

**Eric Xue**  
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## EDUCATION

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**University of Toronto**  
*Honours Bachelor of Science in Computer Science; GPA: 3.94*

Toronto, Canada  
*Sep. 2021 – July. 2025*

## EXPERIENCE

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### SocialAI Research Group

*Research Student*

Toronto, ON  
*Sep 2022 - Present*

- **Research Study Planning:** Collaborated with the team to design research studies on emergent social behaviors through reinforcement learning in a simulated environment.
- **Paper Reproduction:** Analyzed and reproduced recent reinforcement learning literature to help plan a novel framework for the purpose of socio-economic studies.
- **Gem:** Gem is a general-purpose reinforcement learning engine that enables researchers, developers, and students to develop and deploy reinforcement learning algorithms on new and pre-existing environments.

### aUToronto

*2D Object Detection Team Memberr*

Toronto, ON  
*Sep 2022 - Present*

- **Dataset Collection:** Collected and curated traffic-oriented image datasets to be used in training aUToronto's 2D perception system.
- **Data Augmentation:** Reviewed and presented a novel data augmentation technique by optimizing the augmentation policy directly from the training data.

### MOZI AI

*Software Intern*

Remote Work  
*Summer 2020*

- **Knowledge Graph:** Implemented components in a knowledge graph-based gene annotation tool in Python using OpenCog AtomSpace.
- **Software Testing:** Created and executed software test plans to identify and fix code errors.

## PUBLICATIONS

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### “Granular Analysis of Pretrained Object Detectors”

*Conference Paper*

Authors: Eric Xue, Tae Soo Kim  
*ICAIIIC 2022*

- Published in the 2022 International Conference on Artificial Intelligence in Information and Communication.
- **Paper Reproduction:** Reproduced classic architectures in computer vision including YOLOv3 and Faster R-CNN.
- **Image Perturbation:** Implemented various image perturbations to simulate imperfect image conditions in the real world, and brought down prediction accuracy by up to 25%.
- **Subgroup Analysis:** Performed detailed analysis on detectors with respect to different groups of applied perturbations and testing data in the KITTI dataset. Found a stronger degradation in performance across geometric handicaps than those of color.

## PROJECTS

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- **YumoBot:** Built a dice-roller bot for TRPGs on Discord (messaging platform using Discord.js. Used MongoDB to store and organize user data. Refactored code to accomodate for changes in the Discord API.
- **Personal Website:** Designed and developed a personal website to showcase past projects with Next.js. Implemented decorative animations and transitions using CSS.
- **Coveet:** Collaborated and built Coveet, an user sentiment analyzer for Twitter, using Python. Parsed, analyzed and visualized over 10GB of tweets with NLTK.
- **BuddyBreed:** Published an iOS app that identifies a dog's breed from a single photo. Utilized Firebase to store uploaded photos and communicate with server. Adopted ResNet-50 model to provide breed predictions with 90% accuracy.

## PROGRAMMING SKILLS

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- **Languages:** Python, Javascript, Java, Swift, C
- **Technologies:** Firebase, MongoDB, Next.js, Unity, PyTorch