Minh Tran

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Research Interest

In this period, I am interested in applications of 3D Vision. I am currently conducting research on applications of vision and language for generating CAD models with industrial level of accuracy. My goal for this year is to create a framework that takes image and/or language as input and returns CAD models of components for furniture. I expect the framework to be general enough to work well with out-of-distribution request, such as a pentagon chair or a table with seven legs. If you are interested, here is my full research statement. My curiosity spans the fields of:

- Perception: If humans can see stars like nocturnal animals, hear high frequency sounds, and feel magnetic fields using external sensors, how will the brain handle these new types of signals? How will it affect our consciousness and subconsciousness? Is it possible and how to unlock new perceptions for humans?
- Robot Evolution: Biological species evolve based on primal goals. How can robots be made to evolve into a high-order organized society similar to that of humans, and what would it look like? How would they cooperate, handle conflicts, yield, compromise, and come up with new, non-predetermined goals (such as performing art or exploring space)? When robots can do self-adjustment based exploration (questioning, reasoning, and creating), does it become a truly intelligent subject?

Capstone Project

Multi-view Human Part Segmentation, Meta Reality Labs — Pittsburgh, PA
Advisors: Prof. Deepak Pathak, He Wen, Yuan Dong. — 2023 – 2023

Education

Carnegie Mellon University, School of Computer Science — Pittsburgh, PA
MSc in Computer Vision — 2022 – Present
Advisor: Prof. Michael Kaess. *GPA: 4.08.*

Linköping University, Institute for Analytical Sociology — Linköping, Sweden
Exchange Studies - Social Networks Analysis — 2018 – 2018

DePaul University, Jarvis School of Computing — Chicago, IL
MSc in Data Science — 2016 – 2018
Advisor: Prof. Jacob Furst. *GPA: 3.83.*

Foreign Trade University, Information Science Center — Hanoi, Vietnam
BA in Electronic Commerce — 2011 – 2015
Advisor: Prof. Hung Nguyen. *GPA: 3.31.*

Selected Projects & Research

- 3D Decomposition and Part Prediction. **In Prep** Draft
- Multimodal for Affective Computing. **In Prep** Draft
- M3C Benchmark: A Toy Dataset for Continous Meta Multimodal Multi-task Learning. **In Prep** Draft
- Meta Learning for Few-Shot Medical Text Classification. **Under Review** arXiv preprint

- Tracker for Darknet YOLOv4: Added object trackers SORT, and background subtraction trackers for CCTV. Github
- Implemented models for meta-learning including Memory Augmented Networks, Model-Agnostic Meta-Learning and Prototypical Networks, train/test on Omniglot.
- Built a Multi-task Recommender System based on the classic Matrix Factorization and Neural Collaborative Filtering, predict both likely user-movie interactions and potential scores.

Technical Skills

Proficient: Python, C++, Darknet, Pytorch, Tensorflow, AWS, GCP, Azure, LaTeX.
Prior Experience: Java Scripts, R, Matlab, SQL, Java, Hadoop, Spark, SAS, SPSS, Scala, Tableau, Gephi.

Professional Experience

See my full job responsibility at https://minhtcai.github.io/data/minh-resume.pdf

Actuate AI Nov. 2018 - Jan. 2022
Sr. Data Scientist New York City, NY

- Built real-time object detection (YOLO, SSD, EfficientDet), segmentation (YOLACT++), activity recognition (OpenPifPaf), tracking (DeepSort), structure from motion (OpenSfM) models for large-scale CCTV systems. Models were deployed on more than 15000 cameras.
- Designed and built end-to-end autonomous CI/CD pipeline for data collection and verification, model re-train, compile, re-test and re-deploy. The pipeline reduced the workload of data science team by 50% and up to 70% inference cost, impacting all machine learning products.
- Customized and integrated new research into CCTV applications including test-time augmentation, background subtraction, multi-channel training and many more. Optimized inference models for SaaS pipeline and edge devices, deployed models on iOS and Android.
- Designed database and internal library for data management and integrated to analytical platform.

Veda Grace Dermatology Jul. 2018 – Jan. 2019
Data Scientist Chicago, IL

- Built and deployed image processing pipeline to process and extract skin surface features for dermatology.
- Built classification model based on ResNet to detect skin diseases and researched the combination methods of ingredients for each disease.

Talks and Tutorials

Ensemble Learning with Tree-based Models - Chicago Machine Learning Hackathon. 2018
Hadoop and Spark on AWS - DePaul Data Hacking Hour. 2018
Intro to Deep Learning - DePaul Data Hacking Hour. 2017
Data Science Tech Startup - Electronic Commerce Club FTU. 2017

Honors and Awards

First Prize - AWAP CMU Algorithms Hackathon (Team: IDC) 2023
Third Prize - Edward L. Kaplan, '71, New Venture Challenge (Team: Aegis AI) 2019
Finalist - MARS Hackathon Chicago (Team: DePaul) 2018
Second Prize - Bosch & KPMG Mobility Hackathon Chicago (Team: DePaul) 2018
Computer Training Institute of Chicago Full Scholarship 2018
First Prize - Young Entrepreneurs & Sustainability Education Hack (Team: Pupa) 2015
FTU Excellence Student Scholarship 2015
Second Prize - Hanoi Startup Weekend (Team: Beeketing) 2014