Hanke Chen

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LinkedIn: linkedin.com/in/chenhanke
Interests: Machine Learning, System, Computer Graphics, Quantum Computing

Education

Carnegie Mellon University (CMU) Pittsburgh, PA
Bachelor of Computer Science and Art *August 2020 - May 2024*
Courses: Machine Learning, Deep Learning, AI for Robotics, Distributed System, Computer System, Computer Graphics, Theoretical CS, Theoretical Quantum Computing, Data Structures and Algorithms, Functional Programming, Compiler, Statistics, Probability

Experience

Wireless Sensing and Embedded System (WiSE) Lab @ CMU Pittsburgh, PA
Research Assistance *May 2022 - Present*
- **Skills**: CUDA Programming, C++, Pytorch, Machine Learning, Computer Graphics
- Worked with Prof.Anthony Rowe on accelerating hash-encoded Neural Radiance Field. Designed and implemented realtime ML training pipeline that leverage occupancy-grid guided sampling, CUDA kernels, and tetrahedral dilation to achieve 10x speedup in training time than state-of-the-art for 3D reconstruction on real-world bounded scenes.

DeepVocab @ CMU Olympus Incubator Pittsburgh, PA
Co-founder, Machine Learning Engineer, Software Engineer *June 2020 - Present*
- **Skills**: Computer Vision, Natural Language Processing, CI/CD, SQLite, HiveDB, Dart, Flutter, GraphQL, Nginx
- Managed the team of 8 people to design and develop the frontend+backend of an Android+IOS vocabulary-learning app that uses CV and NLP to predict memory decay. Implemented Model-View-ViewModel with Provider architecture for maintainability. β-testing on Testflight. Will release to AppStore in 2023.

KokiCraft Network Remote
Founder, Software Engineer *2014 - 2017*
- **Skills**: Java, MySQL, Game Engine Development, Network Programming
- Online game played by 300,000+ players. Most popular GTA Minecraft Server in MCBBS Forum. Player experience documented by influencer. Programmed large game backend logic and resource management engine & update new game features monthly. Implemented automatic hack client banning and prevented UDP flood.

Projects

Scotty3D: A Blender-Like Artist Software May 2022 - Dec 2022
Programmed realtime rendering and ray-tracing pipeline. Designed algorithms for mesh editor, animation editor, and blackhole renderer with General Relativity, using various acceleration datastructure (C++, Computer Graphics)

Distributed Bitcoin Miner: A Mining Farm Protocol Aug 2022 - Dec 2022
A UDP-based system for distributed bitcoin mining. Robust against server & client failures. Designed and implemented fair scheduler and dynamic load-balance. Optimized for fast response. (Golang, Distributed System)

CryptoEggs: AI Generated Game on Blockchain Jan 2022 - June 2022
Designed and deployed robust Smart Contract on Gnosis Chain. Use Resnet50 to automate Cryptomon generation. (Pytorch, NodeJS, HTML, Javascript, Typescript, CSS, Flask, Solidity) [link]

RedstoneTorch: A Computer Vision Framework for Competitive Programing Jan 2018 - Jan 2020
A large pipeline and toolkit built for Competitive Programming based on Pytorch with 2,000,000+ lines of code. [link]

Publications

ImpAct: Important Sampling on An Octree 1st author, in progress (*Jan '23*)
We leverage importance sampling and mipmap under the assumption of time-consistency to accelerate the training of an octree scene representation for novel-view synthesis.

DART-NeRF: Depth Assisted Realtime Neural Radiance Field 1st author, in progress (*May '22*)
Introduced a photorealistic view synthesis system for 3D radiance field reconstruction using images and depth sensor input. We proposed depth regularization on plenoptic voxels, forground-background separation, point cloud initialization, and tetrahedral dilation for faster training.

Extracting Cellular Location of Human Proteins Using Deep Learning 1st author, [link] (*Dec '18*)
Proposed a proteins modeling system with Residue+Squeeze-Excitation layers (and many tricks) to identify 27 cell types within 28 subcellular locations in microscopy images. System surpassed human accuracy by 35%.

Awards & Honors

· **Dean's List** ×3 , CMU School of Computer Science and College of Art *Aug 2020 - Dec 2022*
· **World 1st Place (Solo)** , Kaggle Histopathologic Cancer Detection Competition *Jan 2019*

Teaching and Volunteer Experience

Instructor @ CMU StuCo 98-205 - Introduction to Minecraft Pittsburgh, PA
Designed course for technical Minecraft. Developed automatic grading and server infrastructure. Jan 2023 - Present

Project Lead and Technical Artist @ Game Creation Society Pittsburgh, PA
Led and worked with 3 teams on 3 video games. (Unreal, Unity, Blender, Houdini, ZBrush) May 2021 - June 2022

Network Security Consultant @ FIRST Robotics College Park, MD
Monitor network security by WiFi sniffing during regional FTC competition. (Wireshark) Jan 2018