SINONG(SIMON) ZHAN

Github⋄ Personal Page⋄ Google Scholar

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EDUCATION

Northwestern University *Sept 2023 - Now*
PhD in Electrical and Computer Engineering advised by Prof.Qi Zhu

University of California, Berkeley *August 2018 - December 2022*
Bachelor of Art in Computer Science and Applied Mathematics advised by Prof.Sanjit Seshia

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

RESEARCH EXPERIENCE

IDEAS Lab, Northwestern University March 2022-Now
Research Assistant *Advised by Prof.Qi Zhu*

· I'm researching how to provide formal verified aspects(safety or stability guarantee) to the Cyber-Physical Systems. We implemented a framework that jointly conducts learning and formal verification by formulating and solving a bi-level optimization problem, which can cope with deterministic and stochastic continuous systems.

University of California, Berkeley April 2022-April 2023
Undergrad Researcher *Advised by Prof.Sanjit Seshia*

· I'm working on LOGiCS Project, the STR pipeline. We design a set of automated design-optimization, simulation, control/path planning, SMT-based 3D bin packing problem solver, and verification toolchain on various robots' designs.

Human Computing Lab, ISCAS and XDiscovery Lab, Dartmouth May 2019-Sep 2021
Research Assistant *Advised by Prof Feng Tian & Prof Teng Han & Prof Xingdong Yang*

· I have researched the new fabrication and novel interaction techniques under the HCI context. Specifically, I have worked on developing novel input and feedback devices, using fast prototyping techniques, in the VR environment.

WORK EXPERIENCE

CAS Ruiyi Technology Co., Ltd May 2020-Aug 2021
Software Developer

· Collected and Analyzed patients' and health people's performance data for product robustness testing.
· Participated in developing WeChat programs for both doctor and patient sides on test analysis.
· Pitched and Conducted live demos to various clients including top-tier hospitals and investors.

PUBLICATION(* STANDS FOR EQUAL CONTRIBUTION)

Model-Based Reward Shaping for Adversarial Inverse Reinforcement Learning in Stochastic Environments Simon Sinong Zhan, Qingyuan Wu, Philip Wang, Yixuan Wang, Ruochen Jiao, Chao Huang, Qi Zhu. *In Submission*. link:

Variational Delayed Policy Optimization Qingyuan Wu*, **Simon Sinong Zhan***, Yixuan Wang, Yuhui Wang, Chung-Wei Lin, Chen Lv, Qi Zhu, Chao Huang. *Neurips 2024* (Spotlight). link: `https://arxiv.org/abs/2405.14226`

Switching Controller Synthesis for Hybrid Systems Against STL Formulas Han Su, Shenghua Feng, **Simon Sinong Zhan**, Naijun Zhan. *FM 2024*. link: `https://arxiv.org/abs/2406.16588`

State-wise safe reinforcement learning with pixel observations Simon Sinong Zhan, Yixuan Wang, Qingyuan Wu, Ruochen Jiao, Chao Huang, Qi Zhu. *L4DC 2024*. link: `https://proceedings.mlr.press/v242/zhan24a.html`

Boosting Reinforcement Learning with Strongly Delayed Feedback Through Auxiliary Short Delays Qingyuan Wu, **Simon Sinong Zhan**, Yixuan Wang, Yuhui Wang, Chung-Wei Lin, Chen Lv, Qi Zhu, Jurgen Schmidhuber, Chao Huang. *ICML 2024*. link: `https://openreview.net/forum?id=0IDaPnY5d5`

Empowering autonomous driving with large language models: A safety perspective Yixuan Wang, Ruochen Jiao, Chengtian Lang, **Simon Sinong Zhan**, Chao Huang, Zhaoran Wang, Zhuoran Yang, Qi Zhu. *LLMAgent@ICLR 2024*. link: `https://arxiv.org/abs/2312.00812`

Kinematics-aware Trajectory Generation and Prediction with Latent Stochastic Differential Modeling Ruochen Jiao*, Yixuan Wang*, Xiangguo Liu, **Simon Sinong Zhan**, Chao Huang, Qi Zhu. *IROS 2024*. link: `https://arxiv.org/abs/2309.09317`

Enforcing Hard Constraints with Soft Barriers: Safe Reinforcement Learning in Unknown Stochastic Environments Yixuan Wang, **Simon Sinong Zhan**, Ruochen Jiao, Zhilu Wang, Wanxin Jin, Zhuoran Yang, Zhaoran Wang, Chao Huang, Qi Zhu. *ICML 2023*. link: `https://arxiv.org/abs/2209.15090`

Joint Differentiable Optimization and Verification for Certified Reinforcement Learning Yixuan Wang*, **Simon Sinong Zhan***, Zhilu Wang, Chao Huang, Zhaoran Wang, Zhuoran Yang, Qi Zhu. *ICCPS 2023*. link: `https://arxiv.org/abs/2201.12243`

MicroFluID - A Reconfigurable RFID Platform for Robust Interaction Sensing Based on Microfluidics Wei Sun, Yuwen Chen, Yanjun Chen, **Simon Sinong Zhan**, Yixin Li, Jiecheng Wu, Teng Han, Feng Tian, Jingxian Wang, Haipeng Mi, Xing-Dong Yang. *UbiComp 2022*. link: `https://dl.acm.org/doi/abs/10.1145/3550296`

RElectrode: A Reconfigurable Electrode For Multi-Purpose Sensing Based on Microfluidics. Wei Sun, Yanjun Chen, **Simon Sinong Zhan**, Teng Han, Feng Tian, Hongan Wang, Xing-Dong Yang. *CHI 2021*. link: `https://doi.org/10.1145/3411764.3445652`

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