

# Shihao Ran

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## Summary

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Ph.D. student in Electrical and Computer Engineering pursuing a career as a Data Scientist.

## Education

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### University of Houston

Houston, TX

PH.D. ELECTRICAL AND COMPUTER ENGINEERING

Aug. 2015 – Expected: May 2020

### University of Electronic Science and Technology of China

Chengdu, China

BACHELOR OF SCIENCE, ELECTRICAL ENGINEERING

Sep. 2011 – Jun. 2015

## Skills

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**Programming** Python (primary), JavaScript

**Data Analytics** SQL, Tableau, Excel, MATLAB, R, Apache Spark

**Web/Media** HTML/CSS, Flask, D3.JS, Docker, Photoshop, AWS

## Internship

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### Research Intern, Dataminr – AI Team, New York, NY

Sep. 2019 – Dec. 2019

- Designed and implemented multiple data analytics and visualization strategies for end customers and internal stakeholders based on the company's product and internal data sets.
- Deployed an AI-integrated timeline visualization platform (web-based) for retrospective analysis of large-scale events, taking care of both front-end (design, implementation) and back-end (model training and data processing).

## Academic Projects

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### Deep Learning and Phase Retrieval in Holographic Imaging (CNN, ANN)

Aug. 2018 - Now

- Developed a chemical holographic imaging system in the mid-infrared range for biomedical phase-sensitive imaging.
- Optimized the ill-conditioned inverse problem using **Keras**-based Convolutional Neural Network (CNN) and Artificial Neural Network (ANN), achieved regression models with high-accuracy (>**99.51%**) and low noise sensitivity (<**2.48%**).
- Published [4 research articles](#) (with 14 citations) on Optics Express and IEEE journals.

### Predicting Molecular Properties Competition (LightGBM)

Jul. 2019 – Sep. 2019

- Built ensemble models (LightGBM) to predict the scalar coupling constant between pairs of atoms in a molecule.
- Engineered more than 150 additional features based on the type of coupling and the structure of the molecule.
- Implemented secondary feature engineering models for predicting meta-features. Decreased log MAE by **19.08%**.

### Real-time Twitter Analysis Web Application (Dash, Docker, AWS)

May 2019 - Jun. 2019

- Developed a real-time analytics application on the cloud for [Twitter data streaming](#) and [visualization](#) (Python).
- Implemented functionalities to track the most recent tweets for specific topics and display the changing trend of most-frequently-used words, including the corresponding sentiment analysis.

### NLP: Automated Twitter User Tagging (SVM)

Apr. 2019 - May 2019

- Built a Python pipeline to connect Twitter API and a PostgreSQL database for automated text mining and data migration.
- Developed a binary Support Vector Machine (SVM) classifier to identify and tag Twitter users by their profile description.
- Benchmarked various models, including Logistic Regression, Random Forest, K-Nearest Neighbors, and Linear SVC for text classification. The SVM model achieved a **0.925** precision and a **0.929** recall.

## Publications

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- **S. Ran**. et al. "Mitigating fringing in discrete frequency infrared imaging using time-delayed integration," Biomed. Opt. 832-843 (2018).
- C. Wu, H. Le, **S. Ran**, M. Singh, I. V. Larina, and K. V. Larin, "Comparison and combination of rotational imaging optical coherence tomography and selective plane illumination microscopy for embryonic study," Biomed. Opt. (2017).