## Impossible Made Possible by architects, catalysts and technologists

August 2022

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.



Communicative strategies for building public confidence in data governance: Analyzing Singapore's COVID-19 contact-tracing initiatives

Big Data and Society

SUTD Author: Tan Kuo Siong Gordon and Sun Sun Lim

"This commentary argues that the Singapore government's communicative strategies surrounding TraceTogether represent missed opportunities to foster public confidence in social data governance. Moving forward, we suggest communicative solutions that foster trust, based on a sound understanding of public concerns that involve greater public engagement and solicitation of public feedback."

--- Tan Kuo Siong Gordon



Design change prediction based on social media sentiment analysis ALEDAM

SUTD Author: Edwin Koh

"This work presents a method that uses social media sentiment analysis to identify opportunities for design change and the set of product components affected by the change. The method builds on natural language processing to determine change candidates from textual data and uses dependency modeling to reveal direct and indirect change propagation paths arising from the change candidates."

--- Edwin Koh



Continual
Learning Electrical
Conduction in
ResistiveSwitchingMemory Materials
Advanced Theory and
Simulations

SUTD Author: Goh Shaoxiang, Wang Qiang, Wang Bo, Jiang Yu, Bajalovic Natasa and Desmond Loke

"Inspired by the human brain, a new type of 'continual learning' technique was developed to calculate the electrical current of digital memories in subsequent tests without the need to store data. This technique outperforms other continual learning models when applied on electric current dataset. A state-of-the-art performance was achieved after further adding modifications to the proposed technique."

--- Desmond Loke





A Novel Path
Planning Strategy
for a Cleaning Audit
Robot Using
Geometrical
Features and
Swarm Algorithms
Sensors

SUTD Author: Pathmakumar Thejus, Muthugala M. A. Viraj J., Samarakoon S. M. Bhagya P., Gomez Braulio Felix, Elara Mohan Rajesh



An electric power digital twin for cyber security testing, research and education

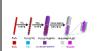
Computers & Electrical Engineering

SUTD Author: Nandha Kumar Kandasamy, Sarad Venugopalan, Tin Kit Wong and Nicholas Junming Leu



Biomimetic Vasculatures by 3D-Printed Porous Molds

SUTD Author: Terry Ching, Jyothsna Vasudevan, Shu-Yung Chang, Anupama Sargur Ranganath, Javier G. Fernandez, Michinao Hashimoto



Double-Enhanced Core-Shell-Shell Sb2S3/Sb@TiO2@C Nanorod Composites for Lithium- and Sodium-Ion Batteries

ACS Applied Materials & Interfaces

SUTD Author: Hui Ying Yang



Exemplars-Guided
Empathetic Response
Generation Controlled
by the Elements of
Human
Communication

IEEE Access

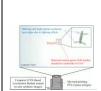
SUTD Author: Majumder Navonil, Ghosal Deepanway, Poria Soujanya



Homogenizing spatially variable Young modulus using pseudo incremental energy method

Structural Safety

SUTD Author: Kok-Kwang Phoon



Monocular UAV Localisation With Deep Learning and Uncertainty Propagation

IEEE Robotics and Automation Letters

SUTD Author: Xueyan Oh, Ryan Lim, Leonard Loh; Chee How Tan, Shaohui Foong, U-Xuan Tan



Multiple Order Fourier Linear Combiner: Estimating Phase Shift for Real-Time Vibration Compensation

IEEE Sensors Journal

SUTD Author: Yichang He, Yunfeng Fan, U-Xuan Tan



Object-of-Interest Perception in a Reconfigurable Rolling-Crawling Robot

Sensors

SUTD Author: Archana Semwal, Melvin Ming Jun Lee, Daniela Sanchez, Sui Leng Teo, Bo Wang and Rajesh Elara Mohan



Predicted ferromagnetic monolayer CrSCI with large vertical piezoelectric response: A firstprinciples study Applied Physics Letters

SUTD Author: Yee-Sin Ang



The capacity constraint physarum solver

Journal of Computational Science

SUTD Author: Kang Hao Cheong



Toward a
Comprehensive
Domestic Dirt
Dataset Curation for
Cleaning Auditing
Applications
Sensors

SUTD Author: Thejus Pathmakumar, Mohan Rajesh Elara, Shreenhithy V Soundararajan and Balakrishnan Ramalingam

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