# Yangruirui ZHOU

Email: yrrzhou@bu.edu Tel: (+1) 857-763-9402 Boston, MA

## EDUCATION

**Boston University, Boston, MA** 09/2020-Now
Ph.D. student, Department of Engineering
GPA: 3.91/4.00

- Research focus on CAD tools and algorithms in synthetic biology applications.

**University of Electronic Science and Technology of China (UESTC), Chengdu, China** 09/2016-06/2020
B.E, Department of Software Engineering *(Elite program)*
GPA: 3.94/4.00 (Rank: 6/740)

- Senior Theis: Analysis of Postoperative Applications of Pose Tracking Algorithms.

**University of California, Santa Barbara, CA** 01-03/2019
Exchange Program

**National University of Singapore, Singapore** 07-08/2017
Visiting Student

## SKILLS

**Programming language:** Python, Java, C/C++, Typescript, HTML, Linux Shell.
**Tools:** NetworkX, Tensorflow, Pytorch, Latex.

## EXPERIENCE HIGHLIGHT

Rich hands-on experience on:
1) optimizing algorithms for microfluidic device applications, such as validating, simulating and auto-controlling microfluidic devices with multiple constraints and experiment modes.

2) big netlist partitioning algorithm with sub-group size constraint and group-group communication constraint, which can be used in electronics design, gene circuit design, social media community clustering, etc.

3) provide lab automation tool kits and formal definition for microfluidics to make the experiment procedure standardized, and the experiment result reproducible.

## RESEARCH

**Boston University, Boston, MA** 07/2020-Now
**Research Assistant, CIDAR lab**
Supervisor: Prof. Douglas Densmore

- *Implement programmable auto-design platform for microfluidic device.*
- *Implement graph partitioning algorithm with size and communication constraints.* *11/2022-Now*
- *Implement validation algorithm for continuous-flow microfluidic devices with constraints.* *03-09/2022*
- *Design microfluidic device with Multiple experiment modes for a project aiming to research the strategy in cell-cell communication.* *07/2020-03/2022*

**MIT, Boston, MA** 11/2022-Now
**Collaborative Research Assistant, Voigt lab**
Supervisor: Prof. Christopher Voigt

- *Work for the gene circuit partitioning part of a cryptographic hash algorithm implemented by cells rather than electronic components.*

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## PROJECTS

**University of California, Santa Barbara, CA** 06-08/2019
**Student Research Internship, Four eye's lab**
Supervisor: Prof. Matthew Turk and Prof. Tobies Hollerer

- *Pose tracking algorithm organization, implementation, and optimization.*

**University of Electric Science and Technology of China, Chengdu, China** 05-10/2019
**Major Team Member of UESTC-Software**
Supervised by Prof. Beibei Wang

- *International Genetically Engineered Machine competition (iGEM)*
- *The team integrates iGEM Registry and other 10 frequently used biology databases, add many useful tools.*
- *Project Wiki: https://2019.igem.org/Team:UESTC-Software*

**West China School of Basic Medical Sciences and Forensic Medicine, Chengdu, China** 03-08/2018
**Minor Contributor**
Supervisor: Prof. LunXu Liu

- *"Internet +" Innovation and Entrepreneurship Competition for College Students*
- *Project: "Minitutor" Intelligent Endoscopy Training and Assessment System*

## AWARDS & HONORS

**Most Outstanding Students of UESTC 2019** (成电杰出学生, **10/5000** in UESTC, **1/740** in department) 12/2019
iGEM "**Gold medal**" and "**Best Software Project**" 11/2019
Outstanding Graduates Award of UESTC 10/2019
"Wu Liang Ye" Enterprise Scholarship (**2/740** in Software Engineering department) 09/2019
Outstanding Student Scholarship 09/2019
Outstanding Student Scholarship 09/2018
Outstanding Student Scholarship 09/2017
International Software Testing Qualifications Board (Certified Tester) [Foundational Level] 10/2016

## PROFESSIONAL SERVICES

ICCAD'22 Second Paper Reviewer 06/2022
Teaching Assistant of EC504 (Advanced data structure and algorithms) 01-05/2022
Teaching Assistant of EC504 (Advanced data structure and algorithms) 01-05/2023

## PUBLICATIONS

[1] [IWBDA'22] A Conceptual Interactive Microfluidic Design and Control Workflow 07-08/2022
[2, IEEE-TCAD] Y. Zhou, S. M. D. Oliveira, R. Sanka, D. McIntyre and D. Densmore, "Vespa: Logic-Level Constraint-Based Validation for Continuous-Flow Microfluidic Devices," in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, doi: 10.1109/TCAD.2024.3435706. 04/2022-02/2024
[3, on review] [Nature Chemical Biology] Partitioning of a 2-bit hash function across 66 communicating cells 04/2022-12/2023

## ACTIVITIES

[1] International Workshop on Bio-Design Automation (IWBDA'22) 10/2022
[2] Engineering Biology Research Consortium (EBRC'23) 06/2023