

Zhengqi(Drago) Dong

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EDUCATION

Ohio State University, Columbus, OH (Expected graduation: May 2021)

GPA: 3.6 / 4.0

B.S Computer Science Engineering (Minor in Statistics)

University of Dayton, Dayton, OH (August 2016 – August 2017)

GPA: 3.8 / 4.0

ENGINEERING EXPERIENCE

CSE 5914.01 High-Performance Deep Learning, The Ohio State University (Aug 2020 – Present)

- Proposed and tested numerous model parallelism implementation on U-net and ResNet-like architectures for high-resolution pathological disease images detection that could trained on High-Performance Computing (HPC) system.
- Developed, trained, and analyzed the performance (time and acc) of different DNN models on different scale of datasets by varying # of cores on CPUs/GPUs, # of batch size, learning rate, optimizer, and type of MPI communication libraries on OSU Supercomputing Center (OSC).
- Designed and benchmarked the performance of different ML algorithms supported by the Dask-ML library on OSC cluster and provided the visualized task graphs and process utilization through Dask Dashboard via the port forwarding technology.

CSE 5525 Foundations of Speech and Language Processing, The Ohio State University (Aug 2020 – Present)

- Implemented the following algorithms from scratch: Naïve Bayes/Logistic Regression Classifier, HMM(Hidden Markov Model)/CRF(Conditional Random Field) Tagger, Attention Based Encoder-Decoder Model.
- Proposed a hybrid filtering recommender system on the Full MovieLens dataset for the final project.
- Compared and analyzed different text embedding models to improve the performance, e.g., Word2vec, Doc2vec, and BERT.

Deep-Learning Based Plant Disease Diagnosis System, Honor Research Project, The Ohio State University (August 2019 – present)

- Conducted the benchmark testing for various object detectors and backbone DL architectures for the PlantVillage disease dataset, e.g., InceptionNet, ResNet, and NASNet, and MobileNet.
- Fine-tuned the InceptionV3 model and achieved 99.5% acc in training and 98.11% in validation under 20 hours of training.
- Award \$5500 scholarship by College of Engineering towards “Research Distinction” or “Honors Research Distinction”.

CSE4471 Information Security Final Project – Spam Filter Detector, The Ohio State University (May-July 2020)

- Data pre-processing: extracted the text body from MIME email format; split dataset to training, validation, and testing; tokenized sentence and removed the stopwords for feeding to neural networks.
- Compared different neural network model for text embedding, including Gated Recurrent Unit (GRU), Bidirectional Long short-term memory (LSTM), and the Global Vector (GloVe) language model on the spam email detector on Apache SpamAssassin open-source dataset.
- Achieved 99.5% acc in training and 96% in validation, and further visualized the word embedding vector in TensorBoard.

CSE2421 Operation System Project: Air Traffic Control Simulator, The Ohio State University (August – Dec 2019)

- Created an Air Traffic Control Simulator in C including a character-based graphical display with over 800 lines of code spanning decades of files.
- Wrote generic linked-list usable with any data type and proven to handle memory allocation failures.
- Used curses library for display control, nanosleep function to accelerate the simulation process.
- Used dynamic memory allocation and gracefully deals with allocation failures.
- Dealt with numerous unit conversions for heading speed, heading degree, screen size, flight position and etc.

CSE3901 Web Application Final Project: Freelance Canvas Web Application, The Ohio State University (May-July 2019)

- Designed the web frontend interface features such as like, follow, and comment with Ruby on Rails, CSS(Bootstrap), HTML, and SASS.
- Implemented the password registration, confirmation, recovery, authentication functions with Device library in Ruby.
- Designed the database for users with ER-diagram and SQLite.

OSU Data-IO 6-hr Competition — winner of Mid-Ohio Food Bank Challenge (October 2019)

- Reformatted/cleaned/processed/fitted data and produced the visualization result to the final report.
- Conducted time series analysis (identify the seasonality/stationarity/trends/autocorrelation) on the consumer flow volume and gave suggestions in improving logistic management.

AI Team Member, 2019 RoboMaster Competition at ShenZhen, IEEE Undergraduate Chapter (September 2018 – May 2019)

- Tagged the ground truth labels and bounding boxes over 500 pictures clipped from past video.
- Tested and evaluated the performance and accuracy of three robots' aiming system.
- Practiced the operation of Standard Robot and Drone with remote controller in a simulated battlefield.

Member of Connected and Autonomous Vehicles (CAVs) teams, OSU EcoCAR 3 Competition (August 2018 – December 2018)

- Used Python and MATLAB to implement the Kalman Filter (KF) and Extended Kalman Filter (EKF) with the goal of developing a robust sensor fusion algorithm for line detection and following.
- Analyzed the old EcoCar3 Architecture and Version Control system and introduced the basic mechanisms of GitHub.

