

# LIWEI PAN

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## PROFESSIONAL SUMMARY

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Proficient in Machine Learning using PyTorch and Tensorflow with CNN, and RNN Architectures.  
Skilled in Programming via Python, C, C++, Verilog, Matlab, Assembly Language, ROS, and SQL.  
Expertise in logic circuit design on FPGA with Verilog and Assembly.

## EDUCATION

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### University of Toronto, Toronto, Ontario, Canada

Sept. 2017 - Current

BASc in Engineering Science 2021

Major in Robotics Engineering, Minor in Artificial Intelligence

Relevant courses: Control Systems, Digital & Computer Systems, Data Structure & Analysis, AI Fundamentals, Probability & Statistics, Mathematics for Robotics, Intro to Databases

## PROGRAMMING

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Python, C/C++, Matlab, Verilog, Assembly, ROS, SQL

## PROJECTS

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### Deep Learning Image Captioning Model, University of Toronto

June 2019 - Aug. 2019

Proposed an image recognition model that is capable of identifying features of the input image and generating a caption that describes the image (Supervised by Professor Lisa Zhang, Department of Computer Science).

Implemented CNN (VGG16) to embed image features and RNN (LSTM) to generate the caption.

Trained the model using PyTorch 1.1 with Tesla T4 on GCP.

[github.com/leeweip/Image-Captioning](https://github.com/leeweip/Image-Captioning)

### Mail Delivery Robot (operated with ROS), University of Toronto

Sept. 2019 - Dec. 2019

Designed an autonomous mail delivery robot (Supervised by Professor G.M.T. D'Eleuterio, UTIAS).

Operated the robot with ROS and openCR for motor control.

Implemented PID, Kalman filter, and Bayesian Localization to achieve line tracking and localization.

### Ball Dispensing Robot, University of Toronto

Jan. 2019 - Apr. 2019

Proposed and designed an autonomous ball dispensing machine prototype for related industries, including luggage pick up in airport and delivery dispensing in a warehouse (Supervised by Professor M. Reza Emami, UTIAS).

Conducted literature, market, and idea survey and converged to the solution using engineering decision-making tools, including Pugh Chart, Utility Functions, and AHP matrices.

Prototyped the machine with Solidworks, 3D printing and laser cutting; helped in designing the electrical circuits of the machine.

The team placed third in the competition (25 teams in total).

### SUMO Combat Robot, University of Toronto Robotics Association

Feb. 2018 - Apr. 2018

Designed and built the machine using the Arduino kit, and AutoCAD.

Mainly in charge of the mechanical design, and manufacturing of the chassis.

### Chess A.I.

Feb. 2018 - Apr. 2018

Designed and implemented chess playing A.I. using python.

Implemented the algorithm with alpha-beta pruning.