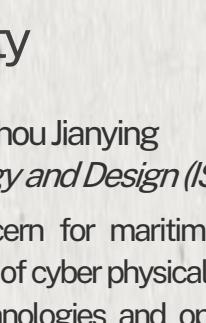


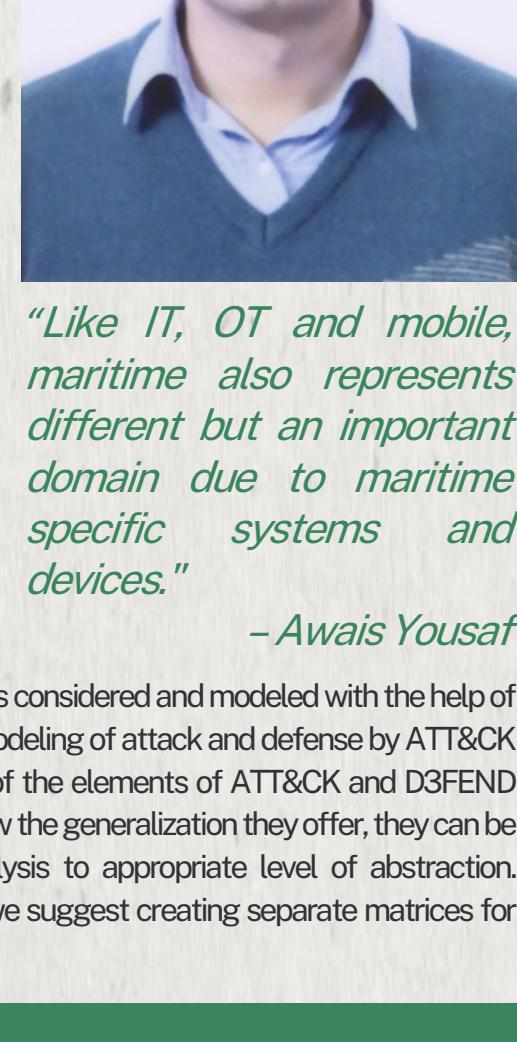
## In the spotlight



### From sinking to saving: MITRE ATT&CK and D3FEND frameworks for maritime cybersecurity

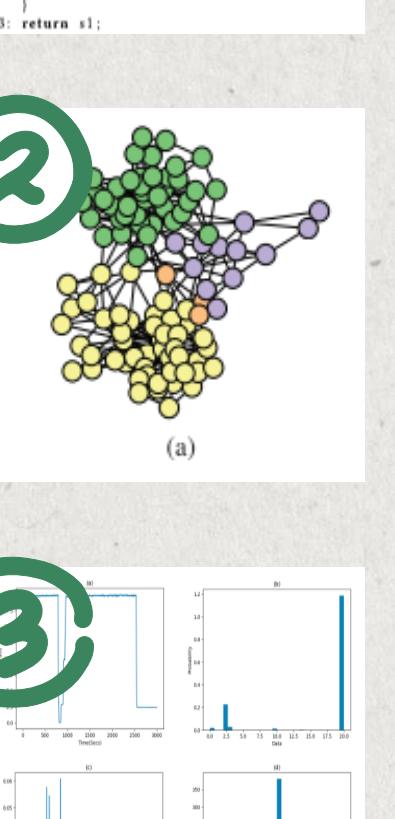
SUTD Authors: Awais Yousaf, Zhou Jianying  
*Information Systems Technology and Design (ISTD)*

Cybersecurity is a growing concern for maritime sector. Modern ships are practical realism of cyber physical systems that utilize both information technologies and operational technologies. Many frameworks for modeling of cyber attacks exist, but they cover only the tiny part of modern multidimensional attack surfaces. MITRE ATT&CK is the most comprehensive cyber attack modeling framework that covers the multidimensional nature of modern cyber attacks. MITRE D3FEND is similar to ATT&CK knowledge base, but it represents cyber defense framework. In this paper, we aim to demonstrate the modeling with MITRE ATT&CK and MITRE D3FEND frameworks for maritime cybersecurity. An attack scenario against ballast water management system of the ship is considered and modeled with the help of ATT&CK. Defense of the ship is modeled with D3FEND. After modeling of attack and defense by ATT&CK and D3FEND, respectively, for a ship, it is identified that most of the elements of ATT&CK and D3FEND matrices are not specific to maritime systems. But keeping in view the generalization they offer, they can be used by making suitable assumptions or restricting the analysis to appropriate level of abstraction. However, due to the uniqueness of the maritime environment, we suggest creating separate matrices for maritime cyber attacks and defenses in future study.

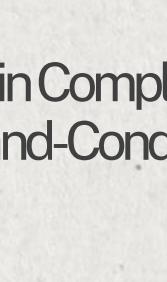


*"Like IT, OT and mobile, maritime also represents different but an important domain due to maritime specific systems and devices."*

— Awais Yousaf



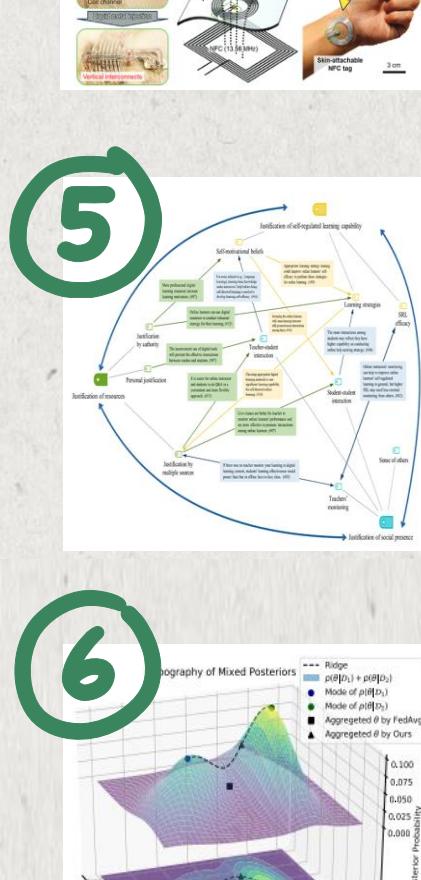
## Congratulations Dr. Yow Wei Quin



For her paper, 'Brain gray matter morphometry relates to onset age of bilingualism and theory-of-mind in young and older adults' being published on *Scientific Reports*\*.

\**Scientific Reports* has a 2-year impact factor of 4.6 (2022), and is the 5<sup>th</sup> most-cited journal in the world

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