Yezhen Cong

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Education

Stanford University, CA Sep. 2021 - Mar. 2023 (expected)
Masters of Science in Computer Science (Systems Track) GPA: 4.19/4.30

- **Relevant Courses**: Interactive Computer Graphics (A+), Image Sythesis Techiniques (A+), Machine Learning with Graphs (A+), Introduction to Cryptography (A+), Advanced Compilers (A+), Advanced Topics in Operating Systems (A)

Tsinghua University, Beijing, China Aug. 2017 - Jun. 2021
Bachelors of Engineering in Software Engineering GPA: 3.98/4.00, Rank: 1/81

- **Relevant Courses**: Probability and Statistics (A), Discrete Mathematics (A+), Data Structure & Algorithms (A), Computer Networks (A+), OS (A), Compilers (A+), Databases (A+), Android Development (A), Web Development (A+), AI (A), ML (A)
- **Selected Honors and Awards**: Outstanding Graduates of Tsinghua University and Beijing; Outstanding Undergraduate Thesis; Top 1% Scholarship for 3 years at Tsinghua; SenseTime Scholarship 2019 for potential in AI research (29 recipients nationwide)

Experience

Meta Platforms, Inc. - AI Metadata Jun. 2022 - Sep. 2022
Software Engineer Intern Menlo Park, CA

- In 11 weeks, wrote 85 commits containing ∼12.5k handwritten code, along with 7 posts and 3 presentations broadcasting my work
- Independently implemented the creation/update of a new database entity which served as a general data model and was the core container of AI model lineage metadata, and collaborated with engineers from data analytic teams who would use it
- Performed a massive backfilling of ∼6 million AI models with the entity I created to track ∼3 billion lineage edges in 2 weeks
- Designed and implemented a robust pipeline to track dataset to feature lineage, analyzed and fixed issues to improve low coverage
- Fixed >4 bugs in the AI metadata registration pipeline independently, increasing the registration success rate by > 3%
- Increased exception catching coverage in AI dataset registration pipeline to 100%, and created a logger to monitor the failures

SenseTime - Deep Learning Platform and Tools Nov. 2020 - Aug. 2021
Machine Learning Engineer Intern Beijing, China

- Made key contributions to developing MMDetection3D, a 2.7k-star 3D detection and segmentation repo of SenseTime on Github
- Implemented new methods, e.g., ImVoteNet; Created 50+ commits, reviewed 40+ pull requests and answered 30+ issues
- Solely carried out a complicated codebase refactor plan on unifying different coordinate systems and bounding box notations, committed 5k+ lines of code from 100+ files, affecting 16 detection algorithms

SenseTime - OpenMMLab Mar. 2020 - May 2020
Research Intern Beijing, China

- Conducted research on single-stage instance segmentation, wrote literature surveys for the department
- Improved an MMDetection algorithm by implementing semantic fusion, corner pooling and iterative contour point regression

Publications

- Cong, Y., Khanna, S., Meng, C., Liu, P., Rozi, E., He, Y., ... & Ermon, S. (2022). SatMAE: Pre-training Transformers for Temporal and Multi-Spectral Satellite Imagery. *Accepted by NeurIPS 2022 as **joint first author**.* [link]
- Wang, H., Cong, Y., Litany, O., Gao, Y., & Guibas, L. J. (2021). 3DIoUMatch: Leveraging IoU Prediction for Semi-supervised 3D Object Detection. *Published at CVPR 2021 as **joint first author**.* [link]

Projects

Controllable View Synthesis of 3D Scenes as Compositional NeRFs based on Diffusion Autoencoders Jan. 2022 – May 2022
Research Assistant to Prof. Stefano Ermon Stanford, CA

- Inspired by GIRAFFE and diffusion models, proposed a method that controls object size, position, rotation and camera viewpoint to synthesize novel views of scenes as a composition of multiple objects. Work to be continued in fall, 2022

Tencent WeChat Mini-Program Development Competition 2020 – Mini-Game Track May 2020 – Aug. 2020

- As team leader, designed a creative and playable WeChat Mini-Game called Yin-Yang, and won **the First Prize** (only 4 nationwide)
- Created the art assets ourselves using online resources; Improved game performance with techniques such as resource preloading

Kaggle Open Images 2019 – Visual Relationship Track Aug. 2019 – Oct. 2019

- Preprocessed the raw competition data; Implemented a detector based on SOTA work and tailored it to the task to achieve higher-quality bounding boxes, which improved the visual relationship detection performance, helping us win **a Silver Medal**

PointAlign: Towards Rotation Invariant Point Cloud Representation via Tangent Space Alignment Apr. 2019 – Nov. 2019
Research Assistant to Assoc. Prof. Yue Gao Beijing, China

- Proposed a novel point cloud network module; Increased the accuracy of RS-CNN and PointNet++ under SO3 rotation by >200%
- Submitted a paper to CVPR 2020 as joint first author; Was awarded Outstanding Oral Presentation at Tsinghua University

Highlight Course Projects (Click the Icon for Demo)

- **CS348B Rendering Competition:** Implemented volumetric photon mapping and layered medium based on pbrt-v3
- **CS248 Planet Simulator:** Rendered ocean, atmosphere scattering, earth terrain, orbitting asteriods using OpenGL
- **Collision Simulation:** Implemented efficient collision detection in CUDA and rendered collision of up to 100k balls
- **Mini Database:** Wrote a database that supports basic SQL queries with optimization, transactions, locks, and recovery
- **FTP Server & Client:** Wrote an FTP server in C and FTP client UI in Python supporting most basic commands
- **Android Chat App:** Wrote an Android app and Django server which support user searching, following, and chatting

Technical Skills

Programming languages: C/C++, Python, PHP, Java, JS **Miscellaneous:** PyTorch, CUDA, SQL, Shell, OpenGL