Hanson Lu

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EDUCATION

Stanford University, *M.S.* Computer Science expected Jun 2022
- Specialization in Artificial Intelligence

The University of Chicago, *B.S.* Computer Science with honors and *B.A.* Linguistics with honors Jun 2020
- Computer Science Specialization in Machine Learning
- *Summa Cum Laude*, *Member of Phi Beta Kappa*, *Leonard Bloomfield Prize Recipient* (highest GPA in linguistics majors)
- CS Coursework: Deep Learning, NLP, Computer Architecture, Networks, Databases, Algorithms, Statistical Theory, Probability

EXPERIENCE

Full-Stack Developer, Lu's Dermatology Clinic, Wuhan, China July 2020 – Present
- Develop new web application to serve over 1000 patients monthly for family-owned clinic
- Create time-slot scheduling and appointment interface using Bootstrap, JavaScript, and the WeChat Mini App framework
- Implement backend API using Python Flask; designing scalable database schemas with MySQL and SQLAlchemy
- Reduce patients' and staff's time for making appointments by at least 70% compared to current methods

Software Developer, Linguistica Project, University of Chicago Jun 2018 – Dec 2018
- Developed Linguistica, a software for linguists to analyze word structure, with team led by Prof. John Goldsmith
- Programed new functionalities in C++ for Linguistica such as file save/load and GUI components on the Qt 5.11 platform
- Implemented prefix tree-based algorithm for compound word discovery

Programmer, Radioglass, Game Design Club, University of Chicago Jan 2018 – Dec 2018
- Brainstormed and designed game mechanics for Radioglass, a role-playing game, in collaboration with team
- Constructed finite state machine AI for in-game creatures, implemented dialogue system using GameMaker Studio2

Backend Developer, Hack4Impact, University of Chicago chapter Apr 2018 – Jun 2018
- Developed website for the Transgender Law Center that helps transgender individuals navigate legal documents and procedures
- Designed and implement back-end data structures for storing legal documents and login system using Go and SQLite

RESEARCH

Research Assistant, Natural Language Processing Group, Stanford University Aug 2020 – Present
- Research systematic and modular behavior in neural network NLP systems using activation interventions, advised by Chris Potts
- Construct artificial datasets, train and tune CNN, RNN and Transformer models, implement experiment frameworks
- Expect to present work at Society for Computation in Linguistics 2021 (SCiL 2021)

Student Researcher, **Department of Linguistics and Computer Science,** University of Chicago Oct 2019 – Jun 2020
- Researched applications to coreference resolution of the Rational Speech Acts (RSA) model, a probabilistic model for pragmatic text understanding; advised by Allyson Ettinger and part of honors BA thesis project
- Implemented and trained Transformer and RNN-based referring expression generator, as part of the RSA model
- Boosted state-of-the-art baseline model's correct rate in predicting long distance links by 10-20%

Research Intern, Center for the Study of Language and Information (CSLI), Stanford University Jun 2019 – Dec 2019
- Explored applications of the RSA model in automatic text summarization, advised by Chris Potts
- Integrated the RSA model with a pointer-generator neural summarizer in PyTorch
- Increased sentence processing efficiency by 2000x compared to iterative prototype, using vectorization and profiler analysis
- Presented research at concluding seminar at CSLI and at Undergrad Research Symposium at UChicago

SKILLS

- Programming/Scripting Languages: Python, C, C++, Java, JavaScript, HTML, CSS, Go
- Frameworks/APIs/Protocols: Flask, MySQL, PyTorch, TensorFlow, SQLite, Qt, TCP/IP
- Natural Language Processing: Text Classification, Sentiment Analysis, Text Summarization, Coreference Resolution
- Spoken Languages: Fluent in Mandarin Chinese, intermediate fluency in Japanese, elementary Spanish