



March 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.



**Rational Design and Application of an Indolium-Derived Heptamethine Cyanine with Record-Long Second Near-Infrared Emission**  
CCS Chemistry

SUTD Author: Syed Ali Abbas Abedi, Davin Tan, Xiaogang Liu

"In this work, we rationally designed and successfully developed a novel indolium-like heptamethine cyanine dye by installing indolium-derived polycyclic aromatic hydrocarbons on the terminal ends of a conjugated polyene backbone. This dye showed excellent photostability and showed bright fluorescent emission in the second near-infrared (NIR-II) window with a peak at approximately 1120 nm."

--- Syed Ali Abbas Abedi



**A Descriptor for Accurate Predictions of Host Molecules Enabling Ultralong Room-Temperature Phosphorescence in Guest Emitters**  
Angewandte Chemie International Edition

SUTD Author: Supphachok Chanmungkalakul, Chao Wang, Davin Tan, Xiaogang Liu

"We found a descriptor  $\Delta E$  based on the intersystem crossing via higher excited states (ISCHES) mechanism, allowing the accurate predictions of metal-free organic host-guest systems."

--- Xiaogang Liu




**Issue 36: Artificial Creativity Transformations**

SUTD Author: Immanuel Koh Chee Beng

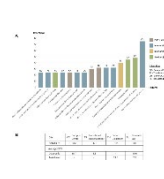
"In this special issue (Artificial Creativity), generative adversarial networks (GANs) is framed as a means towards a machinic extraction of perception. An automated and disembodied artificial urban sketcher is constructed to investigate AI's capacity in learning how to imitate how a human might spatially abstract, translate and eventually create designs."

--- Immanuel Koh Chee Beng




**Aggregation Functions for Simultaneous Attitude and Image Estimation With Event Cameras at High Angular Rates**  
IEEE Robotics and Automation Letters

SUTD Author: Matthew Ng, Zi Min Er, Gim Song Soh, and Shaohui Foong



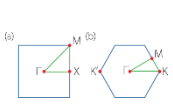
**Application of an adapted FMEA framework for robot-inclusivity of built environments**  
Scientific Reports

SUTD Author: Y. J. Ng, Matthew S. K. Yeo, Q. B. Ng, Michael Budig, M. A. Viraj J. Muthugala, S. M. Bhagya P. Samarakoon and R. E. Mohan



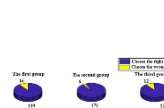
**Birdcage Transmitter for Wireless Power Transfer**  
IEEE Microwave and Wireless Components Letters

SUTD Author: Meena Rajendran, Justin Eng Hee Yang and Shao Ying Huang




**Chiral phonons in lattices with C-4 symmetry**  
Physical Review B

SUTD Author: Qianqian Wang, Jiaojiao Zhu, Weikang Wu and Shengyuan A. Yang



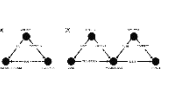
**Decision-making psychology and method under zero-knowledge context**  
Scientific Reports

SUTD Author: Joel Weijia Lai and Kang Hao Cheong



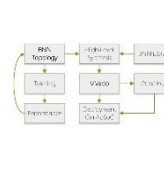
**Energy-Efficient Path Planning of Reconfigurable Robots in Complex Environments**  
IEEE Transactions on Robotics

SUTD Author: Phone Thiha Kyaw, Prabakaran Veerajagadheswar, Mohan Rajesh Elara



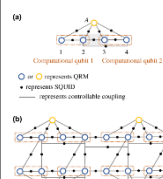
**Engineering Knowledge Graph From Patent Database**  
Journal of Computing and Information Science in Engineering

SUTD Author: L. Siddharth, Lucienne T. M. Blessing, and Jianxi Luo



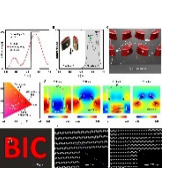
**Implementation of Binarized Neural Networks in All-Programmable System-on-Chip Platforms**  
Electronics

SUTD Author: Maoyang Xiang and Tee Hui Teo




**Implementation of Hybridly Protected Quantum Gates**  
Physical Review Applied

SUTD Author: Chunfeng Wu




**Schrodinger's red pixel by quasi-bound-states-in-the-continuum**  
Science Advances

SUTD Author: Soroosh Daqiqeh Rezaei, Hao Wang, Ray Jia Hong Ng, Qifeng Ruan, Joel K. W. Yang



**S-Sacrr: A Staircase and Slope Accessing Reconfigurable Cleaning Robot and its Validation**  
IEEE Robotics and Automation Letters

SUTD Author: Prabakaran Veerajagadheswar, Prathap Kandasamy, Mohan R. Elara, and Abdullah A. Hayat



**Teaching humanitarian logistics with the Disaster Response Game**  
Decision Sciences-Journal of Innovative Education

SUTD Author: Peter L. Jackson

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