Yuru Chen

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EDUCATION

University of Michigan **Ann Arbor, MI**

Ph.D. student in Biomedical Engineering Aug 2022 – May 2026(Expected)

- Research Interests: **Microfluidic design**, **Machine learning model**, **Automatic image analysis**, **NGS techniques**

M.S.E & B.S.E. in Biomedical Engineering Aug 2019 – Apr 2022

- Honor: James B. Angell Scholar, Summa Cum laude, University Honors, Dean's List

RESEARCH EXPERIENCE

Research Assistant **Ann Arbor, MI**

University of Michigan, Advisor: Prof. Sunitha Nagrath Dec 2019-Present

Developing prognostic metrics used expression of natural killer cell-related ligands on circulating tumor cells

- Developed automatic cell analysis program using convolutional neural networks(CNN) to increase the efficiency and consistency of circulating tumor cells (CTCs) identification from fluorescent images
- Created the mathematical model for correlating the gene expression of natural killer cell-related ligand expression on CTCs and their response to natural killer cell cytotoxicity effect on CTCs
- Retrieved RNA sequencing data from open databases (CCLE) and statistically analyze natural killer cell-related surface markers' gene expression in different cell lines

Sensor Network Laboratory Particle Collector Team Lead **Ann Arbor, MI**

University of Michigan, Multidisciplinary Design Program, Advisor: Prof. Xiaogan Liang Jan 2020 -May 2022

Researching on label-free methods to identify and evaluated particles (pm 2.5 & pollen) in the air

- Led and managed the team working on multiple sub-project in the particle's collector direction effectively, held weekly meeting and presented the weekly report to the professor
- Designed and optimized the three particles collector's CAD models based on fluid dynamic and electromagnetic properties
- Conducted the particle and fluid flow simulation, as well as educated group member to perform simulation
- Currently working on analyzing gas sensors using machine learning, finding the relationship of wildfire and people's health in California

TEACHING EXPERIENCE

Medical Imaging Laboratory, Graduate Student Instructor **Ann Arbor, MI**

University of Michigan; Biomedical Engineering Department Jan 2022 – April 2022

- Led lab sessions, helped students in writing lab reports, and refined the course materials
- Contacted and arranged the professor in each experiments section and created forms to improve the course's structural

Introductory Genetics Laboratory, Graduate Student Instructor **Ann Arbor, MI**

University of Michigan; Molecular, Cellular, and Developmental Biology Department Aug 2021 – Dec 2021

- Prepared and managed the laboratory section, grading assignments and exams, and held office hour for 20 hours per week
- Sent out weekly announcement and implemented different teaching, and get positive feedbacks (4.7/5) from students evaluations

Biomedical Instrumentation and Design, Instructional Aide **Ann Arbor, MI**

University of Michigan; Biomedical Engineering Department Jan 2021 – April 2021

- Helped instructor manage student's projects, troubleshot both software and hardware's problems, graded assignments, and held office hour for 10 hours per week

PUBLICATIONS & PRESENTATION

- **Yuru Chen** et.al. "Expansion and characterization on ALK-positive NSCLC circulating tumor cell isolated using a size based inertial Labyrinth microfluidic device" AACR Annual Meeting 2023. (Abstract & Poster)
- **Yuru Chen**, Zeqi Niu, Sunitha Nagrath. "A ML Approach Image Analyzing System for Circulating Tumor Cells Isolated with Microfluidic Device" BMES Virtual Annual Meeting Conference, 2021. (Abstract & Poster)
- **Yuru Chen**, Zeqi Niu, Sunitha Nagrath. "Semi-automated Cell Analyzing Program for Fluorescent Images of Circulating Tumor Cells (CTCs) Isolated with Microfluidic Devices" BMES Virtual Annual Meeting Conference, 2020. (Abstract & Poster)
- Zeqi Niu, Sarah Owen, **Yuru Chen**, Alina Yan, Zachary Gdowski, Mina Zeinali, Venkateshwar G. Keshamouni, Nithya Ramnath, Sunitha Nagrath et al. "Natural killer cells offer potential therapeutic approach to control metastasis through circulating tumor cell vulnerabilities" *(In submission)*

OTHER EXPERIENCE

Engineering Teaching Consultant **Ann Arbor, MI**
University of Michigan, CRLT-ENGIN Apr 2022 -Aug 2022
Discussed and evaluated current teaching methods, and held two practice teaching sessions

BME Peer Mentor **Ann Arbor, MI**
University of Michigan, Biomedical Engineering Department Jan 2021 -May 2021
Hold slack communication and shared BME related sources and information

Quality Assurance Operations Intern **Syracuse, NY**
Bristol-Myers Squibb, Quality Assurance Department Jun 2019 -Aug 2019
Planned, managed, and executed SharePoint site project to facilitate the cooperation between departments

Hospital Laboratory Volunteer **Guangdong, China**
Shenzhen PKU-HKUST Medical Center July 2018 -Aug 2018
Observed and analyzed the MRI and Tomosynthesis breast imaging in clinic medical image department

Event Planning Team Lead **Cleveland, OH**
Case Western Reserve University, Chinese Students and Scholars Association Jan 2018– May 2019
Responsible for Planned and executed organizational events, and posting relevant information on social media

Digital Marketing Team Lead **Remote**
Panopath Education and Technology Apr 2017-Jun 2019
Supervised a team that analyzed and published information on college applications for 150,000 audiences

Healing Service Volunteer **Cleveland, OH**
Cleveland Clinic, Physical Therapy Department Sep 2017– Dec 2017
Helped nurse in physical therapy (muscular, aroma, musical, and color treat) to increase patient quality of life

SKILLS

Laboratory: 3D printing, cell culture, scaffold building, primer design, molecular cloning, bacterial culture, protein purification, analytical Gel Filtration, electrochromatography
Computational: Matlab (image analysis, machine learning), ImageJ (image analysis, marco), R programming, Python, Solidworks, Fusion 360, COMSOL (fluid flow simulation and particle tracing simulation), LabVIEW, Arduino, Ultimaker Cura, Genome Compiler, EndNote