Bill Y Sun

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EDUCATION

Columbia University, New York, NY — Aug 2020 – present
- GPA: 3.95 (weighted)
- Enrolled in Fu Foundation School of Engineering and Applied Science. Major: Computer Science
- Activities and Societies: Columbia Robotics Club, Columbia Economics Society, Columbia Organization of Rising Entrepreneurs

Georgia Institute of Technology, Atlanta, GA — Aug 2018 – May 2020
- GPA: 4.0/4.0 (unweighted)
- Dual Enrollment Coursework: Linear Algebra, Multivariable Calculus, Applied Combinatorics, Differential Equations

Walton High School, Marietta, GA — Aug 2016 - May 2020
- GPA: 4.0/4.0 (unweighted)
- Activities and Societies: Chamber Orchestra, Math Honor Society, Science National Honor Society, Cryptocurrency Club

RESEARCH EXPERIENCES

Remote Research Intern, Digital Video and Multimedia Lab, Columbia University, New York, NY — Aug 2020 – Jan 2021
- Project – "Improving Few-Shot Object Detection through Attention-RPN and Enhanced Multi-Relation Detector"
  - Implemented Faster RCNN-based object detection algorithm on the 2014 COCO Dataset
  - Developed an improved module for few-shot classification using PyTorch and Detectron2 in Python

Research Intern/ Independent Study, Computer Science Dept., University of Miami, Miami, FL — Aug 2018 – Aug 2020
- Project – "Machine learning as a surrogate for stress analysis in artificial heart valve design"
  - Compared performance of autoencoder-based neural network and feed-forward neural network in predicting stress and deformation of aortic valves under systolic pressure using MATLAB, Python, Keras, and Tensorflow
- Project – "Deep Convolutional Neural Networks for Malaria Parasite Identification in Thin Blood Smear Images."
  - Developed You-Only-Look-Once object detection algorithm to segment individual blood cells from entire smear image
  - Used standard convolutional neural network to classify individual cells as either infected or uninfected by malaria parasite
  - Created web app using Flask library in Python to host these deep learning models

Research Intern, Bioinformatics and Bio-Imaging Lab, Georgia Institute of Technology, Atlanta, GA — June 2019 – July 2019
- Project – "Universal Lesion Detection through the You-Only-Look-Once Algorithm"
  - Compared performance of Faster RCNN, You-Only-Look-Once, and other object detection algorithms to detect and classify various types of lesions (e.g. bone, liver, lymph) from assorted CT images using Keras and Tensorflow

PROJECTS

X-Malaria (https://malariadiagnosis.pythonanywhere.com)
- Developed web app with Flask Python backend that performs deep learning-based malaria diagnosis from blood smear images

StyleTransfer (https://styletransfer1.pythonanywhere.com)
- Created web app with Flask Python backend that automatically styles user images with various famous artwork styles (e.g. Picasso, Kandinsky), via open-source neural style transfer algorithm on tensorflow_hub library

CovidSupplyShipper (https://github.com/billsun9/mern-covid-app)
- Coded a web platform using MERN stack (React.js, Express, Node.js, MongoDB Atlas) that connects people who need emergency supplies and resources during the COVID-19 pandemic to those who need it
- Frontend incorporates Google Maps and Google Geocoding APIs to process location data

Summarizr (https://summarizr1.pythonanywhere.com/)
- Developed a graph weighting-based extractive text summarizer using NLTK in python; also implemented as a chrome extension
- Summarizr won "Best ML Hack" at Columbia's DevFest '21 Hackathon

PUBLICATIONS

1. Liang L and **Sun B** "A Proof of Concept Study of Using Machine-Learning in Artificial Aortic Valve Design: From Leaflet Design to Stress Analysis", Bioengineering. 2019 Nov 8;6(4). pii: E104. doi:10.3390/bioengineering6040104.
2. **Sun B** and Liang L, "Towards a robust and affordable approach for automated malaria diagnosis from microscopy images," Eighth International Conference on Learning Representations (ICLR), Addis Ababa, Ethiopia, April 26-30, 2020

SKILLS

Languages: Python, JavaScript, Java, MATLAB, SQL, HTML, CSS,
- Python Libraries: SciPy, NumPy, Pandas, Pillow, OpenCV, Matplotlib, Scikit-Learn, Keras, TensorFlow, PyTorch, and more!
- Other Frameworks/Tools: Bootstrap3, React.js, Node.js, MongoDB, Flask, Google Cloud APIs, Git