

In the spotlight



Exploring the Dynamics of XR and AI Synergy in Architectural Design

HCI International 2024-Late Breaking Papers, Pt I

SUTD Authors: Juan David Salazar Rodriguez, Sam Conrad Joyce

In my research, I explored how Extended Reality (XR) (virtual, augmented, and mixed reality) and Artificial Intelligence (AI) can work together to transform architectural design. I reviewed a wide range of studies showing how AI already supports tasks like shaping building forms, optimizing layouts, and improving energy efficiency, while XR allows people to experience and interact with designs in immersive 3-D spaces. Yet I found that these technologies are rarely combined in practice.

To address this gap, I developed two key tools: the XR-AI Deployment Framework, which guides architects through planning, testing, and scaling projects that merge XR and AI, and the Vision Map, a long-term roadmap outlining the roles of governments, industry, educators, and communities for responsible adoption. My findings show that XR and AI together can speed design cycles, enhance creativity, and improve sustainability, while also highlighting challenges like data privacy and technical complexity that future practice must navigate.



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- Juan David Salazar Rodriguez

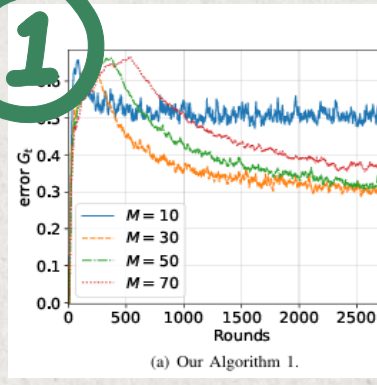


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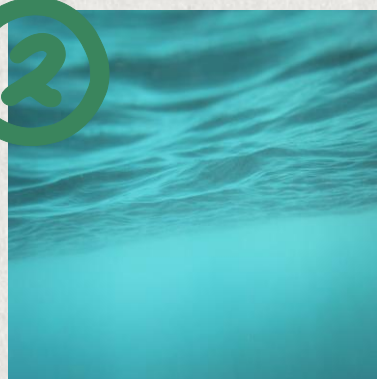
Theory of Mixture-of-Experts for Mobile Edge Computing

IEEE Infocom 2025

SUTD Authors: Li Hongbo, Duan Lingjie

ESD

2



MARVL-ROV: Modular, Adaptable, Research Vehicle Loadout for the BlueROV2

Oceans 2025 Brest

SUTD Authors: Marcel Bartholomeus Prasetyo, Hoo Jun Jie, Tan Yu Xiang, Malika Meghjani

ISTD

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Mooring the Global Archive: A Japanese Ship and Its Migrant Histories

Monumenta Nipponica

SUTD Author: Takahiro Yamamoto

HASS

4



Maritime Cybersecurity: A Big Change Ahead

IEEE Security & Privacy

SUTD Author: Zhou Jianying

ISTD

5



Seamlessly Machine-Knitted Multi-Sensor Garment to Monitor and Quantify Dynamic Upper Body Movement

Advanced Sensor Research

SUTD Author: Tan Ying Yi, Ujjaval Gupta, Chia Pei Zhi, Christyasto Priyonggo Pambudi, Benjamin Lim En How, Low Hong Yee, Soh Gim Song

DmanD, Robot Innovation Lab

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Substation simulation synchronization - towards a distributed and scaled power grid cyber range

Proceedings Of The 15th ACM International Conference On Future And Sustainable Energy Systems

SUTD Authors: Jit Biswas, Revati Godse, Chen Binbin

iTrust, ISTD

7



Lithium-ion Battery Capacity Loss Predictions using Domain-Knowledge-Incorporated Capacity Loss Model through Bayesian Inference

2025 IEEE International Conference On Prognostics And Health Management

SUTD Authors: Rahul Sahay, Nagarajan Raghavan

EPD

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GREEN INVOLUTION: Mediating Plant Times and Lifetimes in a Chinese Rice Genetics Laboratory

Cultural Anthropology

SUTD Author: Lyle Fearnley

HASS

