Yingtao Tian

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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
- **Generating artifacts with artistical discretion.**
  - Proposed novel models for abstract art, multiple text prompts and collective intelligence.
- **Machine learning-boosted tools for historical and cultural works.**
  - Pioneered in making ML-ready dateset for pre-modern japanese artworks / longest consecutive typhoon satellite image.
  - Proposed ML-based historical figure analysis / calligraphy generation for CJK characters.
- **Advancing Machine Learning Techniques in Black-Box Optimization.**
  - Pioneered in fitting evolution strategy, an black-box optimization, to modern settings.
  - Proposing fundation models (LLMs and transformers) based approaches to black-box optimizations.

Internships Google Brain, Facebook, Google, Microsoft Research Asia   Periodically 2013 - 2018
- Proposed latent space transfer for multi-modality tasks.
- 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	
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	