Dylan Lewis

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Cambridge, MA

Education

Massachusetts Institute of Technology — Cambridge, MA
Masters of Engineering in Electrical Engineering and Computer Science; GPA: 5.0/5.0 — *Expected May 2022*
Thesis: Automating Crowdsourced Crisis Report Assessment for Enhanced Crisis Awareness and Response — *Concentration: Artificial Intelligence*

Massachusetts Institute of Technology — Cambridge, MA
Bachelor of Science in Electrical Engineering and Computer Science; GPA: 4.3/5.0 — *May 2020*

Relevant Coursework: Software Studio; Software Construction; Data Structures & Algorithms; Computer Systems Engineering; Statistics, Computation, & Applications; Statistics for Engineers & Scientists; Advanced Natural Language Processing; Machine Learning; Machine Learning & Data Science in Politics; Probability; Linear Algebra; Matrix Methods for Data Analysis, Signal Processing, & Machine Learning

Skills

- **Programming Languages**: Expert:{ JavaScript, Python }; Proficient:{ Java, R, SQL } **Technologies**: Docker, Git, Linux
- **Libraries & Frameworks**: TypeORM, NestJS, Vue.js, React, Redux, NumPy, pandas, Matplotlib, PyTorch, scikit-learn, SciPy, NetworkX

Experience

MIT Urban Risk Lab — Cambridge, MA
Research Assistant — *September 2020 - Present*

- Researching Deep Learning models for Japanese Crisis Text classification using crowdsourced crisis text data
- Designed system and constructed the backend for a web app which assists Crisis Managers during crisis events through triaging crowdsourced crisis reports by leveraging AI methods using TypeORM, PostgreSQL, RDS, NestJS, AWS S3, AWS ECS, and Docker
- Developed a documented Python package for training, testing, and predicting with a variety of pretrained CNNs for classifying crowdsourced crisis image data during crisis events using PyTorch and scikit-learn as well as tools for constructing, visualizing, and analyzing labeled datasets using pandas, NumPy, Matplotlib, statsmodels, and scikit-learn
- Organized annotation efforts to construct robust, labeled crowdsourced crisis datasets for training and evaluating machine learning models incorporating domain-expertise to design useful prediction classification tasks and their respective labels
- Defined and mentored undergraduate research projects adjacent to my thesis research

MIT Department of Electrical Engineering and Computer Science — Cambridge, MA
Software Studio Teaching Assistant — *September 2020 - December 2020*

- Led recitation sessions covering the fundamentals of software design from pencil & paper concept ideation and UI/UX wireframing to full-stack web application development
- Received an average rating of 6.8/7 by students for stimulating their interest in the subject and showing thorough knowledge of the subject material and 6.9/7 for supporting student learning

Southwest Research Institute — San Antonio, TX
Software Engineering Intern — *June 2020 - August 2020*

- Developed a full-stack web application with React, Redux, TypeScript, Google Protocol Buffers, CouchDB, and Docker
- Designed UI/UX of the application by iterating on the React-Redux frontend based on feedback from peer review

Projects

- **Evolution of the U.S. TV News Narrative on Climate Change**: Data Science & NLP project in Python that investigated the evolution of climate change coverage frequency & content between U.S. TV News Networks CNN, Fox News, and MSNBC over Jul. 2009-Jan. 2020.
  - Constructed TFIDF embeddings for documents made from climate change news audio transcripts based on network, year, and network & year combinations to extract the most important words to each network, to each year, and to each network in each year
  - Computed cosine similarity between document embeddings to have a measure of content similarity between the documents to see how climate change coverage content differed between the networks over time
- **Supervised & Unsupervised Methods for Evidence Synthesis in International Development Gray Literature**: Python NLP project that used supervised & unsupervised methods to optimize the manual evidence synthesis process in International Development Gray Literature
  - Evaluated various text inputs and pretrained SpaCy Named Entity Recognition (NER) models against a simple baseline model to extract Country of Study (CoS) associated with each international development paper in the corpus and to perform CoS classification
  - Used the concatenated title and abstract as input to a pretrained Transformer NER model that achieved an accuracy of 91.0% on the entire corpus for CoS classification to enable filtering unlabeled corpora for papers by predicted CoS with high accuracy
- **Boomerang**: Full-stack web application where users can efficiently and reliably borrow items from others within their communities.
  - Drafted UI/UX wireframes and implemented full-stack functionality for login page and sign up flow in Express.js and Vue.js
  - Developed central concepts to meet application's purpose and to create database schemas