



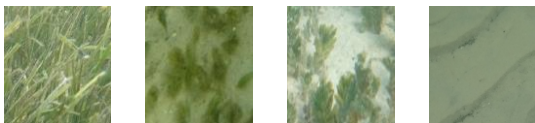
Smart Society with Computer Vision and VLSI Testing コンピュータビジョンとVLSIテストで創るスマート社会

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Our lab specializes in interdisciplinary research, combining AI-driven computer vision and machine learning-based VLSI testing for practical applications, aligning with SDG 9 (Industry, Innovation, and Infrastructure), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action) SDG 14 (Life Below Water), and Society 5.0 for a sustainable and technologically advanced future.

Computer Vision (コンピュータビジョン):

Japan, especially Shimane, has rich coastal ecosystems with vital seagrass supporting marine life. Seagrass plays a crucial role in maintaining marine biodiversity, acting as a carbon sink and habitat for various marine species. Our lab advances deep learning for underwater image analysis, enhancing marine monitoring with semi-supervised and active learning, aiding conservation and automation.



Sample of our seagrass dataset

Aligned with **SDG-14** (Life Below Water) and **SDG-13** (Climate Action), our collaborative research brings together expertise from ECU (Australia), NAIST (Japan), BUET (Bangladesh), and EsReC Shimane University to enhance marine conservation efforts through advanced AI-driven monitoring.

VLSI Testing (VLSIテスト):



□ Unmeasured ■ Measured
Wafer-level variation modeling

Our VLSI testing research enhances semiconductor manufacturing by leveraging machine learning, like Gaussian Process Regression, to optimize RF IC testing, cutting test time, cost, and errors for more efficient and reliable chips. Reducing testing costs remains one of the biggest challenges in semiconductor manufacturing, especially in Japan, where production efficiency is crucial for global competitiveness. Aligned with **SDG-9** (Industry, Innovation, and Infrastructure) and **SDG-12** (Responsible Consumption and Production), In this research, we collaborate with Sony (SSMC) Japan , Stoneridge Electronics Estonia, and KIT Japan.