

KE LIN

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Education

Tsinghua University **Sep. 2022 – present**
Master of Engineering (M.Eng.) in Software Engineering (GPA: 3.52/4.0) *Beijing, China*

Tsinghua University **Sep. 2018 – Jun. 2022**
Bachelor in Software Engineering (GPA: 3.69/4.0, Top 25%) *Beijing, China*

Experience

Tencent **Apr. 2024 – Present**
AI Research Intern *Shenzhen, China*

- Developed a VLLM-based pipeline for evaluating the realistic, reliability, and aesthetic of generated 3D scenes.
- Built a 2D rendering framework using Blender for generating views of 3D objects as inputs to VLLMs.
- Optimized the LLM agents to generate 3D layouts for the compositions of pre-defined 3D assets.
- Investigated the spartial reasoning capability of LLMs to produce precise 3D layouts utilizing arithmetic coordinates.

Momenta **Jan. 2021 – Apr. 2021**
AI Backend Intern *Beijing, China*

- Developed an automated service for scheduling autonomous driving model training tasks based on Kubernetes.
- Utilized Golang to reduce redundant resource consumption and estimated the approximate cost of training sessions.
- Processed the runtime logs of training tasks and stored them into AWS Cloud Storage for visualization.
- Automated the deployment of driving models on AWS and the updating of the K8s image from the upstream repository.

Publications

- Yiyang Luo*, **Ke Lin*** and Chao Gu*. "Context-Aware Indoor Point Cloud Object Generation through User Instructions." ACM Multimedia 2024.
 - Designed a GPT-aided data pipeline for paraphrasing the descriptive texts in ReferIt3D dataset to generative ones.
 - Proposed an end-to-end multi-modal diffusion model for generating in-door 3D objects into specific scenes.
 - Introduced the visual grounding task to assess the quality of an augmented scene along with other metrics.
- **Ke Lin**, Yiyang Luo, et al. "Zero-shot Generative Linguistic Steganography." 2024 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL 2024). Association for Computational Linguistics, 2024.
 - Presented a zero-shot approach for linguistic steganography based on in-context learning using samples of coverttexts.
 - Improved both the binary coding process and the embedding process by differential coding and annealing penalty.
 - Designd several metrics and language evaluations to evaluate both the perceptual and statistical imperceptibility.
- Yiyang Luo*, **Ke Lin***, and Chao Gu*. "Lost in Overlap: Exploring Logit-based Watermark Collision in LLMs." arXiv preprint arXiv: 2403.10020 (2024). Under Review.
 - Proposed the concept of watermark collisions, where multiple watermarks are present simultaneously in the same text.
 - Analyzed the potential risks and the vulnerability of existing watermarking techniques.
- Chao Gu, **Ke Lin**, Yiyang Luo, Jiahui Hou, and Xiang-Yang Li. "ViRED: Prediction of Visual Relations in Engineering Drawings." Under Review.
 - Developed a relation prediction pipeline to differentiate between the circuit and tabular parts in engineering drawings.
 - Achieved a 10% enhancement in detection accuracy compared to prior studies on the electrical diagram dataset.
- **Ke Lin**, Yasir Glani, and Ping Luo. "Low-Latency Privacy-Preserving Deep Learning Design via Secure MPC." Proceedings of the IJCAI-24 Workshop on Artificial Intelligence Safety (AISafety 2024). CEUR-WS.org, 2024.

*Equal contribution

Projects

Farthest Point Sampling Library | *Python, Rust, C++* **Sep. 2023**

- Developed a high-performance farthest point sampling library `fpsample` for Numpy arrays.
- Achieved 100× faster than vanilla implementation in pure Numpy for simplified preprocessing of 3D point clouds.
- Published PyPI packages for easy use in x64 platforms to avoid multi-language compilations.

Technical Skills

Languages: Python, Rust, C++, Java, Golang, ReactJS, SQL

Tools/Frameworks: PyTorch, Blender, Ubuntu, ArchLinux, PostgreSQL