WENBO (GORDON) HU

San Diego, CA   w1hu@ucsd.edu   www.linkedin.com/in/wenbo-hu-1b17521b2/

EDUCATION

University of California San Diego   *Sept.2019 - Present*
Bachelor of Science in Data Science   *Major GPA: 3.916*
Minor in Business   *Total GPA: 3.870*
Main Curriculum:
COGS108(Data Science in Practice)(**A+**), CSE151A(Intro to **Machine Learning**) (**A**), CSE152A(Intro Computer Vision)(**A+**),CSE151B (Deep Learning) (**A+**), DSC102(**Scalable** Analytics Systems) (**A+**), DSC190 (Perception & Navigation) (**A**), MATH173B (**Optimization**)(**A**
Graduate-Level Course:
CSE 291(Hao, Su Machine Learning Meets Geometry) (**A**), CSE 250A(AI: **Probabilistic Reasoning** & Learning (**A**), CSE 258/158 (**A+**) (Recommender System)

RESEARCH / WORK

Research Intern at Hao Su Lab at UCSD   *Feb.2022 - Present*
- Worked closely with Ph.Ds and developed rigid body environment of **ManiSkill 2022 Challenge**, a large-scale robotic manipulation challenge seeking to benchmark generalizable robotic agents; Enabled environment fully-simulated dynamic interaction, supporting multiple observation modes such as(**point cloud**) and multiple controllers.
- Researched minimizing **simulation to real** robot transferability gaps; Experimented with motion planning using **Xarm** 7 joint robot arm; Enabled vision perception by implementing **hand-eye** calibration algorithm with **Intel Realsense** camera; Transformed Xarco to URDF by **Docker** & ROS; Trained **RL policy** in the simulated environment aiming for real transfer.
- Implemented and explored front-end 2D and 3D Computer vision models to relate all domains' research insights such as **DETR, WGAN-GP, and NeRF**.
- Practiced projects in solving forward and inverse Kinematics problems, Motion Planning tasks(RRT, PRM), **PID control** and Reinforcement Learning algorithms such as **PPO, SAC** using a **SAPIEN environment** based on an Open AI gym environment.

Deep Learning Research Intern at Synthesis Electronic Technology   *June.2021 - Aug.2021*
- Worked in **Computer Vision Group** and researched lightweight **object detection** models such as Yolo Series to compress and accelerate deep learning models to run on small devices (CPU chip / mobile end).
- Improved standard Yolov5s model with **5% mAP@.5 increase** by utilizing in-depth data augmentation and TTA, finetuning, and applying **Transformer to Yolov5** after reading **10 papers** in Transformer domain.
- Independently innovated a question of whether adding the semantic meaning of class labels improves accuracy; Experimented by designing **loss function** to consider semantic related classes, post-processing bounding box, and trying embedding matrix.
- Converted models from different frameworks to NCNN, ONNX, and TensorRT that can run on mobile devices and deployed **int 8 quantized yolov5s** on intel i5 CPU with speed **180ms in 1920*1080 video**.

Software Engineer Intern at Inspur Groups   *July.2020 - Sept.2020*
- Launched project with MyBatis and SpringMVC framework under Maven and Tomcat.
- Provided apple big data back-end development and support including writing **SQL** to select data series from database, developing controller, dao, data, and service layer by **JAVA** to achieve requests from the front end.

PROJECTS/ COMPETITIONS

Kaggle SIIM COVID-19 Detection Competition - Top 15% (1416 Teams)   *June.2021 - Aug.2021*
- Identified and localized COVID-19 abnormalities on chest radiographs with a dataset comprising **6,334** chest scans in DICOM format **(119.68 GB)**; Employed packages: Albumentations, **Timm**, **MMdetection**, and **Detectron2**.
- Employed Transfer Learning; Trained and finetuned classification models such as Densenet121, EfficientNet.
- Ensembled detection models such as Yolov5x6, Cascade RCNN and edited their architectures; Implemented WBF to postprocess bounding box (better than SoftNMS).

Team leader at DS3 Data Hackathon - (Cryptocurrency) - First Place   *April.2021*
- Analyzed ransomware in recorded transactions of Bitcoin from **2009-2018 (263MB)**.
- Implemented Binary / Multi-class classification models such as Random Forest and employed LightGBM; Found best hyperparameters by Grid Search; Used K-fold validation, and model assessment by AUC and F-1 score; Reached final test **accuracy of 91%**.