Zhengqi(Drago) Dong

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EDUCATION

Boston University, Boston, MA (GPA: 4.00 / 4.0) **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 FABE.

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 "Research Distinction" or "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.

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.

SKILLS

Related Coursework

- 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

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.
- Required to oversee 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.

HONORS AND AWARDS

- Achieved **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.