BINGZHAO SHAN

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SUMMARY

- Actively seeking 2022 full-time positions
- Quick learner, self-motivated and well-organized developer, efficient team player with leadership
- Proficient Languages/Tools: Python, Java, C, C++, Linux Shell, HTML, MATLAB, SQL, JavaScript, Shell, AWS
- Proficient Concepts: Object-oriented design, data structures, Agile environment, complexity analysis, machine learning
- Interested in Web development, computer vision, and machine learning

EDUCATION

University of Michigan, *Ann Arbor, MI* 09/2020-05/2022 (Expected)
- Master of Science (MS) in Computer Science and Engineering, GPA: 3.93
- Selected coursework: Web Systems, Computer Vision, AI Foundations, Machine Learning, Advanced Compilers

University of Toronto, *Toronto, ON* 09/2015-06/2020
- Honors Bachelor of Science (HBSc), Major in Computer Science, Minor in Mathematics
- Dean's Honor List 2017 Winter, 2017 Summer, 2018 Winter
- Graduated with high distinction
- Selected coursework: Software Design, Computer Organization, Data Structure and Analysis, Databases, Operating System, Programming on the Web, Image Understanding, Machine Learning, Computer Graphics, Computational Linguistics.

EXPERIENCE

Research Scientist | Toyota Research Institute of North America, *Ann Arbor, MI* 09/2021-Present
STEM Co-op | Toyota Research Institute of North America, *Ann Arbor, MI* 05/2021-08/2021
- Supervised by Dr. Chen Ling.
- Designed and trained deep learning models to predict water pressure in fuel cell channels.
- Ported deep learning models to complex fuel cell geometries and significantly reduced fuel cell design costs.
- Reduced model parameters, improved training efficiency by 43% and prediction accuracy by 11%.
- Presented outcomes to our Vice President on behalf of the team.

Grad Student Research Assistant | University of Michigan - Galbal Lab, *Ann Arbor, MI* 01/2021–Present
- Supervised by Dr. Sundaresh Ram and Prof. Craig J. Galban.
- Worked on Lung Segmentation on CT images.
- Developed algorithms based on 3D wavelet transformations using MATLAB.

Research Associate | Aggregate Intellect**,** *Toronto, ON* 01/2020-06/2020
Engineer Associate | Aggregate Intellect**,** *Toronto, ON* 05/2019-12/2019
- Supervised by Dr. Ehsan Amjadian and Prof. Muhammad Rizwan Abid.
- Proposed and developed a "detection + tracking" pipeline for slide matching and achieved 95% accuracy.
- Published a paper as the first author on ICISDM 2020.

Software Developer, Computer Vision | Epson Canada Ltd, *Markham, ON* 08/2018-08/2019
- Supervised by Dr. Jie Wang.
- Research analysis in fingertip detection, touch/hover classification, and segmentation on IR image pairs.
- Improved the accuracy of stereo camera calibration by 3 pixels.
- Independently designed and developed a cross-platform annotation and evaluation system, speed increased by 3x.
- Epson Spotlight Award | Presented to 50+ colleagues on Epson Monthly Meeting | Trained four new interns.

PUBLICATIONS & PREPRINTS

- **Bingzhao Shan**, Muhammad Rizwan Abid, Ehsan Amjadian, "Hybrid Unsupervised Scale-invariant Slide Detection (HUSSD) for Video Presentation", *International Conference on Information System and Data Mining* (**ICISDM**), Hawaii, United States, 2020. (**Oral**)

PROJECT & PROGRAMS

Movie Recommendation Website, *Independent developer*

- Fully responsive server-side dynamic website based on Flask and SQLite, allowing users to get movie information.
- Developed a multi-page wiki crawler, parsed movie information, and stored them in a local database.
- Integrated Twitter API into the web system to get instant movie review.

Client-side dynamic Instagram clone, *team leader and full-stack developer*

- Designed the front-end framework in ReactJS and built the backend using MySQL.
- Deployed the website to AWS.

Interactive Gomoku-GameSearchTree Game, *developer and heuristic designer*

- A digital version of the strategy board game Gomoku using Python with AI-based computer challenger.
- Proposed and implemented the heuristic objective functions for the game tree searching algorithm.
- Optimized the searching algorithm using Min-Max-Cut algorithm, speed of the AI challenger increased by over 70%.

Road Segmentation & Traffic Objects detection, *developer*

- Collaborated with a team of 4 | proposed and trained a SegNet variant in PyTorch | data augmentation.
- Full mark project in UM's grad-level computer vision course.

TEACHING & GRADING

Teaching Assistant, CSC148H1 (UofT, Winter 2020): Introduction to Computer Science

Teaching Assistant, CSC321H5 (UofT, Winter 2020): Introduction to Neural Networks and Machine Learning

Grader, EECS492 (UM, Fall 2020): Intro to Artificial Intelligence