**Zhengqi(Drago) Dong**

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| **EDUCATION**  **Boston University, Boston, MA                                                                                 Expected 05/2023**  MS in Robotics & Autonomous Systems  **Ohio State University, Columbus, OH (GPA: 3.67 / 4.0)                                                            08/2017** – **05/2021**  B.S Computer Science Engineering (Minor in Statistics)  Graduated with Enginering Honors Degree, and Honors Research Distinction  **University of Dayton, Dayton, OH (GPA: 3.82/4.0, transferred out) 08/2016 – 05/2017**  **Related Coursework:** Medical Robotic, Robotic Autonouomous System, Cyber-Physical System, Machine Learning, Neural Network, High-performance Deep Learning, Natural Language Processing, Algorithm & Data structure, Operation System, Principles of Programming Languages, Networking, Information Security, Web Development, Database Systems, Probability & Statistic, Statistical Modeling, Spreadsheet and Database Modeling with Excel and Access, Analog & Digital Circuits |
| **PROJECTS AND RESEARCH**  **"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 |
| **MapReduce Emulator,** 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 |
| **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. |
| **NLP Project -- Recommender System,** 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. |
| **Honor Research Project -- Deep-Learning Based Plant Disease Detection**, The Ohio State University 01/2020 - 05/2021   * Developed a self-customized InceptionV4 deep learning * Awarded $5500 scholarship granted by College 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.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. |
| **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. |
| **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. |
| **Web Development Project: Freelance Canvas Web Application**, The Ohio State University 05/2019 - 07/2019   * Designed web frontend interface features such as like, follow, and comments by using 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. |
| **OSU Data-IO 6-hr Competition -- winner of Mid-Ohio Food Bank Challenge**, The Ohio State University 10/2019 - 10/2019   * Reformatted, cleaned, fitted data and produced visualization results for final report. * Conducted time series analysis (identify seasonality/stationarity/trends/autocorrelation) on consumer flow volume and improved logistic management. |
| **2018 IEEE SAC Micromouse competition at Pittsburgh** 01/2018 - 04/2018   * Coded DFS/BFS/Uniform cost/A\* search algorithm with Python on Micromouse robot to search the shortest path in a maze. |
| **SKILLS** |
| **Programming languages**: Python (including Django, Flask, PyTorch, and certified [Google TensorFlow Developer](https://developers.google.com/certification/directory/tensorflow)), and C (including GDB, valgrind, makefile), R (including tidyverse and shiny), Java, Ruby (including Ruby on Rails), SQLite, X86 Assembly Language, HTML, CSS(including Bootstrap), JavaScript(including React.js), MATLAB, Bash Script, LaTeX  **High-Performance Computing Applications:** TensorFlow/PyTorch/LBANN deep learning framework, Horovod/Dask/mpi4py library, and Slurm/PBS scheduler, and experienced with MPI operations, distributed training (model/data/hybrid parrallism)  **Software Applications:** PyCharm, RStudio, Visual Studio, Eclipse, Linux/Unix, Git version control, AWS(Cloud 9), Docker, Heroku, CAD(SolidWorks)  **Hardware Applications:** Arduino, Jetson Nano  **Languages:** Chinese |
| **LEADERSHIP & ACTIVITIES** |
| **WebMaster**, Student Association of Graduate Engineers (SAGE) at Boston University, Boston, MA 08/2021 - Present |
| **WebMaster**, IEEE at OSU Undergraduate chapter, Columbus, OH 01/2018 - 05/2021 |
| **Vice-president**, OSU Table Tennis Club, Columbus, OH 05/2019 - 05/2020 |
| **Student Volunteer**, Mid-Ohio Workers Association, Columbus, OH 10/2017 - 01/2018 |
| **Volunteer of Kroger Pantry Indoor Assistant**, Mid-Ohio Foodbank , Columbus, OH 2017(~30 hr in total) |
| **High School Robotic Team Mentor**, Bonds FRC 5811, OH 11/2016 - 05/2017 |
| **EXPERIENCE** |
| **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). * Oversaw lab sections, maintain weekly office hours, and grade student homework and projects. |
| **AI Team Member, 2019 RoboMaster Competition at Shenzhen** 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. |
| **Student Resident Housing Assistant**, University of Dayton Residential Property, Dayton, OH 05/2017 - 07/2017   * 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 cabinet and wardrobe. |
| **HONORS AND AWARDS** |
| * Dean's List (>3.5 GPA) over five semesters, and graduated with Honor in Engineering, and Honor Research Distinction with 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), Track and Field, Scuba Diving (Certified Open Water Diver), Photography, Cooking, Snowboarding. |