

Yifan Yang

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Areas of Interest

Natural Language Processing, Common Sense Reasoning, Algorithms, Machine Learning.

Education

Current	PhD in Computer Science, University of Maryland College Park.
2020	BS in Computer Science with honors, University of Maryland College Park.

Skills

Programming: Python, R, Ruby, C, C++, Java, OCaml
Data Management: MySQL

Research Experience

Current	BIKESHARE: E-bikes Effect on Mode and Route Choice: a Case Study of Richmond, VA , with Dr. Vanessa Frias-Martinez
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This project aims to find the effect of electric-assist bikes (e-bikes) on the mode and route choice decisions of bikeshare users, providing recommendations on bike infrastructure, place and route guidance.

2018 - 2020	Undergraduate Research Assistant in Dr. Héctor Corrada Bravo's lab, Center for Bioinformatics and Computational Biology.
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My research focuses on the development of computational packages for querying and analyzing genomic data directly from files. This involves parsing, caching and optimizing the index of genomic files for range queries. In addition, I worked on developing a scalable index to query genomic data from a large collection of files using Quadtree based approach.

2019	Video OCR pipeline based on Mask R-CNN and shuffleNet (Google Summer of Code)
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I worked on developing a machine learning pipeline to extract text from videos (mainly news). The workflow uses Mask R-CNN that takes shuffleNet as a backbone to detect text fragments, Tesseract OCR to detect text and dynamically merges these to eliminate duplicates and increase

accuracy.

Publications

IN PREPARATION FOR SUBMISSION

Current (*Equal Contribution) Jayaram Kancherla*, **Yifan Yang***, Hector Corrada Bravo. Scalable index for accessing collections of functional genomic data using Quadtree.

JOURNALS

2020 Jayaram Kancherla, **Yifan Yang**, Hyeyun Chae, Hector Corrada Bravo, Epiviz File Server: Query, Transform and Interactively Explore Data from Indexed Genomic Files, Bioinformatics, btaa591, <https://doi.org/10.1093/bioinformatics/btaa591>
Poster & Presentation at ISMB 2019.

Research Projects

- 2019 Quizbowl Question Generation Using Attention-based LSTM
Generate questions using open knowledge and quizbowl question set. The model encodes the knowledge input and translates the encoded meaning vectors to question (as sentences) with the help of an attention vector.
- 2019 R-CNN, Fast R-CNN, Faster R-CNN and Mask R-CNN: Techniques and Differences
A detailed report on how each neural network works and solves object recognition in images. I re-implemented and extended Mask R-CNN for the Google Summer of Code project.
- 2018 Segmenting Deformable Object from a Given Video Sequence
Trace an object through continuous frames using probability color and shape model. This work is based on the Video Snapcut paper of Bai et al.
- 2018 Reconstructing 2-D Structures from Drone Captured Videos
Solves Simultaneous Localization and Mapping (SLAM) problem using GTSAM.
- 2018 Route Planning in Maps with Random Steering Error
Solve route finding in a maze with speed constraint and random steering error. I developed a formula for the optimal speed and a minimal caching for the map.