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IMPact@SUTD is a regular update featuring works by SUTD Faculty, Researchers, Students and Research Centres/Labs. We hope to create awareness of the Research by SUTD within the SUTD community and beyond. Share with us your SUTD works today so that we can include it in our next update.



**Mitigating Adversarial Attacks on Data-Driven Invariant Checkers for Cyber-Physical Systems.**

*IEEE Transactions on Dependable and Secure Computing*

SUTD Author: Arlindo Silva and Cheah Huei Yoong

"We highlight the shortcomings in data-driven invariants by demonstrating a set of adversarial attacks that are not detectable. We detect such attacks by using a dual strategy using data-driven and design-driven invariants. We demonstrate the efficiency of our approach in increasing detection and reducing false positives in attack detection."

--- [Arlindo Silva](#)



**Beyond Asian 'mask culture': understanding the ethics of face masks during the Covid-19 pandemic in Singapore**

*Critical Public Health*

SUTD Author: Lyle Fearnley and Xiaomeng Wu

"Singapore recently removed its mask mandate, so why are some people still wearing masks? Our paper, based on in-depth interviews conducted in 2021, examines the diversity of ethical motivations for mask-wearing in Singapore during the pandemic."

--- [Lyle Fearnley](#)



**A study on the link between design brief structure and stimulus fidelity to optimize novelty and usefulness**

*AI EDAM*

SUTD Author: Arlindo Silva, Christine Yogiama, Georgios Koronis and Jacob Kang Kai Siang

"This research is focused on identifying elements of a design brief that stimulate creativity (novelty and usefulness) in a sketching exercise. Students instructed with contextual information about the problem designed more novel solutions, while those receiving abstract information about the problem designed more useful solutions."

--- [Arlindo Silva](#)

**A&B: AI and Block-Based TCAM Entries Replacement Scheme for Routers**  
*IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS*

SUTD Author: Xiong Zehui

**Cooperative Double-IRS Aided Proactive Eavesdropping**  
*IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS*

SUTD Author: Cao Yang and Duan Lingjie

**Distributed Deep Reinforcement Learning-Based Spectrum and Power Allocation for Heterogeneous Networks**  
*IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS*

SUTD Author: Xiong Zehui

**Double-Enhanced Core-Shell-Shell Sb<sub>2</sub>S<sub>3</sub>/Sb@TiO<sub>2</sub>@C Nanorod Composites for Lithium- and Sodium-Ion Batteries**  
*Antioxidants*

SUTD Author: Leo Chen Huei, Foo Su Yi, Tan Joseph Choon Wee, Tan U-Xuan, Chua Chee Kai and Ong Eng Shi

**Exploring facilitators and barriers of older adults' outdoor mobility: A walk-along study in Singapore**  
*Journal of Transport & Health*

SUTD Author: Mocnik Spela, Moogoor Adithi, and Yuen Belinda

**Multi-Objective Instantaneous Center of Rotation Optimization Using Sensors Feedback for Navigation in Self-Reconfigurable Pavement Sweeping Robot**  
*Mathematics*

SUTD Author: Yi Lim, Anh Vu Le, Hoong Joel Chan Cheng, Hayat Abdullah Aamir, Ramalingam Balakrishnan, Mohan Rajesh Elara Leong Kristor and Elangovan Karthikeyan

**Path Loss Modeling and Measurements for Reconfigurable Intelligent Surfaces in the Millimeter-Wave Frequency Band**  
*IEEE TRANSACTIONS ON COMMUNICATIONS*

SUTD Author: Han Yu

**Simultaneous Wireless Information and Power Transfer Assisted Federated Learning via Nonorthogonal Multiple Access**  
*IEEE TRANSACTIONS ON GREEN COMMUNICATIONS AND NETWORKING*

SUTD Author: Quek, Tony Q. S.

**Sneak Path Interference-Aware Adaptive Detection and Decoding for Resistive Memory Arrays**  
*IEEE COMMUNICATIONS LETTERS*

SUTD Author: Li Panpan and Cai Kui

**Support vector machines as Bayes' classifiers**  
*Operations Research Letters*

SUTD Author: Peter Jackson

**The random walk-based gravity model to identify influential nodes in complex networks**  
*Information Sciences*

SUTD Author: Zhao Jie; Wen Tao and Cheong Kang Hao

**Uplink Performance of Cell-Free Massive MIMO With Multi-Antenna Users Over Jointly-Correlated Rayleigh Fading Channels**  
*IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS*

SUTD Author: Yuen Chau

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