Shin-ei Arakawa

Last update: 2024.1

About

A master student at Waseda University, interested in computer vision with deep learning. Engaged in the development of controlled image generation using diffusion models. Profound understanding of statistical theory and versatile programming languages. Current research aim revolves around developing a **virtual explorable world** using foundation models, envoking a sence of "being there" to users.

General Information

Location: Tokyo, Japan
Phone: +81-80-2814-4118
Email: sarakawalab@gmail.com
Web: shineiarakawa.github.io
Language: Japanese (native) and English (CEFR level: B2)

Education

Master of Engineering
2023.4 - current

Graduate School of Advanced Science and Engineering, Waseda University
Advisor: Prof. Shigeo Morishima

Bachelor of Engineering
2019.4 - 2023.3

Department of Applied Physics, Waseda University
Advisor: Prof. Shigeo Morishima

Awards

Poster Presentation Award 2023.9
Visual Computing (VC) 2023

Student Encouragement Award of 85th National Convention 2023.3
Information Processing Society of Japan (IPSJ)

Publications

International Papers

[1] **Memory Efficient Diffusion Probabilistic Models via Patch-based Generation**
Shinei Arakawa, Hideki Tsunashima, Daichi Horita, Keitaro Tanaka, Shigeo Morishima
Generative Models for Computer Vision Workshop in CVPR, 2023.

Domestic Papers and Posters

[1] **Any-scale Image Generation via Patch-based Diffusion Models***
Shinei Arakawa, Erik Härkönen, Hideki Tsunashima, Daichi Horita, Shigeo Morishima
Visual Computing (VC) Posters, No. 20, September 2023.

[2] **Examination of Memory Consumption Reduction in Diffusion Probabilistic Models through Patch Partition***
Shinei Arakawa, Hideki Tsunashima, Daichi Horita, Keitaro Tanaka, Shigeo Morishima
Meeting on Image Recognition and Understanding (MIRU) Posters, July 2023.

[3] **Diffusion Probabilistic Models for Multi-resolution Image Generation***
Shinei Arakawa, Hideki Tsunashima[†], Daichi Horita[†], Shigeo Morishima ([†]Equal Contribution)
85th National Convention in Information Processing Society of Japan (IPSJ), March 2023.

[4] **Patch-based Memory Efficient Diffusion Probabilistic Models**

Shinei Arakawa, Hideki Tsunashima, Daichi Horita, Keitaro Tanaka, Shigeo Morishima

Visual Computing (VC) Posters, No. 10, October 2022.

*Translated into English

Working Experience

Teaching Assistant on "Research Seminar on Applied Physics," Waseda University　　　2023.4 - 2023.12
- Traced research proccesses with fresh undergraduate students during three semesters
- Mentored two students to build an image generation model and to conduct assessments
- Led the students to present the work in class to professors

Software Engineer at Insight Inc., Tokyo, Japan　　　2021.3 - current
- Developed computational mechanics softwares for the simulation of wind farms
- Designed Graphical User Interface for computer aided engineering (CAE) using Qt and Java Swing frameworks
- Built generative models for seismic wave simulations on the domestic supercomputer, Fugaku

Conpetences

Programming:　　Python, C, C++, CUDA, Java
Framework:　　PyTorch, Tensorflow, OpenCV, OpenGL, Open3D, Qt, ImGui, CUDA-X, Thrust, Docker