In the spotlight

Cyber risk assessment of cyber-enabled autonomous cargo vessel

International Journal of Critical Infrastructure Protection

SUTD Authors: Awais Yousaf, Philip Teow Huat Kwa, Meixuan Li, Jianying Zhou

The growing interest in autonomous ships within the maritime industry is driven by the pursuit of revenue optimization, operational efficiency, safety improvements, and environmental sustainability. However, the industry's increasing reliance on emerging technologies for developing autonomous ships expands the attack surface, making ship systems vulnerable to exploitation by malicious actors. In response to these challenges, this research presents the FMECA-ATT&CK-ATLAS (FAA) framework for cyber risk assessment of cyber-enabled autonomous cargo vessels. FAA helps to evaluate the cyber risks associated with the advanced operational technologies on board autonomous ships. This approach assists cybersecurity experts in aligning mitigation strategies for the cyber defence of autonomous ships, ensuring their safe and secure operation. Our key findings identify the Navigation Situation Awareness System (NSAS) as the highest risk, followed by the Autonomous Engine Monitoring and Control (AEMC) system onboard autonomous ships.

"There exists a significantly dangerous attack surface for autonomous vessels as compared to traditional vessels, primarily due to the integrated nature of onboard advanced and intelligent systems."
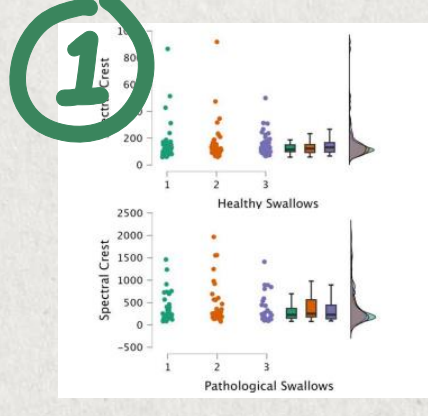
- Awais Yousaf

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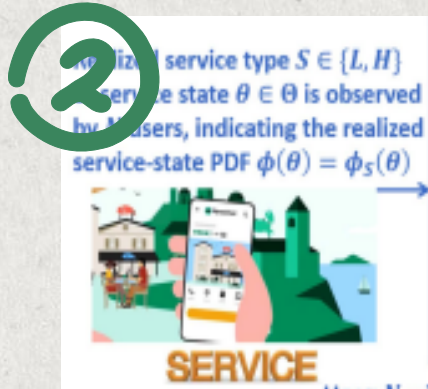Discover more at the Singapore Open Research Conference on 12 November 24 at Alumni House, NUS.

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International Conference on Signal Processing and Communications, SPCOM
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Science, Mathematics and Technology (SMT)

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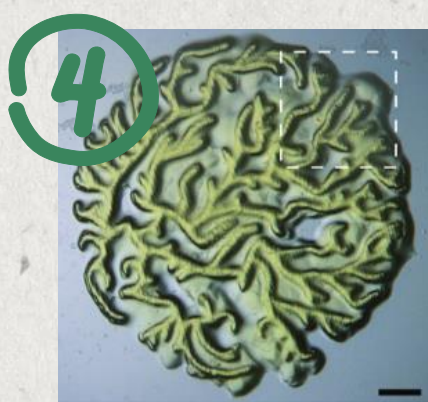
IEEE Transactions On Mobile Computing
SUTD Authors: Hao Shugang, Duan Lingjie
Engineering Systems and Design (ESD)

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*Proceedings Of The 10th ACM Cyber-Physical System Security Workshop*
SUTD Authors: Ivan Christian, Francisco Furtado, Aditya P Mathur
iTrust

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*Macromolecular Materials And Engineering*
SUTD Authors: Chang Shu-Yung, Joseph Lee Zhi Wei, Anupama Sargur Ranganath, Terry Ching, Michinao Hashimoto
Engineering Product Development (EPD), DmanD

5
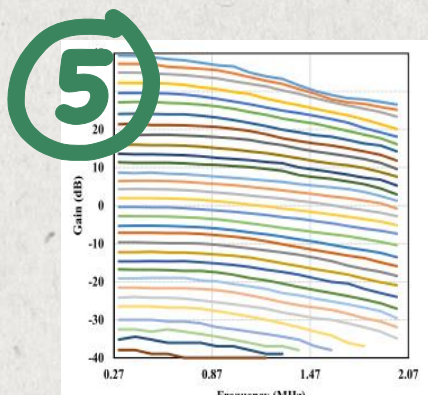
A dB-Linear Programmable Gain Amplifier With Mixed-Signal Control for Wide-Gain Range and Low-Power Applications

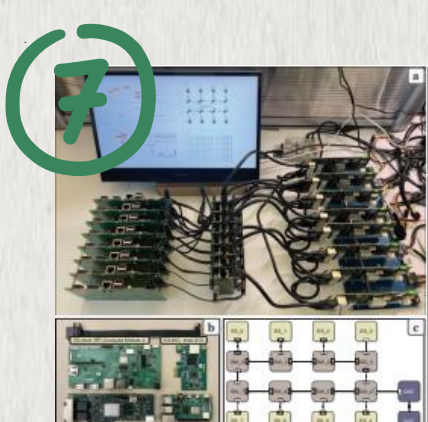*IEEE Transactions On Circuits And Systems I-Regular Papers*
SUTD Author: Aasish Boora, Yeo Kiat Seng
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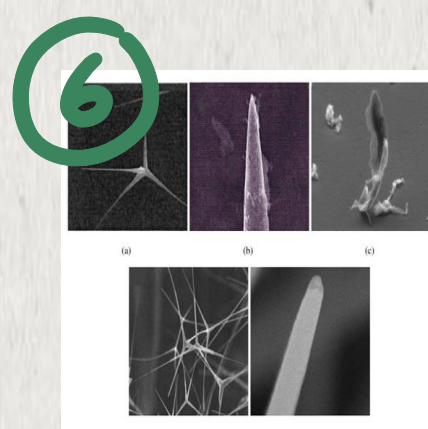
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Journal Of Applied Physics
SUTD Authors: Samra Kanwal, Ang L. K.
Science, Mathematics and Technology (SMT)

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2024 IEEE 30Th Real-Time And Embedded Technology And Applications Symposium
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Information Systems Technology and Design (ISTD)

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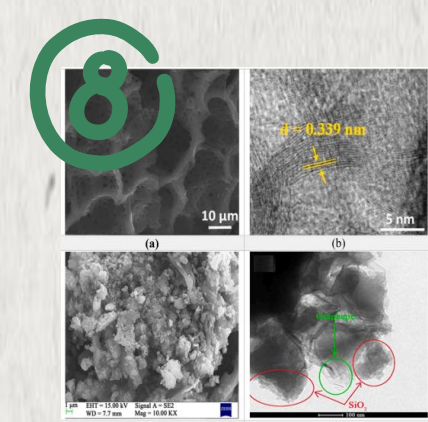
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SUTD Author: Faten Ermala Che Othman
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