Shengbang Tong

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Education

The University of California, Berkeley
Aug 2019 - May 2023

- Majors: Applied Mathematics, Computer Science, Statistics | College of Letter and Science
- GPA: Currently 3.90/4.00, Honor: Kraft Award
- Selected Courses(**Graduate Level Courses**): **High Dim Data Analysis with Low-Dim Models**, **Introduction to Machine Learning**, **Convex Optimization**, **Optimization Models, Convex Optimization Algorithms, Matrix and Numerical Linear Algebra**, **Design of Societal Scale System and Games, Deep Reinforcement Learning,** Concept of Probability, Introduction to Analysis, Introduction to Complex Analysis

Research Experience

NYU Summer Research
May 2022 - Aug 2022

Mentor: Prof. Yann Lecun & Dr. Yubei Chen

- Worked on large scale representation learning via the newly proposed U-CTRL framework using vision transformer.
- Exploring patch-level representation learning and generative models. This project aims to address the current dilemma of poor representation learning via generative models and further unifies discriminative and generative self-supervised learning models. The project is expected to submit to ICLR 2023 as first co-author.

UC Berkeley Artificial Intelligence Research Lab (BAIR)
May 2021 - Present

Mentor: Prof. Yi Ma

- Developed a Generative model based via solving a Minimaxing game between rate reduction called Closed-Loop Data Transcription (CTRL) that offers a new insight to learn and generates a data distribution. It was published in Entropy special edition 2021 and selected as the special notification for the month.
- Developed a novel approach to solve the Incremental Learning Problem via CTRL (i-CTRL). It is the first framework that resolves the Incremental Learning on both Generative and Discriminative model. It is currently under review.
- Developed a new framework that learns more unified unsupervised representation for both discriminative and generative tasks. It has achieved compatible performance on discriminative tasks and overwhelmingly better (30% increase) on generative tasks. It is also currently under review.
- Exploring a more principled approach to the image clustering problem. This project aims to achieve state of the art image clustering performance with a simpler solution and more explainability into the representation learned. The project is expected to submit to ICLR 2023 as first co-author.

Undergraduate Research Apprentice Program, Haas Business School
Feb 2020 - Aug 2021

Mentor: Prof. Anastassia Fedyk

- Developed a Seniority Prediction model for employees across the world that predicts the seniority of an employee via word2vec and random forest. The model is adopted by Cognism Company. .

Publications(* means equal contribution)

Unsupervised Learning of Structured Representation via Closed-Loop Transcription — Under Submission

Shengbang Tong, Xili Dai, Yubei Chen, Mingyang Li, Zengyi Li, Brent Yi, Yann Lecun, Yi Ma

Incremental Learning of Structured Representation via Closed-Loop Transcription — Under Submission

Shengbang Tong, Xili Dai, Ziyang Wu, Mingyang Li, Brent Yi, Yi Ma

Closed-Loop Data Transcription to an LDR via Minimaxing Rate Reduction — Entropy 2021

Xili Dai*, **Shengbang Tong***, Mingyang Li*, Ziyang Wu*, Kwan Ho Ryan Chan, Pengyuan Zhai, Yaodong Yu, Michael Psenka, Xiaojun Yuan, Heung Yeung Shum, Yi Ma

Revising Sparse Convolutional Model for Visual Recognition — Under Submission

Xili Dai*, Mingyang Li*, Pengyuan Zhai*, **Shengbang Tong***, Xingjian Gao, Shaolun Huang, Zhihui Zhu, Chong You, Yi Ma

SKILLS, CERTIFICATIONS & OTHERS

- Skills**:** Word, Excel, PowerPoint, Python, SQL, JAVA, R, Matlab, CSS, HTML, XML, Pytorch