Qi Xin

Curriculum Vitae

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205, School of Life Science, USTC
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Education

B.S. in Physics, University of Science and Technology of China (USTC) 2014 – 2018

Major in Biophysics

- Major GPA: 3.84/4.00
- Ranking: 1/13 (in Biophysics program, Class of 2018)
- Relevant Courses: Biophysics I (Computational Neuroscience) (A+), Computational Physics (Macromolecule Modeling) (A), Computational Methods (A+), Probability and Statistics (A+), Quantum Mechanics (A), Theoretical Mechanics (A), Principle of Neuroscience (Graduate-Level Course, A-)

Research Interests

(a) Statistical Neuroscience (b) Neural Network Dynamics (c) Decision-Making Models (d) Cellular and Synaptic Dynamics

Publication

1) Yu Chen*, **Qi Xin***, Valérie Ventura and Robert E. Kass. (* Equal contribution) **Stability of point process spiking neuron models.** *Journal of Computational Neuroscience* (2018). https://doi.org/10.1007/s10827-018-0695-7
2) Wuan Wang*, Xiaoqian Zhang*, **Qi Xin***, Fan Gao, Mark Alkema, Mei Zhen and Quan Wen. (* Equal contribution) **Stereotypy and Flexibility of Escape Response.** In preparation. (Draft Available Upon Request)

Research Experience

Neurostatistics Group, Carnegie Mellon University Jul 2017 – Sep 2017

Advisor: ***Prof. Robert Kass***

- Explored causes and proposed solutions for the divergence problem: statistical models of single neuron (GLMs) pass goodness-of-fit test but show unphysiological explosion firing rate in the simulation.
- Created methods to avoid divergence within the original framework: Outlier detection method and a look-up table approach which tells whether more data helps.
- Built a new framework that prevents inherent divergence from the original model.
- Developed a diagnosis method that evaluates the stability of a model quickly with high accuracy.

Laboratory of Computational Neuroscience of Small Animals, USTC Apr 2017 – Nov 2018

Advisor: ***Prof. Quan Wen***

- Created a realistic neural network model that can explain and reproduce the behavioral statistics of C. elegans escape response.
- The model correctly predicted the outcomes of multiple experiments, including behavioral changes under various optogenetic manipulations, genetic analyses and calcium imaging.
- Analytically calculated dynamics of the neural network model and interpreted behavior statistics from the view of statistical physics.

- Trained a recurrent network performing the escape response with evolutionary algorithm, which matches the proposed model undesignedly.

Laboratory of Neurophysics and Neurophysiology, USTC Jan 2016 – Apr 2017

Advisor: ***Prof. Guoqiang Bi***

- Tested different permeable substrates binding the brain slices to preserve the sample as well as speed up the sample preparing process.
- Conducted imaging of mouse brain sample with a new developed fast laser scanning microscopy to optimize protocols for sample preparation.
- Performed immuno-staining and operated confocal microscopy to test the specificity of different antibodies.

Laboratory of Solid Waste Recovering with Biotech, Beijing Institute of Technology Jul 2012 – May 2013

Advisor: ***Prof. Shi Chen***

- Got a bioleaching system to extract Nickel slag with the efficiency of 90%, up from 40% previously reported.
- Concluded that the direct contact between bacteria and slag was crucial to the high efficiency of Ni extraction.
- Won the first place in China Adolescents Science and Technology Innovation Contest and was selected to Intel Science and Engineering Fair (3 out of 20,000).

Teaching Experience

- **Teaching Assistant**, 2018 Summer School in Computational Neuroscience and Brain-inspired Intelligence (organized by Tsinghua Laboratory of Brain and Intelligence)

Awards

- National Outstanding Student Scholarship from Ministry of Education 2017 (12 out of 320)
- Outstanding Student Scholarship, USTC 2015 and 2016
- the 7th place of Electromagnetic Thesis Competition, USTC 2015 (7 out of 800)
- the 11th place of Optical Thesis Competition, USTC 2016 (11 out of 500)
- Second prize of Thesis Competition of Research Experiment USTC 2016 (20 out of 600)
- Intel Youth Talent Award 2013 (20 out of 20,000)
- President Award of China Association for Science and Technology 2013 (3 out of 20,000)

Additional Skills

- Programming Languages: Matlab, Python, C/C++, Mathematica, HTML
- Word Processing and Graphic Design Softwares: Latex, Microsoft Office, Adobe Illustrator
- Engineering Applications: Solidworks, Arduino

Community Service

Vice-President, Psychological Association of USTC Sep 2015 – Jun 2017

- Organized Psychological Education Week titled ‘Cherish Your Life’, involving more than 20 personnel and more than 1,000 participants.
- Designed and put up more than 20 posters to publicize Psychological Association.

Director, Society of Psychological Class Committees, School of Physics, USTC Sep 2015 – Jun 2017

- Organized Thanksgiving activities including delivering gratitude letters and thankyou cards to professors around the campus.
- Oversight the performance of all Psychological Class Committees in each class.