Yingtao Tian

Research Scientist • Google DeepMind / alan.yt.tian@gmail.com / alantian.net

Research Interests

I am excited at combining **computational approach**, with artists, culture, humanities and designer's consideration. I propose techniques and tools that have both **addressed the needs in creative settings** and **improved the core machine learning**. Leading collaborations with internal and external stake-holders. More details in my research statement.

Research / Industry Experience

Google DeepMind (formerly Google Brain) Research Scientist 2019 - Present

- Proposed generating artifacts with artistical discretion, proposing novel from of abstract art, multiple text prompts handling and collective intelligence.
- Established several machine learning-boosted tools for historical and cultural works, pioneering in ML approaches for pre-modern japanese artworks, longest consecutive typhoon satellite image dataset, historical figure analysis, and calligraphy generation for CJK characters.
- Pushing forwarding advances for machine learning techniques in black-box optimization, pioneering in evolution strategy, an gradient-free optimization technique, and also proposing LLM and transformer based approaches to black-box optimizations.

Internships Google Brain, Facebook, Google, Microsoft Research Asia Periodically 2013 - 2018

- Proposed latent space transfer with latent model.
- Implemented natural language interface to database system.

Major Publications

Generating Artifacts with Artistical Discretion

Modern Evolution Strategies for Creativity: Fitting Concrete Images and Abstract Concepts. **Yingtao Tian**, David Ha. *Proceedings of EvoMUSART 2022*

Simultaneous Multiple-Prompt Guided Generation Using Differentiable Optimal Transport. **Yingtao Tian**, David Ha, Marco Cuturi. *Proceeding of ICCC 2022*

Evolving Collective AI: Simulation of Ants Communicating via Chemicals. Ryosuke Takata, Yujin Tang, **Yingtao Tian**, Norihiro Maruyama, Hiroki Kojima, Takashi Ikegami. *The 2023 Conference on Artificial Life*

Machine learning-Boosted Tools for Historical and Cultural works

KaoKore: A Pre-modern Japanese Art Facial Expression Dataset. **Yingtao Tian**, Chikahiko Suzuki, Tarin Clanuwat, Mikel Bober-Irizar, Alex Lamb, Asanobu Kitamoto. *Proceeding of ICCC 2020*

Ukiyo-e Analysis and Creativity with Attribute and Geometry Annotation. **Yingtao Tian**, Tarin Clanuwat, Chikahiko Suzuki, Asanobu Kitamoto. *Proceeding of ICCC 2021*

MingOfficial: A Ming Official Career Dataset and a Historical Context-Aware Representation Learning Framework You-Jun Chen, Hsin-Yi Hsieh, Yu Tung Lin, **Yingtao Tian**, Bert Chan, Yu-Sin Liu, Yi-Hsuan Lin, Richard Tzong-Han Tsai. *Proceeding of EMNLP 2023*

Digital Typhoon: Long-term Satellite Image Dataset for the Spatio-Temporal Modeling of Tropical Cyclones. Asanobu Kitamoto, Jared Hwang, Bastien Vuillod, Lucas Gautier, **Yingtao Tian**, Tarin Clanuwat. *Proceeding of NeurIPS 2023 Systems Datasets and Benchmarks Track*

DiffCJK: Conditional Diffusion Model for High-Quality and Wide-coverage CJK Character Generation. **Yingtao Tian** *Proceeding of ICCC 2024*

Advancing Machine Learning Techniques in Black-Box Optimization

EvoJAX: Hardware-Accelerated Neuroevolution Yujin Tang, **Yingtao Tian**, David Ha. *Proceeding of GECCO 2022*

NeuroEvoBench: Benchmarking Neuroevolution for Large-Scale Machine Learning Applications. Robert Tjarko Lange, Yujin Tang, *Yingtao Tian. Proceeding of NeurIPS 2023 Systems Datasets and Benchmarks Track*

DEIR: Efficient and Robust Exploration through Discriminative-Model-Based Episodic Intrinsic Rewards. Shanchuan Wan, Yujin Tang, **Yingtao Tian**, Tomoyuki Kaneko. *IProceeding of IJCAI 2023*

Large Language Models As Evolution Strategies. Robert Tjarko Lange, **Yingtao Tian**, Yujin Tang. *Proceeding of GECCO 2024*

Evolution Transformer: In-Context Evolutionary Optimization. Robert Tjarko Lange, **Yingtao Tian**, Yujin Tang. *Proceeding of GECCO 2024*

Position Paper: Leveraging Fuoundational Models for Black-Box Optimization: Benefits, Challenges, and Future Directions. Xingyou Song, **Yingtao Tian**, Robert Tjarko Lange, Chansoo Lee, Yujin Tang, Yutian Chen *Proceeding of ICML 2024*

Representation Learning for Data in Multiple Modalities

Learning to Represent Bilingual Dictionaries. Muhao Chen*, **Yingtao Tian***, Haochen Chen, Kai-Wei Chang, Steven Skiena, Carlo Zaniolo. *In the Proceedings of the SIGNLL Conference on Computational Natural Language Learning (CoNLL) 2019*

Social Relation Inference via Label Propagation. **Yingtao Tian***, Haochen Chen, Bryan Perozzi, Muhao Chen, Xiaofei Sun, Steven Skiena. *In the proceeding of the 41st European Conference on Information Retrieval (ECIR 2019)*

Syntax-Directed Variational Autoencoder for Structured Data. Hanjun Dai*, **Yingtao Tian***, Bo Dai, Steven Skiena, Le Song. *In Proceedings of the International Conference on Learning Representations (ICLR) 2018*

Education

State University of New York at Stony Brook, New York, U.S. 2014 - 2019
Ph.D, Computer Science. Advisor: Prof. Steven Skiena
Thesis: Representation Learning-based Approaches for Modeling Data in Multiple Modalities

Fudan University, Shanghai, China. 2010 - 2014
B.Sc., Computer Science and Technology

(Old) Awards

27th place, 35th Annual World Final of the ACM-ICPC , 2011

Gold Medal, ACM-ICPC Asia Chengdu Regional Contest, 2011

Championship and Gold medal, ACM-ICPC Asia Amritapri Regional Contest, 2010