

# Xiaoyu Zhang

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## EDUCATION

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<b>Carnegie Mellon University</b> <i>Master of Science in Computer Science - Research Thesis</i>	May 2021 – August 2022 <i>Pittsburgh, PA</i>
<b>Carnegie Mellon University</b> <i>Bachelor of Science in Computer Science with University Honors</i> <ul style="list-style-type: none"><li>GPA: 3.88/4.0</li></ul>	August 2017 - May 2021 <i>Pittsburgh, PA</i>

## RESEARCH EXPERIENCE

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<b>CMU Connecting Language to Actions &amp; the World Lab</b> <i>with Professor Yonatan Bisk</i> <ul style="list-style-type: none"><li>Building an agent that can draw sketches interactively with humans through grounding free-form languages and composing sketch parts generated from textual descriptions.</li><li>Collecting 10K pairs of text and sketch parts on Amazon Mechanical Turk to create a dataset for collaborative sketch generation.</li></ul>	August 2021 - Present
<b>CMU Intelligent Autonomous Manipulation Lab</b> <i>with Professor Oliver Kroemer</i> <ul style="list-style-type: none"><li>Developed pose estimation model that achieved <math>&lt; 2cm</math> average distance between ground-truth and predicted point clouds by first retrieving closest 3D models in ShapeNet with RGB image input and then searching over pose hypotheses.</li></ul>	May 2021 – Present
<b>CMU Neurogenomics Lab</b> <i>with Professor Andreas Pfenning</i> <ul style="list-style-type: none"><li>Created and published HALPER that processes multi-species alignments to identify orthologous regulatory regions evolved from a common ancestor.</li><li>Compared and evaluated features of transcription factor binding motifs within orthologs between brain and liver tissues of mouse and human.</li><li>Modified UCSC program, doBlastzChainNet, to generate pairwise alignment between species using Perl and Bash.</li></ul>	June 2018 - January 2020
<b>CMU Wyvern</b> <i>with Professor Jonathan Aldrich</i> <ul style="list-style-type: none"><li>Participated in the design and implementation of the Collection library for programming language, Wyvern.</li></ul>	January 2019 - June 2019

## PUBLICATIONS

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Xiaoyu Zhang, Irene M Kaplow, Morgan Wirthlin, Tae Yoon Park, Andreas R Pfenning, HALPER facilitates the identification of regulatory element orthologs across species, *Bioinformatics*, Volume 36, Issue 15, 1 August 2020, Pages 4339–4340, <https://doi.org/10.1093/bioinformatics/btaa493>

## PROFESSIONAL EXPERIENCE

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<b>Uber Advanced Technologies Group</b> <i>Software Engineering Intern, Prediction Team</i> <ul style="list-style-type: none"><li>Improved cross- and along-track errors of pedestrian future trajectory prediction by building graph neural networks that learned edge connections modeling pedestrian interactions.</li></ul>	June 2020 - August 2020 <i>Pittsburgh, PA</i>
<b>Uber Advanced Technologies Group</b> <i>Software Engineering Intern</i> <ul style="list-style-type: none"><li>Improved the quality of autonomous vehicle (AV) test sets by deploying a selection tool based on evolution strategies to prioritize test case parameters that exposed AV failures.</li></ul>	May 2019 - August 2019 <i>Pittsburgh, PA</i>

## TEACHING EXPERIENCE

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<b>CMU 15-312 Foundations of Programming Languages</b> <i>Teaching Assistant</i>	January 2020 - May 2020 <i>Pittsburgh, PA</i>
<b>CMU 15-150 Functional Programming</b> <i>Teaching Assistant</i>	January 2018 - December 2018 <i>Pittsburgh, PA</i>

## RECENT PROJECTS

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<b>Emotion Classification on GoEmotions Dataset</b> • Improved macro F1-score of negative emotion classification through prompt-based BERT language model learning.	October 2021 - December 2021
<b>Traffic Routing with A*</b> • Applied A* planning algorithm on traffic routing in SUMO simulator.	October 2021 - December 2021
<b>Action Detection on EPIC-KITCHENS Dataset</b> • Presented a multi-modal approach to the action detection task, where the pipeline retrieved closest narrations of visual features extracted from segments predicted by MS-TCN.	February 2021 - April 2021
<b>Action Recognition on EPIC-KITCHENS Dataset</b> • Incorporated ROI-Align in SlowFast network to improve action recognition accuracy.	February 2021 - April 2021

## RELEVANT COURSEWORK

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**Machine Learning:** Advanced Natural Language Processing || Multimodal Machine Learning || Deep Reinforcement Learning and Control || Visual Learning and Recognition  
**Robotics:** Planning in Robotics || Learning for Manipulation || Statistical Techniques in Robotics  
**Other:** Graph Theory || Foundations of Programming Languages

## TECHNICAL SKILLS

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**Programming Languages:** C++, Python, JavaScript, HTML  
**ML Frameworks:** PyTorch, TensorFlow