Charlie B. Tan

Education

University of Oxford   Oct 2023 - Present
DPhil Computer Science
Supervised by Prof. Michael Bronstein
Funded by Departmental Scholarship

University of Cambridge   Oct 2022 - Jun 2023
MPhil Advanced Computer Science
Pass with Distinction - **78%**
Supervised by Prof. Ferenc Huszár
Funded by Departmental Award

University of Bristol   Sep 2019 - Jun 2022
BEng Electrical and Electronic Engineering
First Class Honors - **82%** - **Ranked #1 in Department**

Publications and Preprints

Scalable Equilibrium Sampling with Sequential Boltzmann Generators   Preprint
Charlie B. Tan*, Avishek Joey Bose*, Chen Lin, Leon Klein, Michael M. Bronstein, Alexander Tong

Beyond the Boundaries of Proximal Policy Optimization   Preprint
Charlie B. Tan, Edan Toledo, Benjamin Ellis, Jakob Nicolaus Foerster, Ferenc Huszár

On the Limitations of Fractal Dimensions as a Measure of Generalization   NeurIPS 2024 (Poster)
Charlie B. Tan*, Inés García-Redondo*, Qiquan Wang*, Michael M. Bronstein, Anthea Monod

Geodesic Mode Connectivity   ICLR 2023 TinyPapers (Oral)
Charlie B. Tan, Theodore Long, Sarah Zhao, Rudolf Laine

Professional Experience

InstaDeep   May 2024 - Oct 2024
PhD Research Intern — Generative Modeling for Biology
Bayesian Flow Networks
- **6-month research internship** with Bayesian Flow Networks team
- Conducted foundational research on **multimodal modeling** using Bayesian Flow Networks, particularly connections to **score-based diffusion models** and **stochastic differential equations**
- Developed, implemented, and evaluated novel methods for **accelerated sampling** from Bayesian Flow Networks
- Contributed to upcoming research papers applying Bayesian Flow Networks to **protein design** and advancing **multimodal modeling** fundamentals

Visual Information Laboratory, University of Bristol   Jun 2021 - Sep 2021
Undergraduate Research Intern — Generative Modeling for Visual Media
Video Super Resolution with Generative Adversarial Networks
- **3-month research internship** with Dr. Aaron Zhang and Prof. David Bull
- Conducted applied research enhancing video compression algorithms using **generative adversarial networks** (GANs) for video super-resolution

Teaching

Department of Computer Science, University of Oxford Oct 2023 - Present
Demonstrator
Modules: Machine Learning, Geometric Deep Learning

Department of Electrical and Electronic Engineering, University of Bristol Sep 2020 - Jan 2022
Teaching Assistant
Modules: Linear Circuits, Electronics I, Digital Circuits and Systems

Relevant Skills

- Proficient with **Linux** systems, including basic system administration for academic computing clusters
- Six years of experience in **Python**, with strong skills in **object-oriented programming**
- Knowledgeable in software engineering practices, including **Git**, **Docker**, and **PostgreSQL**
- Three years of experience with **PyTorch** across diverse machine learning projects
- One year of experience working extensively with **JAX** for advanced ML applications
- Extensive background in **high-performance computing (HPC)**, including multi-GPU / TPU distributed training
- Experienced with **Google Cloud Compute** for scalable machine learning tasks