

# Chahyon Ku

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## EDUCATION

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### 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

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### 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

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### 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

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Machine Learning: Python, PyTorch, TensorFlow, Tensorboard,

3D Rendering and Simulation: Blender, NVISII, PyBullet

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