Zhengqi(Drago) Dong

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EDUCATION

Boston University, Boston, MA **08/2021 - Expected 05/2023**

MS in Robotics & Autonomous Systems

Ohio State University, Columbus, OH (GPA: 3.65 / 4.0) **08/2017 - 05/2021**

B.S Computer Science Engineering (Minor in Statistics)

Graduated with Honor in Engineering, and Honor Research Distinction in Agricultural Engineering

University of Dayton, Dayton, OH (GPA: 3.82 / 4.0) **08/2015 - 05/2017**

ENGINEERING EXPERIENCE

CSE3341 Project – "CORE" Language Interpreter, The Ohio State University **01/2021 - 05/2021**

- Built a Scanner that parses the program from input files into a stream of CORE language tokens (defined by Instructor).
- Implemented the recursive descent algorithm to generate the parse tree for the input program.
- Built the CORE Interpreter that can interpret syntax tree, execute the input program, and reject invalid inputs with error messages.
- Utilized "call by copy return" strategy to build call stack that supports recursive function call for "CORE" language.
- Implemented the Garbage Collector features with reference counting approach for the CORE interpreter

High-Performance Deep Learning Research Study, The Ohio State University **08/2020 - 12/2020**

- Tested various model parallelism methods to speed up the training of out-of-core memory DNN models, such as U-net and ResNet-like architectures, on High-Performance Computing (HPC) environment.
- Analysed the performance (time and acc) of different DNN models on various scale of datasets by varying # of cores on CPUs/GPUs, # of batch size, learning rate, optimizers, and type of MPI communication libraries on OSU Supercomputing Center.
- Benchmarked the performance of various ML algorithms supported by the Dask-ML library and conducted on OSC cluster to provide visualized task graphs via Dask Dashboard and port forwarding technology.

CSE 5525 Foundations of Speech and Language Processing, The Ohio State University **08/2020 – 12/2020**

- Accomplished following algorithms from scratch with PyTorch: Naïve Bayes/Logistic Regression Classifier, HMM(Hidden Markov Model)/CRF(Conditional Random Field) Tagger, Attention Based Encoder-Decoder Model.
- Developed a hybrid filtering recommender system with TensorFlow by integrating metapath-based heterogeneous network for graph embedding and doc2vec for text-embedding methods to achieve ~33.1% accuracy for an unseen movie rating score.

Deep-Learning Based Plant Disease Diagnosis System, Honor Research Project, The Ohio State University **01/2020 - 05/2021**

- Developed a self-customized InceptionV4 deep learning model with **TensorFlow** by evaluating various architectures (e.g., InceptionNet, ResNet, and NASNet, and MobileNet) and fine-tunning multiple hyper-parameters that are most suitable on plant leaf disease detection senario, and result to 99.5% training cc and 98.11% validation acc over 20 hours of training on OSU Supercomputing Center.
- Awarded $5500 scholarship granted by College of Engineering towards "Honors Research Distinction" thesis application.
- Provided thorough explanation of research process and result in a deliverable manner, including research proposal, 70+ pages thesis, poster, 1 hour oral defense, and 2 research forums.

CSE4471 Information Security Final Project – Spam Filter Detector, The Ohio State University **05/2020 - 07/2020**

- Data pre-processing: extracted text body from MIME email format; split dataset to training, validation, and testing; tokenized sentence and removed stopwords for feeding to neural networks.
- Developed a spam email detector with 99.5% training acc by constructing 6 layers neural network and training the model on Apache SpamAssassin open-source dataset with Stanford Global Vector (GloVe) text embedding representation.

CSE3901 Web Application Final Project: Freelance Canvas Web Application, The Ohio State University **05/2019 - 07/2019**

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

CSE2421 Operation System Project: Air Traffic Control Simulator, The Ohio State University **08/2019 - 12/2019**

- 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 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, etc.

AI Team Member, 2019 RoboMaster Competition at Shenzhen, IEEE Undergraduate Chapter **09/2018 - 05/2019**

- Developed a customized Object Detection program with Yolo-v3 model by clipping over 1000 pictures from past competition videos and labeling bounding box over the ground truth objects.
- Practiced maneuvering console of Standard Robot and Drone in a self-build battlefield.

Member of Connected and Autonomous Vehicles (CAVs) teams, OSU EcoCAR 3 Competition **08/2018 - 12/2018**

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

2018 IEEE SAC Micromouse competition at Pittsburgh, IEEE Undergraduate Chapter **01/2018 - 04/2018**

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

SKILLS

Related Coursework

- Machine Learning, Neural Network, High-performance Deep Learning, Natural Language Processing, Algorithm & Data structure, Operation System, Networking, Information Security, Web Development, Database Systems
- Probability & Statistic, Statistical Modeling, Spreadsheet and Database Modeling with Excel and Access, Analog & Digital Circuits

Programming languages:

- Fluent with Python (certified Google TensorFlow Developer), and C (including GDB, valgrind, makefile)
- Experienced with R (including tidyverse and shiny), Java, Ruby (including Ruby on Rails), SQLite, X86 Assembly Language, HTML, CSS(including Bootstrap), JavaScript, MATLAB, Bash Script, LaTeX

Technologies:

- Distributed Deep Learning in HPC environment: Familiar with TensorFlow/PyTorch/LBANN deep learning framework, Horovod/Dask/mpi4py python library, and Slurm/PBS scheduler
- Software Development Environment: PyCharm, RStudio, Visual Studio, Eclipse, Linux/Unix, Git version control, AWS(including Cloud 9), SolidWorks, Arduino
- MicroSoft Office: Access, Excel, Word, PPT, Outlook

Languages: English (6 years' practise in US college), Chinese (Native)

LEADERSHIP & ACTIVITIES

WebMaster, Student Association of Graduate Engineers (SAGE) at Boston University, Boston, MA **08/2021 - Present**

- Coodinated with other e-board members to plan and organize two annual events (whale watching and nutcracker)
- Routinely updated and maintained SAGE's website (https://www.bu.edu/sage/), including event news, student activities, post, and relevant school information, by using WordPress Content Management System (CMS).

Student Instructional Assistant, The Ohio State University, Columbus, OH **08/2020 - 05/2021**

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

Vice-president, OSU Table Tennis Club, Columbus, OH **05/2019 - 05/2020**

- Conducted weekly training sessions 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 the 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 **10/2017 - 01/2018**

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

HONORS AND AWARDS

- Dean's List (>3.5 GPA) over five semesters, and graduated with Honor in Engineering, and Honor Research Distinction in Department of Food, Agricultural and Biological Engineering (FABE).
- Awarded 2020, 2021 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 (>five years professional practices, awarded team champion at 2018-19 NCTTA Midwest Tournament), Martial Art (Green Belt, achieved three gold medals in Ohio International Chinese Martial Art Championship), Climbing, Track and Field, Scuba Diving (Certified Open Water Diver), Photography, Cooking, Snowboarding, and Traveling.