

KO-FAN (KATIE) HUANG, PHD

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in katiehuang1221

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Skills

SOFTWARE

Python
MATLAB
AutoCAD
Illustrator

DATABASES

PostgreSQL
MySQL

DATA WRANGLING

Pandas
NumPy
PySpark

MACHINE LEARNING

Regression
Classification
Natural Language Processing
Computer Vision
Neural Networks

VISUALIZATION

Matplotlib
Seaborn
Altair
Gephi
Tableau

WEB SCRAPING

BeautifulSoup
Selenium

OTHER

Git
Streamlit
Google Cloud
AWS

Experience

Metis

Data Scientist

Jan. 2021 to Current

- An immersive 12-week data science bootcamp focusing on Python programming, project design, data wrangling, statistical modeling, machine learning and communication of deliverables

Kim Lab, Harvard University

Associate Researcher

Cambridge, MA
Sept. 2020 to Current

Overseeing projects of hybrid superconductor-graphene quantum devices

- Data analysis and visualization
- Data interpretation supported by theoretical calculations
- Communication of experimental results to project stake-holders

Harvard University

Graduate Researcher

Cambridge, MA
Aug. 2014 to May 2020

Quantum transport of hybrid 2D materials-superconductor devices:

- Development of nano-fabrication recipes
- Experiment design and signal processing
- Simulation and modeling of physical systems
- Journal reviewer and referee for ACS Nano Letters

Teaching Fellow

Fall 2014

Course: Physical Sciences 2 (Introduction to classical mechanics)

- Designed content and led sections

Projects

PICTURE PURRFECT WITH COMPUTER VISION

- Created an algorithm to auto-select the best frame of a pet cat from a given short video
- Performed feature engineering based on image processing, blur detection, object detection (custom trained YOLO detector with convolutional neural network and cloud computing)
- Built an interactive web app (Streamlit) for users to upload videos and obtain the best picture selected by the algorithm, including options for customized selection (Github repo)

AN ANALYSIS OF U.S. COMMENCEMENT SPEECHES

- Used natural language processing to analyze 400+ transcripts of commencement speeches in the U.S.
- Web scraped (BeautifulSoup, Selenium) speaker and institute info for each speech
- Performed topic modeling (NMF, LDA), sentiment analysis (VADER), network analysis (networkx)
- Identified the common traits of speeches given by leaders in different fields, and how the speeches are distinct for different target audience (Github repo)

HR ANALYTICS

- Used a classification model (logistic regression) to predict if a candidate is looking to switch jobs based on information such as credentials, education, and related experience
- Created an interactive web app (Streamlit) for users to explore candidate data and used customized metrics for the model (Github repo)

PREDICTING REVENUE OF MOVIE ADAPTED FROM NOVELS

- Web scraped (BeautifulSoup, Selenium) movie information from IMDb, book information from Goodreads, FictionDB and author popularity with time filter on Google.
- Used a linear regression model to predict the opening weekend revenue of movies adapted from novels. (Github repo)

INDUCING SUPERCONDUCTING CORRELATION IN QUANTUM HALL EDGE STATES

- Employed a unique device design and successfully created a hybrid superconductivity-quantum Hall edge state system in graphene
- Impact: opens a new route to realizing universal quantum computing

REALIZATION OF COOPER QUARTET ANDREEV BOUND STATES IN 2D SYSTEM

- Constructed graphene-based multi-terminal Josephson junctions to host the previously elusive Cooper quartet Andreev bound states (ABS)
- Observed interference between different quartet ABS
- Impact: paved the way to creating artificial topological materials using multi-terminal Josephson junctions

Education

Harvard University

Ph.D. Physics 2020

M.S. Physics 2015

Sept. 2013 to May 2015

University of Edinburgh

Visiting student

Jan. 2013 to June 2013

National Taiwan University

B.S. Physics 2013

Sept. 2009 to June 2013