

# LINDA WANG

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## EDUCATION

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### University of Waterloo

Masters of Applied Science

Systems Design Engineering, focus in Artificial Intelligence

Advisor: Alexander Wong

*Sept 2018 - Aug 2020 (expected)*

Waterloo, ON

### University of Waterloo

Bachelor of Applied Science

Systems Design Engineering with Distinction, Co-operative Program

*Sept 2013 - Apr 2018*

Waterloo, ON

## RESEARCH INTERESTS

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### Artificial Intelligence - Computer Vision, Deep Learning

I'm interested in combining different visual perception cues, such as object detection and depth estimation, to build a rich scene understanding. My goal is to contribute to the advancement of AI by applying my research to areas such as AI for accessibility and autonomous driving.

## SKILLS

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### Languages

Python, C++, Java, Matlab, C#, SQL, Swift

### Tools

Tensorflow, OpenCV, Git, Mercurial, Unix, LaTeX

## PUBLICATIONS

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**Wang,L., Patnik,A., Wong,E., Wong,J., Wong,A. OLIV: An Artificial Intelligence-Powered Assistant for Object Localization for Impaired Vision.** Conference on Vision and Imaging Systems (CVIS), 2018.

Boroomand,A., Sahfieh,M.J., **Wang,L.**, Kuang,E., Kazemzadeh,F., Wong,A. **Compensated Lens-Free Light Field Microscopy.** International Conference on Inverse Problems in Engineering (ICIPE), 2017.

## PRESENTATIONS

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**Wang, L., Wong, A. Implications of Computer Vision Driven Assistive Technologies Towards Individuals with Visual Impairment.** The IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPR), 2019. [Oral spotlight and poster]

**Wang, L., Wong, A. Enabling Computer Vision Driven Assistive Devices for the Visually Impaired via Micro-architecture Design Exploration.** The IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPR), 2019. [Poster]

## RESEARCH EXPERIENCE

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### Vision and Image Processing Lab, University of Waterloo

*Graduate Research Assistant*

Sept 2018 - Present

Waterloo, ON

- Developing an AI-driven assistant system to help those with visual impairment by combining different visual perceptions (object detection and depth) to produce a rich scene understanding, while maintaining a balance between speed, accuracy and size.

**Vision and Image Processing Lab, University of Waterloo***Undergraduate Research Assistant*

Sept 2016 - Dec 2017

*Waterloo, ON*

- Optimizing existing object detection models by migrating them from Caffe to Caffe2, and employing these models to run in real-time on mobile devices.
- Designed and developed a real-time reconstruction visualization platform backed by image quality enhancement algorithms for the light-field encodings captured using a lens-free nanoscopy system and dispersed Fourier Transform spectrometer.
- Extended the capabilities of the light-field lens-free nanoscopy system to capture information at different wavelengths and concatenate these captures to produce a coloured image.

**WORK EXPERIENCE**

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**Lyft, Autonomous Team***Software Engineer*

May - Aug 2019

*Palo Alto, USA*

- Working on monocular depth estimation for autonomous vehicles
- Implemented the pipeline from data preprocessing to training to evaluation for depth estimation
- Currently training monocular depth estimation models to perceive far objects

**Facebook, Computational Photography Group***Software Engineer*

May - Aug 2017

*Seattle, USA*

- Developed 3D multi-facial deformations using OpenGL for the Augmented Reality Studio
- Experimented with frame buffers in OpenGL to handle interferences when there are multiple faces

**Bluebank Communication Technology***Hardware Engineer*

Jan - Apr 2016

*Chongqing, China*

- Designed PCB layouts and component footprints for mobile device components
- Validated device systems using specialized equipment to measure relevant signals, current flow and voltages of device components, and to calibrate radio frequencies

**Molex***Embedded System Developer*

May - Aug 2015

*Waterloo, ON*

- Designed a test system of multiple computers in a network and new automated MAC address retrieval

**Molex***Junior Developer*

Sept - Dec 2014

*Waterloo, ON*

- Implemented an image recognition system to detect LED colours in a noisy environment
- Leveraged UDP to automatically download files at various test stages to improve speed and throughput

**Independent Electricity System Operator***Developmental Intern*

Jan - Apr 2014

*Mississauga, ON*

- Wrote an automated synchronization script that sync files from primary server to backup server
- Developed a portal to publish reports to market participants and the general public

**TEACHING EXPERIENCE**

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**MTE140 and BME122: Data Structures and Algorithms***Teaching Assistant*

Jan - Apr 2019

*Waterloo, ON*

- Taught a class on algorithmic analysis, big-O notation
- Ran lab sessions and helped students understand core concepts to complete labs

## PROJECTS

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### **Survey of Nonlinear Kalman Filters**

*Github: <https://github.com/lindawangg/Survey-Nonlinear-Filters>*

Analyzed and compared performance of nonlinear filters when applied to nonlinear and non-Gaussian problems.

### **Computer Vision System to Aid the Visually Impaired**

*Github: <https://github.com/edrickwong/w3p>*

Worked in a team of four to build an assistive kitchen system for the visually impaired using computer vision. Won Systems Design Award for Best Overall Project.

### **Selective Attention Model**

*Github: <https://github.com/lindawangg/Visuospatial-Attention>*

Utilized the Neural Engineering Framework to simulate selective attention between the primary visual cortex and middle temporal area.

### **Classifying Heartbeats**

*Github: <https://github.com/lindawangg/Classifying-Heartbeats>*

Extracted features from audio heart sounds to classify into five classes using various machine learning methods.

### **Capsule Networks and Face Recognition**

*Github: <https://github.com/krishnr/CapsNet4Faces>*

Applied Capsule Networks to face recognition task on Labeled Faces in the Wild dataset. Achieved 93.7% accuracy on test set.

## HONOURS AND AWARDS

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Faculty of Engineering Achievement Award	2019
Ontario Graduate Scholarship	2018
President's Graduate Scholarship	2018
Systems Design Award for Best Overall Project	2018
President's International Experience Award	2017
President's Research Award	2017
NSERC Undergraduate Student Research Award	2017
President's Athlete Academic Honour Roll	2013-2017
University of Waterloo President's Scholarship of Distinction	2013

## INTERESTS

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Varsity Swim Team, University of Waterloo, 2013 - 2017

Computer vision and deep learning

Photography

Traveling, exploring and hiking