SIMON ZHAN

Github: https://github.com/SimonZhan-code
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EDUCATION

University of California, Berkeley *August 2018 - Present*
Major in Computer Science and Applied Mathematics(Statistic cluster); **Major GPA:**3.782
High School Affiliated to Renmin University of China *Sep 2015 - Jun 2018*
IGCSE/AL program; **GPA:4.0** (Valedictorian speaker)

PRESENTATION

- **RElectrode: A Reconfigurable Electrode For Multi-Purpose Sensing Based on Microfluidics**. Poster session of *ACM CHI 2021*.

RESEARCH EXPERIENCE

Human Computing Lab, Institute of Software in CAS May 2019-Now
Researcher *Advised by Prof Feng Tian & Prof Teng Han & Prof Xingdong Yang*

· Explored the field of new fabrication and novel interaction
· Researched on microfluidics and photovoltaic technology's application in HCI field
· Explored properties of 3D printing materials and design 3D printing model
· Learnt how to explore and design user design space for various usage scenarios
· Learnt to design user experiments to test robustness and feasibility
· Explored various sensing technologies and built different sensing devices

State Key Lab, Institute of Software in CAS Dec 2020-Mar 2021
Software developer *Advised by Prof Bohua Zhan*

· Developed a toolchain on modeling, simulation, and verification for complex cyber-physical systems(MARS)
· Self-learnt basics of Embedded system and modeled text-book cases by Simulink
· Built an automatic translation tool from the Simulink to HCSP (Hybrid CSP) and a theorem prover for HHL (Hybrid Hoare Logic Prover)
· Created comprehensive testing cases for system verification tools

PUBLICATION

LightSticker: Enabling Pervasive Light Emission Detection for Smart IoT Applications Simon Zhan, Chutian Jiang, Wei Sun, Jiaxuan Ren, Teng Han, Feng Tian, Xing-Dong Yang.(Advised by Bjoern Hartmann)**In submission** to AMC Conference on Human Factors in Computing Systems 2022(*CHI 2022*).

MicroFluID - A Reconfigurable RFID Platform for Robust Interaction Sensing Based on Microfluidics Wei Sun, Yanjun Chen, Simon Zhan, Teng Han, Feng Tian, Hongan Wang, Xing-Dong Yang. **In submission** to AMC Conference on Human Factors in Computing Systems 2022(*CHI 2022*).

RElectrode: A Reconfigurable Electrode For Multi-Purpose Sensing Based on Microfluidics. Wei Sun, Yanjun Chen, Simon Zhan, Teng Han, Feng Tian, Hongan Wang, Xing-Dong Yang. **Accepted** by AMC Conference on Human Factors in Computing Systems 2021 (*CHI 2021*)
link: https://doi.org/10.1145/3411764.3445652

PROJECTS

LightSticker Photovoltaic Tech/Novel design/New fabrication/ IoT
CHI 2022(First Author) *Click for Video*

- Investigated photovoltaic materials and wearable photovoltaic devices industry
- Explored user design space on legacy devices and divide into different categories
- Implemented signal processing and ML algorithms for pattern recognition
- Participated in back-end circuit(Amplifier, Multiplexer, and ADC) design using Labjack board
- Designed the structure of the sticker(electrode used on sticker)
- Designed and conduct evaluation experiments to test robustness and feasibility

MicroFluID RFID/Microfluidics/Antena design
CHI 2022(Major Contributor) *Click for Video*

- Designed the RFID antenna supporting multiple chips identification within a single tag
- Fabricated the RFID antenna on PET substrate using silk-net printing technique
- Designed microfluidics structures that enable different different identification modes
- Designed and conduct evaluation tests on RFID tag's durability, robustness, and functionality

MARS Python/Simulink/HTML
Participant *https://gitee.com/bhzhan/mars*

- Developed blocks feature of simulation tool in MARS system same as blocks in Simulink.
- Conducted testing on existing features on simulatin tool and automatic translation tool.
- Formulated demonstration of MARS system using textbook example such as Feedback system, etc.
- Developed both online and local GUI for graphing system using python Tkinter, flask, and HTML

RElectrode Novel Sensing/Fabrication/Microfluidics
CHI 2021(Major Contributor) *Click for Video*

- Researched on possible materials for re-configurable soft channel(PDMS, Ecoflex, etc)
- Designed re-configurable patterns of microfludics chip capable of detecting various signals
- Devised driving unit and valve logic which enables liquids switching and channels cleaning
- Conducted user experiments for object detection and gesture identification
- Analyzed the identification accuracy based on data from experiments with soft-margin SVM

Get a Grip SteamVR/Unity3D/C#
CHI 2020(Participant) *Click for Video*

- Designed and fabricate the pen model with 3D printing technologies
- Implemented button events on a pen model using bluetooth module for transmission
- Tracked pen movements using OptiTrack V120:Trio and OptiTrack Motive software (Spec detail)
- Mapped pen motions into VR environment using HTC Vive, SteamVR API, and Unity3D
- Reflected button event on pen as SELECT in VR environment
- Constructed a VR environment for experiment use in Unity3D

EMG(electromyography) controlled vehicle Arduino Uno/C++
Individual project *https://github.com/SimonZhan-code/EMG_Vehicle*

- Collected EMG data through Myo armband and analyze the EMG signal based on FFT algorithm.
- Constructed the vehicle and bluetooth module based on Arduino Uno board.
- Implemented instruction sets on vehicle using Myo built-in API and bluetooth module for transmission.
- Collected testing data and train SVM model based on LIBSVM in C++.

PATENT

No.CN201710953534.X **The Device generating control instruction for multi-targets based on EMG(electromyography) signal** Simon Zhan, Junjun Fan, Feng Tian, Wei Sun. *Protected by Patent Law of the People's Republic of China*

No.CN202110377915.4 **A complex microfluidic pipeline composite structure and microfluidic pattern deformation system based on microfluidic technology** Wei Sun, Yanjun Chen, Simon Zhan, Teng Han, Feng Tian, Hongan Wang, Xing-Dong Yang. *Protected by Patent Law of the People's Republic of China*

No.CN202110378536.7 **A fluid pattern re-configurable system based on microfluidic technology** Wei Sun, Yanjun Chen, Simon Zhan, Teng Han, Feng Tian, Hongan Wang, Xing-Dong Yang. *Protected by Patent Law of the People's Republic of China*

TECHNICAL STRENGTHS

Computer Languages	C/C++, Python, Java, R, C#, RISC-V, MATLAB
Software & Tools	HTML, Excel, Mathematica, Unity3D, Simulink, LaTeX, Autodesk Fusion360
Language	Academic proficiency in Chinese and English, Limited proficiency in German

TECHNICAL COURSES WORK

1. Linear Algebra(Math110)
2. Abstract Algebra(Math113)
3. Numerical Analysis(Math128A)
4. Optimization Models(EECS127/227A)
5. Probability theory(Stat134)
6. Statistical methods(Stat135)
7. Efficient Algorithm(CS170)
8. Database(CS W186)
9. Real Analysis(Math104)
10. Neural Network(CS182/282A)
11. Machine Learning(CS189/289A)
12. Embedded System(EECS149/249A)
13. Complex Analysis(Math185)
14. Time Series(Stat153)

HOBBIES

I like playing guitar and poker in my part time. I also enjoy all kinds of sports and routinely working out reading.