

HAOXUAN ZHU

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EDUCATION

University of Michigan <i>Bachelor of Science in Computer Engineering</i> GPA: 4.0 / 4.0 Course Highlights: Computer Architecture, Machine Learning, OS, Web, Data Structure & Algorithm, Embedded System Honors: Dean's list, University Honors	<i>Sep 2018 - Apr 2020</i> Ann Arbor, MI
Shanghai Jiao Tong University <i>Bachelor of Science in Electrical & Computer Engineering</i> GPA: 3.6 / 4.0 Course Highlights: Systems and Signals, Logic Design (Verilog RTL, FPGA,) Programming (MATLAB, C/C++, Python) Honors: Best Innovation Award, Merit Undergraduate Scholarship, Sunshine Scholarship, Meritorious Winner in 2018 MCM	<i>Sep 2016 - Aug 2020</i> Shanghai, China

RESEARCH EXPERIENCE

Object Detection for Autonomous Driving (Hitachi project) <i>Researcher, University of Michigan</i> <ul style="list-style-type: none">Modified, quantized, and compiled YOLOv3 and MobileNetv1 in tflite, deployed them in TPUs and profiled their inference performanceExpect a 6-7x performance (inference speed) gain over CPU	<i>Sep 2019 - Present</i> Ann Arbor, MI
Software Defined Hardware (DARPA project) <i>Researcher, University of Michigan</i> <ul style="list-style-type: none">Optimized TransPy for a domain-specific processor (TM) and designed test benches for TransPy on a no-ISA emulatorReimplemented social media graph clustering and image classification programs in TransPy and ran simulations with gem5	<i>May 2019 - Present</i> Ann Arbor, MI
Runtime Neural Pruning <i>Researcher, University of Michigan</i> <ul style="list-style-type: none">Designed and implemented a prunable CNN framework with an RNN to dynamically prune neurons based on input complexityAchieved a 5x speedup while maintaining an accuracy of 90%	<i>May 2019 - Jan 2020</i> Ann Arbor, MI
Accelerating Variant Calling for Genome Sequencing <i>Researcher, University of Michigan</i> <ul style="list-style-type: none">Accelerated variant calling by making GATK multi-threaded and assigning PairHMM computations to FPGADeveloped a HOST-FPGA interface that dynamically adjusts the batch structure to minimize overheads and controls FPGAs with Java code	<i>Jan 2019 - Sep 2019</i> Ann Arbor, MI

PROJECT EXPERIENCE

R10K-style 2-way Superscalar Out-of-order Processor <i>Developer, University of Michigan</i> <ul style="list-style-type: none">Designed, implemented, and tested a 2-way superscalar out-of-order processor with SystemVerilogImplemented features such as victim caches and tournament direction predictor to boost performance	<i>Sep 2019 - Dec 2019</i> Ann Arbor, MI
Image Classification (Neural Network) <i>Developer, University of Michigan</i> <ul style="list-style-type: none">Designed a DNN architecture to classify photos by monumentsApplied transfer learning (autoencoder) to augment classification abilities of the CNNsAchieved an accuracy of 0.85 for a 10-category classification problem	<i>Mar 2019 - Jun 2019</i> Ann Arbor, MI
Smart Window <i>Team Leader, University of Michigan</i> <ul style="list-style-type: none">Built a gesture-controlled window with a touchscreen that can self-adjust the opening angle based on multiple weather indicesConverted and wrote C libraries for the touchscreen and the gesture sensor. Integrated peripherals to SmartFusion FPGA with APB3, SPI, and I2C interfaces, and implemented interrupt handlers to update data from sensors	<i>Jan 2019 - May 2019</i> Ann Arbor, MI
Airline Review Evaluation (Supervised Learning) <i>Developer, University of Michigan</i> <ul style="list-style-type: none">Trained Linear/Quadratic-Kernel Support Vector Machines (SVM) to classify the sentiment of twitter reviewsEvaluated various hyperparameters and pre-processing methods with cross-validation	<i>Jan 2019 - Mar 2019</i> Ann Arbor, MI

INTERNSHIP AND ACTIVITIES

University of Michigan <i>Research Assistant, Department of CSE</i> <ul style="list-style-type: none">Conduct research on computer architecture and domain-specific accelerators	<i>Sep 2018 - Present</i> Ann Arbor, MI
University of Michigan <i>Grader, Department of EECS</i> <ul style="list-style-type: none">Graded students' assignments and exam papers	<i>Sep 2018 - May 2019</i> Ann Arbor, MI
Shanghai Jiao Tong University <i>Teaching Assistant</i> <ul style="list-style-type: none">Held office hours and discussions to help students understand course materialHelped design, grade, and proctor exams and assignments	<i>Sep 2017 - Jan 2018</i> Shanghai, China
Network & Information Management Organization <i>Network Manager</i> <ul style="list-style-type: none">Maintained local switches and resolved clients' network problems on site	<i>Oct 2016 - Oct 2017</i> Shanghai, China

MISCELLANEOUS

- Skills:** C/C++, Python, Java, Verilog, JavaScript, React, FPGA, PSpice, MATLAB, Mathematica, LaTeX
- Interests:** Machine Learning, Computer Architecture, Domain-specific Accelerators, Software Development, Embedded System