

Alec F. Helbling

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Education

Georgia Institute of Technology | 3.95 GPA

August 2018 – Present

Bachelor of Science in Computer Science

Expected Graduation, December 2022

Experience

IBM Research

May 2021- August 2021

AI Research Intern | Foundations of AI Reasoning Group

- Designed algorithms for reducing the complexity of knowledge graphs for single and multi-document summarization using unsupervised learning techniques based on optimal transport theory
- Used Pytorch Geometric for processing Graph Neural Networks and BERT Transformers for representing document graphs in an NLP Pipeline
- Presented my project at a DARPA Knowledge-directed Artificial Intelligence Reasoning Over Schemas on site review

Microsoft Azure Intune

May 2020 - August 2020

Software Engineering Intern | Insight and Analytics Group

- I designed a distributed data analytics pipeline using a microservice architecture for efficient load balancing of incoming events for Intune's mobile device management services
- The changes resolve the classic noisy neighbor issue(lack of use case isolation), and saves >\$10,000 per month in server costs due to reduced latency in addition to securely isolating customer data and improving system administration experience

NASA Jet Propulsion Laboratory

May 2019 - August 2019

Summer Intern | Machine Learning and Instrument Autonomy Group

- Implemented methods of visualizing and interpreting large datasets using classical machine learning approaches for applications like Mission Operations, Flight Dynamics, and Mars Rover Geological data
- Utilized React.js and Redux for front end development, python websockets for the backend, and python for machine learning modeling to allow for dynamic data querying, visualizations of random forests and decision trees, and the iterative labeling of unlabeled datasets

Georgia Institute of Technology

January 2019 – Present

Student Researcher | Sensory Information Processing Lab(SIPLab) / CORE Robotics Lab

- Developed deep learning approaches to generative modeling using variational autoencoders and information theory, and novel approaches to searching their learned representation
- We plan for this work to go towards a first author publication in a premier ML conference like NeurIPS, AAAI, or ICML
- I won an NSF Research Experience for Undergrads Award to work on this topic
- Designed differentiable decision tree neural network architectures using pytorch for reinforcement learning robotic applications

University of Pittsburgh School of Medicine

March 2016 – August 2018

Student Researcher and Javascript Programmer | Department of Computational and Systems Biology

- Implemented interpretable visualizations of Convolutional Neural Network based deep learning models to find drug candidates for protein structures . (See publication below)
- Developed a Javascript WebGL based molecular visualizations library called 3Dmol.js with hundreds of users and over 450 stars on Github (see at <https://github.com/3dmol/3Dmol.js>)

Publications

University of Pittsburgh School of Medicine | Pittsburgh, Pennsylvania

September 2018

Title - Visualizing Convolutional Neural Network Protein-Ligand Scoring

Journal of Molecular Graphics and Modeling

- Co-authored a paper more than 50 citations on visualizing deep learning methods for discovering novel drugs using 3D analogs of convolutional neural networks (traditionally computer vision approaches)
- See at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6343664/>

Skills

Programming(proficient in): Python, C, C++, Java, C#, Javascript, Node.js, React.js, HTML, CSS

Software Tools: Tensorflow, Caffe, Numpy, Sklearn, React.js, Redux, Numpy, Docker, Linux, Git, Bash, SSH, Unity