SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
Faculty of Engineering
Website: https://www.eng.nus.edu.sg/ece/

Area: Signal Analysis & Machine Intelligence

Host: Asst Prof Feng Jiashi

TOPIC	**:**	**Deep Interactive Thin Object Selection**
SPEAKER	**:**	**Dr Liew Jun Hao** **Research Fellow, National University of Singapore**
DATE	**:**	**3 July 2020, Friday**
TIME	**:**	**5.20pm to 6pm**
WEBINAR	**:**	**https://us02web.zoom.us/j/497447113?pwd=b1V4ZFJGaEZuTTJjZUVlekJCRkhpQT09** **Meeting ID: 497 447 113** **Password: 027731**

ABSTRACT

Existing deep learning based interactive segmentation methods have achieved remarkable performance with only a few user clicks, e.g. DEXTR attaining 91.5% IoU on PASCAL VOC with only four extreme clicks. However, we observe even the state-of-the-art methods would often struggle in cases of objects to be segmented with elongated thin structures (e.g. bug legs and bicycle spokes). We investigate such failures and find the critical reasons behind are two-fold: 1) lack of appropriate training dataset; and 2) extremely imbalanced distribution w.r.t. number of pixels belonging to thin and non-thin regions. Targeted at these challenges, we collect a large-scale dataset specially for segmentation of thin elongated objects, named ThinObject-5K. Also, we present a novel integrative thin object segmentation network consisting of three streams. Among them, the high-resolution edge stream aims at preserving fine-grained details including elongated thin parts; the fixed-resolution context stream focuses on capturing semantic contexts. The two streams' outputs are then fused to complement each other for help producing a refined segmentation output with sharper predictions around thin parts. Extensive experimental results well demonstrate the effectiveness of our proposed solution on segmenting thin objects despite using only four clicks.

BIOGRAPHY

Liew Jun Hao is a research fellow at National University of Singapore (NUS), working with Asst Prof Feng Jiashi. He obtained his Ph.D. degree from NUS Graduate School for Integrated Sciences and Engineering (NGS) in 2019, where his supervisors were A/Prof Ong Sim-Heng and Dr. Xiong Wei. His research interests include interactive image/ video segmentation, instance segmentation and semantic segmentation.