Cheng Lu

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Education

Tsinghua University   Sep 2019 – Now
*PhD in Computer Science and Technology, supervised by **Jun Zhu***   *Beijing, China*

Tsinghua University   Sep 2016 – Jul 2019
BE in Computer Science and Technology   *Beijing, China*

Tsinghua University   Sep 2015 – Jul 2016
BE in Civil Engineering   *Beijing, China*

Honors & Awards

China National Scholarship   2023

ByteDance Scholarship   2023

'84' Future Innovation Scholarship   2020

Outstanding Graduates, Department of Computer Science and Technology, Tsinghua University   2019

The Mathematical Contest in Modeling, Meritorious Winner   2018

Chinese Mathematical Olympiad (CMO), Silver Medal   2014

Research Highlight

DPM-Solver and DPM-Solver++   2022
- **SOTA** training-free fast sampler for diffusion models, within only 10 to 20 steps (compared to the default 1000-step setting).
- Github Stars: **1k+**. It also has been integrated into *Diffusers* library.
- Widely-used in various text-to-image diffusion models, such as stable-diffusion (v1, v2, XL and LoRA variants), DreamStudio, StableBoost, Stable-Diffusion-WebUI, Apple's Core ML library, Stability-AI's DeepFloyd-IF.

ProlificDreamer   2023
- **SOTA** text-to-3D generation with solely 2D diffusion models. Greatly outperforms all previous works, such as Dreamfusion and Magic3D.
- Propose *variational score distillation*, a novel and principled score distillation algorithm, suitable for both 2D and 3D.
- Project Page: https://ml.cs.tsinghua.edu.cn/prolificdreamer/

Publications

Publications
- Zhengyi Wang*, **Cheng Lu***, Yikai Wang, Fan Bao, Chongxuan Li, Hang Su, Jun Zhu. *ProlificDreamer: High-Fidelity and Diverse Text-to-3D Generation with Variational Score Distillation.* Conference on Neural Information Processing Systems (**NeurIPS**), 2023. **(Spotlight)**
- Kaiwen Zheng*, **Cheng Lu***, Jianfei Chen, Jun Zhu. *DPM-Solver-v3: Improved Diffusion ODE Solvers with Empirical Model Statistics.* Conference on Neural Information Processing Systems (**NeurIPS**), 2023.
- Tianyu Pang, **Cheng Lu**, Chao Du, Min Lin, Shuicheng YAN, Zhijie Deng. *On Calibrating Diffusion Probabilistic Models.* Conference on Neural Information Processing Systems (**NeurIPS**), 2023.
- Hanzhong Allan Guo, **Cheng Lu**, Fan Bao, Tianyu Pang, Shuicheng YAN, Chao Du, Chongxuan Li. *Gaussian Mixture Solvers for Diffusion Models.* Conference on Neural Information Processing Systems (**NeurIPS**), 2023.
- **Cheng Lu***, Huayu Chen*, Jianfei Chen, Hang Su, Chongxuan Li, Jun Zhu. *Contrastive Energy Prediction for Exact Energy-Guided Diffusion Sampling in Offline Reinforcement Learning.* International Conference on Machine Learning (**ICML**), 2023.
- Kaiwen Zheng*, **Cheng Lu***, Jianfei Chen, Jun Zhu. *Improved Techniques for Maximum Likelihood Estimation for Diffusion ODEs.* International Conference on Machine Learning (**ICML**), 2023.
- Huayu Chen, **Cheng Lu**, Chengyang Ying, Hang Su, Jun Zhu. *Offline Reinforcement Learning via High-Fidelity Generative Behavior Modeling.* International Conference on Learning Representations (**ICLR**), 2023

- **Cheng Lu**, Yuhao Zhou, Fan Bao, Jianfei Chen, Chongxuan Li, Jun Zhu. *DPM-Solver: A Fast ODE Solver for Diffusion Probabilistic Model Sampling in Around 10 Steps.* Conference on Neural Information Processing Systems (**NeurIPS**), 2022. **(Oral, Accept rate ~1.7%)**
- **Cheng Lu**, Kaiwen Zheng, Fan Bao, Chongxuan Li, Jianfei Chen, Jun Zhu. *Maximum Likelihood Training for Score-Based Diffusion ODEs by High Order Denoising Score Matching.* International Conference on Machine Learning (**ICML**), 2022.
- **Cheng Lu**, Jianfei Chen, Chongxuan Li, Qiuhao Wang, Jun Zhu. *Implicit Normalizing Flows.* International Conference on Learning Representations (**ICLR**), 2021. **(Spotlight, Accept rate ~5.5%)**
- Jianfei Chen, **Cheng Lu**, Biqi Chenli, Jun Zhu, Tian Tian. *VFlow: More Expressive Generative Flows with Variational Data Augmentation.* International Conference on Machine Learning (**ICML**), 2020.

Preprints

- **Cheng Lu**, Yuhao Zhou, Fan Bao, Jianfei Chen, Chongxuan Li, Jun Zhu. *DPM-Solver++: Fast Solver for Guided Sampling of Diffusion Probabilistic Models.*

Invited Talks

ByteDance   Nov 2022
- *DPM-Solver: A Fast ODE Solver for Diffusion Probabilistic Model Sampling in Around 10 Steps*

Services

- Reviewer: ICML, NeurIPS, ICLR, CVPR, ICCV
- Contributor of `huggingface/diffusers`

Technical Skills

Languages: Python, JavaScript, HTML/CSS, C, C++, Java

Frameworks: Vue.js, Flask

Personal

- I'm a bass singer in Chorus of Tsinghua University with a vocal range of C2-E4 (where C2 is also known as "low C"). I won the **top ten compus singers competition of Tsinghua University** in 2019 by singing a famous song *Autumn Leaves*. I love singing!