Zhou Daquan

Research Scientist at Bytedance USA Research lab

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Research Interest

As an ardent researcher, I am keen on consuming the minimum energy & memory consumption for training & using the most powerful artificial intelligence algorithms. I am a staunch advocate for green AI and the advancement of general artificial intelligence. My prior research has extensively focused on the efficiency and generalization of deep neural networks, as well as hardware execution efficiency. This expertise positions me uniquely to further delve into research that converts powerful AI algorithms from useful into both powerful and usable in the realm of edge devices. I have been focused on the video-generative model recently and I am also extremely interested in exploring utilizing video-generative pre-trained models as world models and using them for interaction with the environment.

Research Experience

Bytedance

San Jose, USA

Research Scientist, AI Lab US — *July, 2022 - Now*

- Focus on the research works of architecture design with efficiency consideration for the image/video generation and multi-modality large language model (LMM) tasks.

Nvidia

Mountain View, USA

Internship, Nvidia Research — *June 2021 - March 2022*

- Explore design guidelines on the neural network architectures that are robust to nature image corruptions with zero shot training framework.
- Focus on the design of efficient neural architectures with strong zero-shot robustness capabilities.
- Proposed algorithms are deployed in the autonomous car and are the core algorithm for the Champion solutions for the Robust Vision Challenge 2022 for five segmentation tracks.

NUS - IDS interdisciplinary program

Singapore

PhD student, NUS, learning and vision lab — *Aug. 2018 - 2022 May*

- Focus on research related to deep learning model compression and acceleration, AutoML, and hardware-algorithm co-design framework.
- Explore efficient deep neural network architectures and deployment on edge devices.
- Advised by Dr. Jiashi Feng

DSO - ST Electronics Joint Lab

Singapore

System Design Engineer — *June 2016 - August 2018*

- Focus on the design and develop a high-speed real-time operation system with FPGA - Micro-processor co-processing.
- Launch the first commercial satellite in Singapore (Singapore President Science and Technology Award (Group Award))

Education Background and Awards

National University of Singapore

Singapore

PhD Student of Institute of Data Science — *June 2018 to June 2022*

- **Top tier conference: 25 papers (12 as first authors) accepted by ICML, ECCV, NeurIPS, ICLR, ICCV, and CVPR**
- **Top tier journal: 4 papers accepted by T-PAMI, TIP and TNNLS**
- **2020 SINGAPORE DATA SCIENCE CONSORTIUM (SDSC) DISSERTATION RESEARCH FELLOWSHIP AWARD**

National University of Singapore

Singapore

Bachelor of Engineering in Electrical and Computer Engineering — *June 2012 to June 2016*

- **Graduate with Highest distinction**, first class honors degree
- **Dean's List ×4**, Top Academic Performance Awards
- **Attained Singapore President Science and Technology Award**, Group Award, STE Satellite System — *Fall 2017*
- **Awarded Infineon Technology Asia Pacific Prize**, — *Top-1 student in the IC design specialization track*
- **Awarded best intern prize**, SEAGATE TECHNOLOGY — *June 2014*
- **Attained First Runner-Up for AI design of 5-on-5 Robot soccer simulation competition**, — *Spring 2013*
- **Awarded Scholar of China and Singapore Ministry of Education scholarship**, — *Fall 2012*

Research Activities

CVPR2022 Workshop: Transformers for Vision

Vancouver, Canada

Core Organizing Communities

June, 2022

- Organizing the first workshop on the new backbone Transformer
- Jointly organize the workshop with researchers from Google Brain, Meta AI, Nvidia Research, MSR, UT Austin and CalTech.

Invited Talk at Toronto University AI Lab

Vancouver, Canada

Key Speaker

Dec, 2023

- A talk on video generation and customerization
- Jointly invited by Nvidia Research Team

Collaboration with Academic Institutes

San Jose, USA

Mentoring students from academic institutes for research projects

March 2023 to Now

- Collaboration with Peking Universities, mentoring 4 students on research projects regarding deep neural network efficiency, large language model (LLM) and IP protection algorithm.
- Collaboration with Nankai Universities, mentoring 2 students on research projects regarding AIGC.
- Collaboration with UC Berkeley, mentoring 2 students on research projects regarding AIGC and multi-agents.

Invited Talk at Workshop in IJCAI

Macao, China

As a distinguished speaker on the workshop with topics of model generalization and efficiency.

August, 2023

Invited talk from Hua Wei

Hang Kong, China

Invited for a talk on diffusion algorithms for image and video generation

December, 2022

Guest Lecturer

Beijing, China

Invited as a lecturer for a module at the University of Chinese Academy and Science.

April, 2023

Peer Review Experience

Reviewer for NeurIPS, ICML, CVPR, ICCV, ICLR, T-PAMI, TNNLS and NeroComputing

Invited Talk at TechBeat

Beijing, China

Invited talk on transformer model architecture design and generalization capability, awarded as the most popular talk presenter

Jan 2021 & March 2022