

Muyi Liu

liu413@purdue.edu

(765) 701-7858

<https://liumuyi.github.io/>

Education

Postdoc	School of Medicine	Indiana University		August 2019
Ph.D.	Biological Sciences	Purdue University	3.7/4 (GPA)	August 2017
M.S.	Computer Science	Purdue University	3.8/4	May 2017
B.E.	Computer Science	Tsinghua University	84.1/100	July 2006

Computation Skill

Language

- R, C++, MATLAB, Python, and Perl *Research Related*
- Java, Delphi, Pascal, VHDL, Shell Script, X86, and MIPS Assembly *M.S. and B.E.*

Machine Learning and Data Mining

- NP Algorithm, Metropolis Sampling, Graph Theory, and Classification *Research Related*
- *Bioinformatics and Wet Lab*
- Single Cell RNA-Seq Cell Type Classification, iPS Cell Differentiation Analysis, Protein (CABS) and ncRNA (RNAFold) Structure Prediction, Genomics Sequence Analysis *Research Related*

Package

Platform Management

- conda and docker

Machine Learning

- Tensorflow and sklearn (SVM, Random forest, gradient boosting, and DBSCAN)

Data Analysis and Visualization:

- g++, numpy, pandas, ggplot2, ggsci, pysam, pybedtools, and matplotlib

Bioinformatics

- Star, Deseq2, Seurat, Monocle, and SingleR

Purdue CS Master

CS50300	Operating Systems	A
CS58000	Algorithm Design, Analysis, and Implementation	A
CS50200	Compiling and Programming Systems	B+
CS51400	Numerical Analysis	A-
CS53000	Introduction to Scientific Visualization	A
CS54701	Information Retrieval	A
CS57800	Statistical Machine Learning	B+
CS57900	Bioinformatics Algorithms	A

Research Experience

Postdoc

- Single Cell Genomics RNA-Seq Data Analysis
Cell type annotation (developing supervised and unsupervised annotation algorithms)

Graduate Research Assistant

- Frequent Subgraph Mining Algorithm Design (NP-Hard Topic)
- ncRNA Function Prediction Pipeline
- Protein RNA Structure Prediction and Folding Simulation

Publication and Presentation

Publication

- M. Liu, and M. Gribskov, "MMC-Margin: Identification of Maximum Frequent Subgraphs by Metropolis Monte Carlo Sampling" in *2015 IEEE International Conference on Big Data*, IEEE, 2015 (Acceptance Rate: 17%)
- M. Liu, and M. Gribskov, "Adapt Frequent Subgraph Mining Algorithms to noncoding RNA Topology Alignment and Function Prediction" (Preparation)

Invited Talk

- "MMC-Margin: Identification of Maximum Frequent Subgraphs by Metropolis Monte Carlo Sampling" in *2015 IEEE International Conference on Big Data*, Oct 31st, 2015, Santa Clara, CA

Manuscript Review

- "Isomorphism Identification of Planar Kinematic Chains Based on Characteristic Arrays and Automatic Programming" in 2018

Teaching Experience

BIOL 231	Cell Structure and Function	Summer 2017
BIOL 111	Fundamentals of Biology	Spring 2017 Spring Fall 2016 and 2015
BIOL 121	Ecology, Evolution and Environmental Biology	Summer 2016
BIOL 221	Introduction to Microbiology	Fall 2014

Award

Purdue Research Assistant	2010-2014
Travel Award of Purdue University PULSe Program	2015
Scholarship of College Entrance Examination from Gansu Provincial Government	2002
Membership Award of Students Union in Tsinghua University	2004