

# YUSHUO HAN

## SUMMARY OF QUALIFICATIONS

### LANGUAGES

Python, JavaScript, C/C++, HTML/CSS

### DATA SCIENCE/MACHINE LEARNING

PyTorch, Keras, Tensorflow, Scikit-learn;  
Numpy, Pandas; Matplotlib, Seaborn

### AMAZON WEB SERVICES

Sagemaker, Rekognition, ECR; EC2, Lambda;  
Step Functions, SES, API Gateway;  
S3, CloudWatch; IAM

### CONTAINERIZATION/DEVOPS

Docker, Kubernetes; AWS ECR;  
GCP Kubernetes Engine, Container Registry

### DATABASES

MySQL, MSSQL; MongoDB

### FRAMEWORKS AND ENVIRONMENT

OpenCV, Pillow, and Imgaug;  
Flask, React.js, Node.js, Express.js, JWT, Socket;  
SQLAlchemy, CherryPy, and Mako

### STRONG COMMUNICATION SKILLS

with experience of working in teams of various sizes

## RELEVANT COURSES

- *Statistical Learning - Function Estimation*
- *Introduction to Machine Learning*
- *Algorithms*
- *Computational Statistics & Data Analysis*
- *Applied Linear Models*
- *Introduction to Database Management*
- *Mathematical Statistics*
- *Object-oriented Software Development*
- *Data Structures & Data Management*
- *(Advanced) Design Functional Programs*
- *Operating Systems*

## EDUCATION AND ACHIEVEMENTS

### B. OF COMPUTER SCIENCE(2018-2023)

#### University of Waterloo (Average: 92.0%)

- Mathematics Global Scholarship  
for exceptional international applicants
- President's Scholarship of Distinction  
for over 95% average
- Mathematics Promissory Scholarship  
for outstanding Euclid contest performance

#### DISTINCTION (99.5% PERCENTILE) AND SCHOOL CHAMPION IN EUCLID / FERMAT / HYPATIA CONTESTS

University of Waterloo | OCT 2016-JUN 2017




- Invited to UWaterloo on-campus  
workshops based on outstanding  
contest performances

### DEAN'S HONOURS LIST

University of Waterloo | SEP 2018-APR 2021

- Awarded "Term Dean's Honours List"  
for all terms .

## Bachelor of Computer Science, Data Science, 3B

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## WORK EXPERIENCE

### MACHINE LEARNING RESEARCH ENGINEER (CO-OP)

Huawei Technologies Canada | Toronto, ON | JAN - APR 2021

- **Augmented network architectures** of a **facial landmark detection** model.
- Implemented training script and loss functions using **Keras**. Prepared dataset with **hard sample mining** and **trained** the network.
- Researched state-of-the-art **facial landmark detection** and **head pose estimation** neural nets. Conducted model inference in **Tensorflow** and **Caffe**.

### AI/ML SOFTWARE DEVELOPER (CO-OP, EXTENDED PART TIME)

WorkshopX - CreativeLayer | Ottawa, ON | MAY - DEC 2020

- Researched, developed and trained a state-of-the-art **image matting network** on **AWS EC2**, including creating and augmenting datasets, developing training code and loss functions in **PyTorch**, adjusting training hyperparameters, and visualizing loss using TensorBoard.
- Implemented an automated workflow of the training and deployment of **AWS Sagemaker** deep learning models using **AWS Step Functions, CloudWatch, API Gateway, Lambda, and SES**.
- Created **salient object detection** and **semantic segmentation** model inference services using **PyTorch, Docker** and **AWS ECR**. Trained and deployed deep learning models using **AWS Sagemaker** and **Rekognition**.

### SOFTWARE DEVELOPER (CO-OP)

Opentext HQ | Waterloo, ON | MAY - AUG 2019

- Pitched and completed the failure analysis feature of an automation test platform using **MSSQL, SQLAlchemy, CherryPy, and Mako** in Python.

## PROJECT EXPERIENCE

### AUTOTRUCKX | JAN - MAR 2021 | /shawnhan108/AutoTruckX

- Implemented state-of-the-art **semantic segmentation** models that utilize **transformers** and **UNet**, including **SETR(2020)**, **TransUNet(2021)**, and **UNet (2018)**. Trained models on the **CityScape pix2pix** dataset using **PyTorch**.
- Augmented and trained **steering angle prediction** models based on CNN, LSTM and transfer learning. Visualized the models' **salient map features**.

### BISENET-APP | MAR - MAR 2021 | /shawnhan108/BiSeNet-app

- Implemented a **face semantic segmentation** web app using model **BiSeNet (2018)** in **PyTorch**, and **Flask**.
- Deployed app on a **Google Cloud Platform Kubernetes Engine cluster**, in a **docker** container on **Container Registry**.

### NATURE NOTEBOOK | MAY-JUL 2020 | /shawnhan108/nature-notebook

- Created notebooks that leverage **classical ML algorithms** and **DL neural nets** using **TF, Keras, and Theano** to address biology and conservation issues.
- Implemented **CycleGAN, BiLSTM, and CNN** models. Utilized **Scikit-Learn** algorithms including **KNN, SVM, Random Forest** and **Keras built-in models** including **Inception-ResNet-V2** and **Vgg-16**.
- Developed, trained, and inferenced models after exploratory data analysis and data preprocessing using **Numpy** and **Seaborn**.

### THE RECOMMENDERS | JUL-AUG 2020 | /shawnhan108/The-Recommendors

- Created two recommender systems using **Collaborative Filtering, Matrix Factorization, residue learning**, and **Bayesian Bandit**.
- Implemented a **Deep Learning Architecture for Collaborative Filtering Recommender Systems**, proposed by Bobadilla et al (2020).