2018 IEEE SAC Micromouse competition at Pittsburgh, IEEE Undergraduate Chapter (January 2018 – April 2018)

- Programed the DFS/BFS/Uniform cost/A* search algorithm with Python on Micromouse robot to search the shortest path in a maze

SKILLS

Related Coursework

- CSE1223(Java), ECE2020/2060(Analog & Digital Logic), CSE2321/2331(Algo & Ds), CSE2421/2431(OS), CSE3901(Web Dev), CSE3241(Database), CSE4251(Unix), CSE4256(Python), CSE3521/5522(AI), CSE3461(Networking), CSE4471(Info Security), CSE5523(Machine Learning), CSE5526(Neural Network), CSE5914.01(High-performance DL), CSE5525(NLP)
- Stat4201/4202(Probability & Statistic), Stat4194(R Programming), Stat3301/3302(Statistical Modeling)

Techniques and skills

- Programming language: Python(with TensorFlow Developer Certificate), R(tidyverse and shiny), C (familiar with GDB and makefile), Java, Ruby(familiar Ruby on Rails), SQLite, X86 Assembly Language, HTML, CSS, JavaScript, Latex, MATLAB
- Technology:
 - ♦ Distributed Deep Learning in HPC environment (> 1-year experience): Familiar with TensorFlow/PyTorch/LBANN deep learning framework, Horovod/Dask/mipi4py python library, and Slurm/PBS scheduler
 - ♦ Software Development Environment (> 1-year experience): PyCharm, RStudio, Visual Studio, Eclipse, Linux/Unix, Git version control, AWS(Cloud 9), SolidWorks, Arduino
 - ♦ Microsoft Office(> 3-year experience): Access(database desgin), Excel(table desgin and analysis), Word(writing thesis and report), PPT(making presentation), Outlook
- Languages: English, Chinese (Native)

EXTRACURRICULARS

Student Instructional Assistant, The Ohio State University, Columbus, OH (Aug 2020 – Present)

- Teaching assistant and grader for CSE 3461 (Computer Networking and Internet Technologies) under the supervision of Jim Vickroy through the Department of Computer Science.
- Required to oversee lab sections, maintain weekly office hours, and grade student homework and projects.

WebMaster, IEEE at OSU Undergraduate chapter, Columbus, OH (January 2018 – Present)

- Designed and maintained IEEE's website(<https://ieee.osu.edu/>) powered by Drupal Content Management System (CMS) and routinely posted newest organization events and activities.

Vice-president, OSU Table Tennis Club, Columbus, OH (May 2019 – May 2020)

- Conducted weekly training session and coached fundamental skills to improve member's serving, flicking, looping and striking ability.
- Cooperated with other club officers to manage the 2019 NCTTA tournament plan at Iowa University, Friendship Cups at University of Toledo, and various seasonal tournaments.
- Cooperated with Nike's "Project Move" program to deliver and promote table tennis culture and spirit.

Student Volunteer, Mid-Ohio Workers Association, Columbus, OH (Oct 2017– Jan 2018)

- Wrapped gifts during Thanksgiving, set up family events for Christmas dinner, delivered donated food to low-income families, helped to edit photos, and canvased hundreds of neighbors.

Volunteer of Kroger Pantry Indoor Assistant, Mid-Ohio Foodbank , Columbus, OH (~30hr in total)

- Assisted the manager organizing and packing the foods, stored them to the warehouse, and distributed to the customers.

Student Operations Assistants, University of Dayton Residential Property, Dayton, OH (May 2017-July 2017)

- Diagnosed and noted all damaged walls, outlets, and furniture throughout about 300 dormitories.
- Tracked inventory, coordinated logistics, and collaborated with team to replace all unusable or old furniture.
- Cleaned and discarded all spoiled foods and clothes abandoned at the cabinet and wardrobe.

HONOR AND ACTIVITIES

- Achieved Dean's List (>3.5 GPA) over five semesters, active Honor student in OSU and Honor Collegian Program.
- Awarded 2020 IEEE Excellent Service Award, active IEEE members (Student Member, 2018–Present).
- Activate NCTTA(National Collegiate Table Tennis Association) member (Student member, 2018—Present)
- Personal interest: Table Tennis (>5 years professional practices), Martial Art (Red Belt), Climbing, Track and Field, Scuba Diving (Certified Open Water Diver), Photography, Cooking, Camping, Skiing/Snowboarding, and Traveling.