Zelin (Bobby) Lv

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Education

- **University of Wisconsin-Madison** — Madison, WI
  Bachelor of Science in Computer Sciences (Honors) and Mathematics; GPA: 3.91/4.0 — *Sept 2016 – May 2020*
  - **Thesis**: *Space Complexity of Directed st-connectivity Problems*, advisor: Prof. Dieter van Melkebeek
  - **Awards**: L&S College Dean's List Fall 2016, Spring 2017, Fall 2017, Fall 2018, Spring 2019
  - **Relevant Courses**: Computational Complexity (Graduate-level); Advanced Algorithms (Graduate-level); Theory of Computation; Algorithms; Abstract Algebra; Number Theory; Probability; Optimization; Discrete Mathematics; Machine Learning (Graduate-level); Computer Vision (Graduate-level);

Experiences

- **Independent Study** — Madison, WI
  UW-Madison Computer Sciences Department, mentored by Professor Dieter van Melkebeek — *Feb 2019 - May 2019*
  Proved relationship between Minimum Circuit Size Problem (MCSP) and Ring Morphism problems.
- **Summer Research Intern** — Nanjing, China
  Nanjing University Theory Group, mentored by Professor Yitong Yin — *Jun 2019 - Aug 2019*
  Conducted research on the Data Structure Lower Bound.
  Organized reading group on Communication Complexity.
- **Undergraduate Researcher** — Madison, WI
  UW-Madison Department of Mathematics, mentored by Professor Andrei Caldararu — *Jan 2019 - May 2019*
  Designed the canonical form of ribbon graphs and thus improved the algorithm for computing the homology of moduli spaces of curves.
- **Undergraduate Researcher** — Madison, WI
  UW-Madison Computer Vision Group, mentored by Professor Vikas Singh — *Jun 2018 - Apr 2019*
  Developed an Invertible Neural Network to learn the relationship between different domains and to uncover the hidden parameters.
- **Directed Reading Group Participant** — Madison, WI
  Department of Mathematics, University of Wisconsin-Madison — *Jan 2018 - Dec 2018*
  Participated in two semester-long Directed Reading programs and given presentations in Math Department. Topics: *Burnside's Lemma and Its Application* and *Information theory and Kolmogorov Complexity.*
- **Undergraduate Research Assistant** — Madison, WI
  UW-Madison Human-Computer Interaction Lab, mentored by Professor Bilge Mutlu — *Sept 2017 - Dec 2017*
  Developed a platform for instructing robots with essential ideas of dialogue between robot and human and natural language processing based on OpenDial and ROS.

Projects

- **Impossibility Results for Fairness**:
  Exploring the Algorithmic Fairness problem by proving the computational tractability of non-trivial fairness assignment problem.
- **Super Resolution with Generative Adversarial Networks**:
  Implemented Generative Adversarial Networks model for the image super resolution with TensorFlow.
  Analyzed model performance of image reconstruction with different parameter settings.
  Wrote an academic report with on this project. URL: http://pages.cs.wisc.edu/ blv/super-resolution-generative.pdf

- **Image Style Transfer**:
  Finished an image style transfer which can faithfully transfer the input image into the style of reference image with a deep-learning method with TensorFlow.
  Created a website to illustrate this project. URL:https://sites.google.com/wisc.edu/cs766project/
- **Post-disaster Recovery Modeling**:
  Analyzed and managed data of various scenarios after disaster by building Debris Clearance Scheduling Model (DCSM) and Equipment Allocation Model (EAM) with optimization techniques.
  Implemented with visualization interface on Julia

Skills

- **Languages**: Chinese, English
- **Technologies**: TensorFlow, LaTeX, Jupyter Notebook
- **Programming Languages**: Python, C, Java, Julia, MATLAB