Ong Yong Zheng

Ph.D. Student | Data Scientist | Researcher

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PROFILE

- Passionate about building large-scale deep-learning models.
- Four years of professional data science experience in leading projects on Graphical Design/Image Generation, Self-Supervised Learning, Image Segmentation, Optical Character Recognition (OCR), Detection, and Natural Language Processing (NLP).

SKILLS

- Programming Skills: Python, R
- Query Language: SQL
- Machine Learning Tools: PyTorch, TensorFlow
- Statistical Tools: MATLAB

EXPERIENCE

Data Scientist, Shopee Singapore Pte Ltd 2019 - Present

- Developed a novel automatic background generation model based on GANs and Vector Graphics (published in ICIP2022).
- Built a feature backbone for Computer Vision tasks. The model is trained using Self-Supervised Learning over 9 million images. It significantly reduced the benchmark error of the classification and detection models by **10%**.
- Initiated and executed design changes to the existing image segmentation model, improving the acceptance rate by **4%**.
- Spearheaded the enhancement of the existing OCR model using NLP methods, with a **5%** improvement in results.
- Represented the department during seminars and gained a score of **4.5/5** on trainer effectiveness.

EDUCATION

Ph.D in Mathematics, National University of Singapore 2019 - Present

- Demonstrated ability to handle multiple concurrent projects as a postgraduate student in the Industrial Postgraduate Program with Shopee Singapore alongside with research projects with NUS.
- Presenter in a mini-symposium (MS71) in SIAM MDS22, 2022.
- Presenter in an upcoming mini-symposium (00455) in ICIAM23, 2023.

Bsc. of Science, National University of Singapore 2015 - 2019

- Major in Applied Mathematics and Minor in Computer Science.

KEY PUBLICATIONS / PROJECTS

Integral Autoencoder Network for Discretization-Invariant Learning March 2022

Yong Zheng Ong, Zuowei Shen, Haizhao Yang, JMLR, 2022.

- Proposed a novel discretization invariant operator learning framework based on Integral Autoencoders to achieve state-of-the-art performance in various fields of scientific computing, predictive modeling, forward and inverse problems, signal processing, and image processing.

VG-GAN: Conditional GAN Framework for Graphical Design Generation October 2022

Yong Zheng Ong, Lilei Zheng, Chaowei Feng, Kang Song, IEEE ICIP, 2022.

- Designed a novel conditional GAN model for graphical design generation tasks, utilizing vector-based methods to achieve scale invariance of the generated designs. The proposed model fully automates the generation of patterned backgrounds with arbitrary resolution.

Generative Imaging and Image Processing via Generative Encoder June 2022

Yong Zheng Ong, Haizhao Yang, AIMS IPI, 2022.

- Developed a novel framework for generative imaging and image-processing tasks based on unifying separately trained GANs and Autoencoders through a training and optimization step. The two-step process achieves improved performance while visualizing interesting properties in the feature space of the trained GAN and Autoencoder.