

Chahyon Ku

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EDUCATION

Master of Science @ University of Minnesota

Sept 2022 – June 2024

Robotics

Computer vision, robot vision, and natural language processing

Bachelor of Science @ University of Washington

Sept 2016 – Aug 2022

Computer Science and Mathematics

Artificial intelligence, machine learning, computer vision, and natural language processing

RESEARCH

Robotics Perception Manipulation Lab, University of Minnesota

Sept 2022 – Present

Research Assistant

Supervised by Prof. Karthik Desingh

Behavioral Cloning with Object-centric Representations from RGB Image

Oct 2022 – Present

Research using object-centric embeddings for behavioral cloning

Generate photorealistic RGBD videos that teach the model the desired behavior (Blender)

Goal: Apply trained model to putting a cap and a water bottle together with a 2-arm robot manipulator

Category-level 6D Pose Estimation with Object-centric Representations from RGB Image

Sept 2022 – Present

Generate photorealistic RGB images for minimal sim2real gap (Blender)

Pretrain a transformer-based model to produce a set of object embeddings from RGB images

Finetune a simple head to extract relevant information from object embeddings (for example, 6D pose)

Goal: Create an interactive demo for unseen-object 6D pose estimation

Robotics State Estimation Laboratory, University of Washington

March 2022 – August 2022

Research Assistant

Supervised by Dr. Karthik Desingh

University of Washington-Amazon Robot Manipulation Project

June 2022 – August 2022

Worked on building a system of UR16 and RGBD camera to pick objects from Amazon pods

Generated simulated RGBD images of randomized bins using the Google Scanned Objects (NVISII)

Implemented, trained, and evaluated a U-net-based model for instance segmentation of products

Evaluating SORNet on a Geometric and Spatial (GeoSpa) Reasoning Dataset

March 2022 – June 2022

Generated simulated images of elementary shapes by modifying the CLEVR data generation code (Blender)

Modified and trained SORNet to predict the geo-spatial relations from RGB images

Performed comparative analysis on which unseen attributes the model is sensitive to

CSE 481 Natural Language Processing Capstone, University of Washington

April 2022 – June 2022

Class Project

Supervised by Prof. Noah Smith

Reproducing "Self-supervised Quality Estimation for Machine Translation"

April 2022 – June 2022

Finetune multilingual BERT for quality estimation of machine translation

Replicate results from the paper

Conduct ablation studies on choice of hyperparameters and pretrained model

TEACHING

CSE 473 Artificial Intelligence, University of Washington

April 2022 – June 2022

Teaching Assistant

Supervised by Lecturer Jared Moore

Held weekly office hours, wrote new problem sets, and graded homework

Topics: Search, Markov Decision Processes, Reinforcement Learning, Bayes Network

SKILLS

Machine Learning: Python, PyTorch, TensorFlow, Tensorboard,

3D Rendering and Simulation: Blender, NVISII, PyBullet

Software Engineering: C/C++, JAVA, HTML, JavaScript, CSS