SIMON ZHAN

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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-Now
Software developer *Advised by Prof Bohua Zhan and Naijun 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
· Participated in building 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 preparation** to ACM Symposium on User Interface Software and Technology 2022(*UIST 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 ACM 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 ACM Conference on Human Factors in Computing Systems 2021 (*CHI 2021*)
link: https://doi.org/10.1145/3411764.3445652

PROJECTS

Geocentric Dynamic System/ Sensors fusion and network/ Simulation
Group Project *Github*

- Constructed robot cars to symbolize different planets such as Moon and Earth
- Implemented BLE controller on mother planet to control its trajectory
- Formulate Dynamic System equation for orbiting movement
- Simulated the dynamic system as mother planet moves in arbitrarily trajectory in Simulink
- Designed and built sensors network using IR and EO(electrical optic) sensors on Berkeley Buckler

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

- 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) *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) *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 *Github*

- 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, Julia
Software & Tools	HTML, Excel, Mathematica, Unity3D, Simulink, LaTeX, Autodesk Fusion360
Language	Academic proficiency in Chinese and English, Limited proficiency in German

TECHNICAL COURSES WORK(TAKING/TAKEN)

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)
15. Partial Differential Equation(Math 126)
16. Nonlinear System(EE C222)

HOBBIES

I like playing guitar and poker in my part time, intending to become a part time poker player. I also enjoy all kinds of sports and routinely working out. Besides, I love reading and writing book recommendation and comments while reading.