Zhuohe (Harry) Liu

(Last updated: August 2018)

1519 Wheeler St., Houston, TX, 77004
harry.liu@rice.edu | +1-832-646-2662
harry.liu.web.rice.edu

INTERESTS

Neuroengineering, Biomedical devices, Electrical engineering, Protein engineering.

EDUCATION

Rice University, Houston, TX, USA — Sep. 2016 – May 2022 (expected)

- Ph.D. Student in Electrical & Computer Engineering (Neural Engineering)

University of Michigan, Ann Arbor, MI, USA — Sep. 2014 – Apr. 2016

- B. S. E. in Biomedical Engineering (Bioelectrical Engineering), College of Engineering

Shanghai Jiao Tong University, Shanghai, China — Sep. 2012 – Aug. 2016

- B. S. E. in Electrical & Computer Engineering, UM-SJTU Joint Institute

EXPERIENCE

Graduate Research Assistant — Jan. 2017 – **Now**

St-Pierre Lab, Department of Neuroscience, Baylor College of Medicine, Houston, Texas

- Develop high-throughput screening platforms for genetically encoded voltage indicator (GEVI) and other biosensors, capable of applying electrical field stimulation, drug addition, etc.
- Analyze fluorescent microscopy images and videos using MATLAB to quantify sensor dynamic range, brightness, kinetics, and photostability properties, and thus rank mutagenesis library candidates.

Teaching Assistant — Fall 2017

Department of Electrical & Computer Engineering, Rice University (ELEC326 Digital Logic Design)

- Graded lab reports and homework on Verilog.
- Held lab sessions on FPGA board development.

Research Assistant — May 2015 – Mar. 2016

Shea Lab, Department of Biomedical Engineering, University of Michigan

- Developed techniques of bioluminescence living cell microarrays.
- Studied the time-dependent transcription factor / microRNA activity using R for statistical analysis.
- Performed plasmid cloning of 110 microRNA to make luciferase reporters.
- Conducted lentiviruses production and the transduction on target human MCF-7 cells.

Laboratory Assistant Sep. 2012 – Aug. 2013

Students' Innovation Lab, UM-SJTU Joint Institute, Shanghai Jiao Tong University

- Answered electrical & computer engineering related technical questions for lab users.
- Regulated lease of tools, maintained the environment of the lab.
- Oversaw equipment usage and safety of 300 JI students with 0 accident, injury or equipment damage.

POSTER PRESENTATION

"Automated Multimodal Screening of Fluorescent Biosensors of Membrane Potential", *12th Quantitative Biology (Q-bio) Conference, June 2018*.

"Automated Multimodal Screening of Fluorescent Biosensors of Membrane Potential", *Rice ECE Corporate Affiliates Day, Rice University, Mar. 2018.*

"An automated multimodal screening platform for developing improved indicators of membrane potential", *28th Rush and Helen Record Neuroscience Forum, Baylor College of Medicine, Feb. 2018.*

THESIS AND PROJECT

Low Cost SLAM Realization on Smart Phone Aug. 2016

Shanghai Jiao Tong University, Senior Capstone Design

- Transplanted a PC-based SLAM algorithm to an Android device to assist autonomous driving.
- Sponsored by Huawei Technologies Co. Ltd.
- Awarded the best of the five groups from that year by Huawei, and the Sliver Award in UM-SJTU JI 2016 Summer Design EXPO.

Force Gauge for the Removal of Epidural Catheters Apr. 2016

University of Michigan, Senior Capstone Design

- Developed an add-on single-use mechanical gauge to indicate internal force of the catheter and prevent its breakage.

Facial EMG as a Computer Input Method and a Communication Aid Dec. 2015

- Built a LabVIEW system capable of controlling the mouse cursor and selecting words/letters using only 3 channels of facial EMG signals, intended for people with speech and/or dexterity difficulties.

The Effect of Electrode Position on Human Biceps EMG Amplitude Apr. 2015

- Reassessed and cast doubt on the necessity of using the assigned electrode position to yield best signal.

Synthesis of Physalien and Its Application to Food Coloring Dec. 2010 – Mar. 2011

No.2 Secondary School Attached to East China Normal University, Mentors: Lan Ding, Huanxin Xu.

- Synthesized naturally occurring red pigment physalien from zeaxanthin and palmitic acid, replacing costly wolfberry extraction method, and to be used as an edible coloring and a nutritional supplement.
- Awarded the First Prize in 26th Intel Shanghai Adolescents Science & Technology Innovation Fair.

HONORS AND SCHOLARSHIPS

Rice ECE Departmental Fellowship (2016 – **Now**): Fellowship provided to Ph.D. students at Department of Electrical & Computer Engineering of Rice University.

James B. Angell Scholar (2016): Honor for students who achieve an "A" record for four consecutive terms at University of Michigan.

Shanghai Future Science Star (2014): Honor and scholarship for 20 high school students per year in Shanghai for their innovation potential. Sponsored by Shanghai Municipal Education Commission, Science and Technology Commission of Shanghai Municipality, Shanghai Science Education Development Foundation, and Applied Materials, Inc. (China),

Other merit-based awards: Dean's Honor List (2014 – 2016, College of Engineering, University of Michigan), Dean's List (2012 – 2014, UM-SJTU Joint Institute), SJTU Excellent Student Scholarship (Level C) (2012, 2013).

SKILLS

Wetware:	*In vitro* Imaging, Cloning, Cell Culture
Computer Coding:	MATLAB, Mathematica, Visual Basic, C/C++, LATEX, Python, R
Software Application:	SolidWorks, LabVIEW, Pspice, Xilinx, Photoshop, Premiere
Hardware development:	Raspberry Pi, Arduino, FPGA
Languages:	Chinese (native), English (fluent)
Liberal Arts / Hobbies:	Graphic design, Phonetics, Numismatics, Astrophotography, Calligraphy