

December 2021

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.



A device to detect leakage at the patient end of total intravenous anaesthesia

Journal of Medical Engineering & Technology

SUTD Author: Xiaojuan Khoo, Terry Tsz Him Ching, Fleming Paiputra and Joanne Huishan Tan

"In collaboration with CGH clinicians, we developed a functional leak detection device, comprising a moisture sensing bandage and an audio and visual alert system, to address the problem of undetected total intravenous anaesthesia (TIVA) leakages at the patient end, thereby allowing immediate intervention in preventing accidental awareness during surgery."

--- Xiaojuan Khoo



A General Method to Develop Highly Environmentally Sensitive Fluorescent Probes and AIEgens

Advanced Science

SUTD Author: Chao Wang, Ying Gao, and Xiaogang Liu

"We report a simple and general method that leads to a series of probes with greatly enhanced environmental sensitivity for biological applications and AIEgen development."

--- Xiaogang Liu



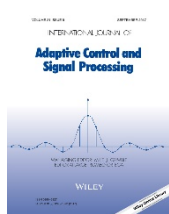
Ultrasensitive two-dimensional material-based MCF-7 cancer cell sensor driven by perturbation processes

Nanoscale Advances

SUTD Author: Sophia S. Y. Chan, Denise Lee, Maria Prisca Meivita, Lunna Li, Natasa Bajalovic and Desmond K. Loke

"Here, we developed a direct current (DC) resistance sensor based on two-dimensional (2D) molybdenum disulfide (MoS₂) nanosheets to enable cancer cell-specific detection dependent on micro-changes in the cancer cell membrane, representing a promising approach for the early detection of cancerous cells and to reduce the risk of post-surgery cancer recurrence."

--- Desmond K. Loke



A singular perturbation based adaptive strategy for bounded controller design in feedback linearizable systems

International Journal of Adaptive Control and Signal Processing

SUTD Author: Balakrishnan Ramalingam and Mohan Rajesh Elara



Activating Silent Synapses in Sulfurized Indium Selenide for Neuromorphic Computing

ACS Applied Materials & Interfaces

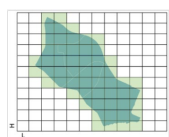
SUTD Author: Song Hao, Khin Yin Pang, Nan Wang, Huimin Li, Yu Jiang, Kian Guan Lim, Tow Chong Chong, Rong Zhao, and Desmond K. Loke



aiSTROM-A Roadmap for Developing a Successful AI Strategy

IEEE Access

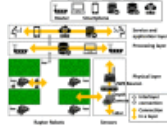
SUTD Author: Dorien Herremans



An End-to-End Point of Interest (POI) Conflation Framework

ISPRS International Journal of Geo-Information

SUTD Author: Raymond Low and Lynette Cheah



Drain Structural Defect Detection and Mapping Using AI-Enabled Reconfigurable Robot Raptor and IoT Framework

Sensors

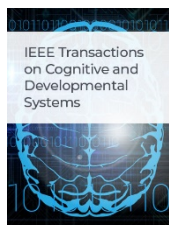
SUTD Author: Povendhan Palanisamy, Rajesh Elara Mohan, Archana Semwal, Lee Ming Jun Melvin, Braulio Félix Gómez, Selvasundari Balakrishnan, Karthikeyan Elangovan, and Balakrishnan Ramalingam



Hidden Hypergraphs, Error-Correcting Codes, and Critical Learning in Hopfield Networks

Entropy

SUTD Author: Tenzin Chan



IEEE TCCN Special Section Editorial: Convergence of Collaborative Distributed Machine Learning and Edge Computing Toward Intelligent Networking

IEEE Transactions on Cognitive Communications and Networking

SUTD Author: Zehui Xiong



Postmenopausal Chinese-Singaporean Women Have a Higher Ratio of Visceral to Subcutaneous Adipose Tissue Volume than Caucasian Women of the Same Age and BMI

Diagnostics

SUTD Author: Karupppasamy Subburaj



Reconfigurable Intelligent Surface Aided Power Control for Physical-Layer Broadcasting

IEEE Transactions on Communications

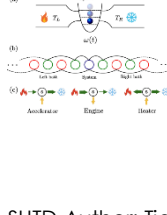
SUTD Author: Zehui Xiong



Remote drain inspection framework using the convolutional neural network and re-configurable robot Raptor

Scientific Reports

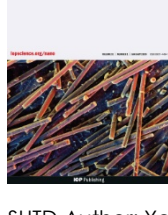
SUTD Author: Lee Ming Jun Melvin, Rajesh Elara Mohan, Archana Semwal, Povendhan Palanisamy, Karthikeyan Elangovan, Braulio Félix Gómez, and Balakrishnan Ramalingam



Thermodynamic performance of a periodically driven harmonic oscillator correlated with the baths

Physical Review E

SUTD Author: Tianqi Chen and Dario Poletti



Two-dimensional Dirac half-metal in porous carbon nitride C₆N₇ monolayer via atomic doping

Nanotechnology

SUTD Author: Yee Sin Ang