Yujia Liu

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EDUCATION

M.Phil. in Computational Biology **Aug 2021 (expected)**
The University of Cambridge, Cambridge, UK

B.Eng. in Bioengineering, Honors Science Program **Jun 2020**
Xi'an Jiaotong University, Xi'an, China
Thesis: A Computational Method for Automated Modeling of Logic Gates in Synthetic Circuits and Human Transcriptome (top 1%) | Advisor: Prof. Tielin Yang
Honors Youth Program (skipping high school)
GPA: 3.92/4.3 | Ranking: 1/30

Exchange semester **Fall 2018**
University of California, Berkeley, Berkeley, CA
GPA: 4.0/4.0

SELECTED COURSEWORK

Deep Learning	Machine Learning	Genetic Sequence Analysis
Genomics	Proteomics	Principles of Synthetic Biology
Genetic Engineering	Computational Molecular and Cell Biology	

RESEARCH EXPERIENCE

Summer Intern **Aug 2020**
Westlake University, Hangzhou, China *Advisor: Dr. Jing Huang*
- Simulated, using molecular dynamics (MD), how the surface tension of NaCl solution differs under CGenFF additive force field and Drude polarizable forcefield and confirmed the applicability of Gibbs adsorption theorem in these cases.

Bachelor's Thesis **Dec 2019 – Jun 2020**
Xi'an Jiaotong University, Xi'an, China *Advisor: Prof. Tielin Yang*
- Designed BioLoGI (Biological Logic Gate Inference system), a compuational method for automated analyzing logic gate–like models in synthetic circuits and human transcriptome.
- Detected logic gate clusters pivoting REG1A in lipase metabolic pathways and EGFL7 in cardiovascular tissues leveraging GTEx bulk RNA sequencing data.
- Applied BioLoGI to single cell RNA sequencing data of embryonic stem cells and identified important roles played by lncRNA, which involve in about 40% of single-input logic gates.

Visiting Researcher **Jul 2019 – Sept 2019**
Lawrence Berkeley National Laboratory, Berkeley, CA Advisor: Prof. Adam Arkin
- Built and still maintaining The ENIGMA Explorer (source code), a web service for searching and analyzing bacterial isolates information for ENIGMA, a consortium of 19 labs across the US.
- Implemented both the point-and-click GUI and script-accessible API, upon which allowing flexible workflows to be built.
- Studied the "warfare" between the plant pathogen *Xanthomonas campestris* pv. *campestris* and several *Pseudomonas* using Random Barcode Transposon-site Sequencing (RB-Tnseq).

Research Assistant **Apr 2018 – Jun 2019**
Xi'an Jiaotong University, Xi'an, China *Advisor: Prof. Tielin Yang*
- Discovered BNIP3 as a novel methylation biomarker for renal cancer and breast cancer using differential expression analysis, log-rank test, Cox proportional harzards regression, and co-expression network.

Team Leader of International Genetically Engineered Machine (iGEM) Competition **Feb 2018 – Oct 2018**

Advisor: Prof. Xiaoyun Lu

- Engineered *E. coli* with a genetic circuit that converts the production of D-psicose, a novel healthy sugar, to the survival benefit of mutants with more than 30-fold sensitivity.
- Performed directed evolution experiments on the engineered bacteria carrying shuffling PCR-constructed sequence library to identify optimal D-psicose producing strain, which the method is named DEcose.

PATENTS

- Dan Tan, **Yujia Liu**, Xinlei Fang, Peiyao Fan, Yun Yu, Xiaoyun Lu. 2020. Recombinant Plasmid and Engineered Bacteria, Their Construction Method, and the Application in Promoting the Yield of D-psicose. China Patent 202010380209.0, filed May 08, 2020. Patent pending.
- Tielin Yang, **Yujia Liu**, Congcong Liu, Yan Guo, Shanshan Dong. 2020. Automated Modeling Method for Genetic Circuits and Transcriptional Regulations. China Patent 202011035802.8, filed September 27, 2020. Patent pending.

LEADERSHIP

Operation and Maintenance Director **Jun 2018 – Jun 2019**

Tiaozhan.com

Leader of Qt Department **Jun 2017 – Jun 2018**

IBM Students Technology Club

HONORS & AWARDS

Outstanding Bachelor's Thesis (top 1%) **Jun 2020**
Undergraduate Presidential Scholarship (10 per year) **Nov 2019**
Undergraduate First Prize Scholarship **Nov 2018**
Siyuan Scholarship **Nov 2017, Nov 2016**

iGEM Gold Medal, Advisor **Nov 2019**
iGEM Gold Medal, Team Leader **Nov 2018**

SKILLS

Academic Softwares: MATLAB, Qt, Docker, CHARMM, OpenMM, Autodesk 3ds Max
Programming Languages: C++, C#, Python, R, JavaScript, PHP
Languages English (fluent), German (basics), Chinese (native speaker)