Haomin Lin

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EDUCATION

M.S. in Computational Science and Engineering
Georgia Institute of Technology, Atlanta, GA (exp.) May 2021

- GPA: 4.0/4.0
- Selected Courses: Web Search & Text Mining; Intro Database Systems; Data & Visual Analytics; Modeling and Simulation: Fundamentals & Implementation; Statistical Machine Learning

B.Eng. in Optical Engineering (joint with Nankai University)
Tianjin University, Tianjin, China July 2019

- GPA: 3.6/4.0
- Selected Courses: Probability Theory and Mathematics Statistics; Fundamentals of Computer Software; Linear Algebra

RESEARCH EXPERIENCE

Research Assistant, Georgia Institute of Technology Sept 2020 - Now
Supervised by Prof. Munmun De Choudhury

- Investigated how media portrayed immigrants throughout the years by analyzing the coverage of different media on immigrants dating back to last century. My main task so far is to collect valid data and pre-processed it.
- Collected related data from GDELT project with the help of Google BigQuery for the analysis on immigrant-related topics and searched for more data under this topic.

Research Assistant, Northwestern University July 2020 - Sept 2020
Supervised by Prof. Ágnes Horvát

- Investigated online media on COVID-19 during the early months of the pandemic across different platforms including news, blogs, and discussions. A full paper of this work was submitted to ICWSM-2021.
- Analyzed data under different themes and from different platforms with time series analysis to extract the difference in trends of coverage amount and sentiment scores.
- Ran statistical tests including ANOVA tests and Tukey HSD tests on linguistic features of postings from different platforms to identify the disparity in the language usage on different platforms.

Research Assistant, Indiana University May 2020 - Aug 2020
Supervised by Prof. Xiaojing Liao

- Helped to build up the database of a knowledge graph used to evaluate vulnerabilities in industrial control systems. My main task was to develop a dictionary consisting of key information from security reports on the website of ICS-CERT Advisories.
- Scraped 1,316 network security reports from website of ICS-CERT Advisories as pure text and pre-processed it with BeautifulSoup to remove tags and reorganize the information.
- Extracted information of 4,989 products, 2,943 vulnerabilities, and other general information from structured/unstructured text data and transformed it into generic words that represent the features of vulnerabilities with regular expressions and POS tagging.

Research Assistant, Purdue University July 2018 - Sept 2018
Supervised by Prof. Meng Cui

- Assisted in constructing an optical system that assessed the performance of a Structured Illumination Microscopy algorithm on different kinds of animal tissues. My work focused on creating a tool to control the lens that receives and moderates incident light.
- Designed and produced components including holders and gears with 3D printing that perfectly hold the lens and the motor so that the motor can drive gears to adjust lens.
- Created a GUI program in Python to interface with the motor so that the lens can be adjusted in optical

experiments manually and automatically.

Research Assistant, Nankai University Feb 2017 - Mar 2018
Supervised by Prof. Yange Liu

- Explored different fiber structures in order to find a structure that absorbs most energy with 980nm wavelength laser light source for mode conversion in light information transmission.
- Conducted several experiments on fibers engraved with different structures and collected corresponding energy absorption data to make visualizations of different absorption peaks under different fiber structures.
- Analyzed the results in visualizations to find the fiber structure in the following experiment and found out the structure most ideal for mode conversion.

Research Assistant, Huaqiao University July 2017 - Aug 2017
Supervised by Prof. Jixiong Pu

- Studied the method of focusing laser beams that diffuse when going through opaque scattering media. My main accomplishment is realizing a multi-focused laser light field that generates several high resolution focusing points with a spatial light modulator.
- Implemented a Genetic algorithm with the modulator to adjust the phase distribution in the light field so that different focusing points can be produced in the diffracted laser light field.
- Collected light field data of different modulator settings and adjusted the parameters according to visualizations of variations in the light field's key features for optimizing the resolution of focus points.

PUBLICATIONS

Dambanemuya, H.K., **Lin, H.**, and Horvát, E-Á. Characterising Online Media on COVID-19 during the Early Months of the Pandemic. AAAI: International Conference on Web and Social Media (ICWSM). In review: submitted.

PROJECTS

Simulation of rumor spreading in social network Spring 2020
ECE 6730 @ Georgia Tech

- Studied how a rumor would spread with the co-existence of people believe or disbelieve it in a small social network. Developed a software to simulate the process in a network with spatial information using Discrete Event Simulation.
- Constructed a simulated crowd based on SIR model with another role that clarifies the rumor, and modeled the rumor spreading with features that determine individuals' opinions including conversation length, chances of convincing, etc.
- Validated the output of simulation system through statistical analysis like confidence interval to compare the results with previous research and created visualization on the spatial distributions of the crowd's opinions.

Community & Digital Archives Project Spring 2020
VIP 6603 @ Georgia Tech

- Worked on the development of Allen Archive website at Georgia Tech to assist administration of archive files and moderation on users of the website.
- Produced a plugin to identify negative comments by flagging it in the web database for administrators to moderate certain comments using sentiment analysis in PHP with the help of VADER lexicon.
- Classified all the map image files by training a Machine Learning model based on Transfer Learning in Tensorflow to recognize different kinds of maps with accuracy over 90%.

Revealing Gendered Language in Job Descriptions Spring 2020
CSE 6240 @ Georgia Tech

- Investigated whether the usage of gender languages in job postings online is unbalanced based on text data from Indeed.com. My analysis focused on the variations in different salary levels and industries.
- Trained classifiers with Ensemble Learning to make prediction on salary levels of job postings that don't have salary information to get more data, achieving 87% accuracy.

- Categorized job descriptions into 16 industries by counting the frequencies of keywords from each industry and analyze the gender scores in each industry.

PROFESSIONAL EXPERIENCE

Research Technician Intern, HC SemiTek Corporation, Yiwu, China Jan 2018 - Feb 2018

- Investigated the needs on different product features to find the one needs improvement the most by analyzing the data of customers' preference on products with Pandas and NumPy. The the most desired feature was determined with the strategy team as durability.
- Studied the Metal organic chemical vapor deposition (MOCVD) growth of GaN based LED to design a new recipe with a 10-people research team for manufacturing wafer extenders that can improve the life expectancy of LED products.
- Ran simulation to investigate the features of products produced by different recipes and managed to finalize a novel recipe whose improvement on product's durability is later validated by the experiment results.

COMPETENCIES

Techniques Python, SQL, JavaScript, D3.js, Tableau, SciKit-Learn, Hadoop, R, PHP, HTML

HONORS & AWARDS

- Nankai University Gongneng Scholarship (2016-2017)
- Tianjin University Sanhao Student Award (2017-2018)