive Neuroscience Summer School**, Peking University.

## Other Research Experiences

- 2018.09 – 2019.10        **Eye tracking experiment: Response Selection.** Designed the eye-tracking program by Experiment Builder. Completed an eye-tracking data analysis program in MATLAB. Used the eye-tracking technique to investigate the influence of different stimulus-response conditions on the eye movement trajectories.
- 2019.07        **Web project development.** Developed a web project for an e-commerce platform under the SSM framework. Java + MySQL + JSP was used for full-stack agile development.
- 2018.02        **Clinical internship at the State Key Laboratory of Biotherapy, West China Hospital, SCU.** Conducted tests including the Mini-Mental State Examination (MMSE), the Montreal Cognitive Assessment (MoCA), the Hamilton Anxiety Rating Scale (HAM-A), and the Hamilton Depression Rating Scale (HAM-D).

## Skills and Hobbies

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**Machine Learning/Math Programming:** Python, MATLAB, Mathematica, R, Julia.

**Development Programming:** C/C++, Java, SQL.

**Multi-Media:** Cinema 4D, Adobe Premiere Pro, Adobe Illustrator, Adobe Audition, etc.

**Others:** Experiment Builder (eye-tracking),  $\LaTeX$ , Linux, etc.

**Hobbies:** Violin, Piano, Magic tricks, YOYO ball, Aerial photograph & film/audio post-processing, etc.