Ashley D'Souza

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Education

Rice University
2017 - present
Houston, TX

- Computer Science, graduating May 2021, GPA: 3.21

Westwood High School
2013 - 2017
Austin, TX

- GPA: 4.0/4.0 (5.58/5.0 weighted), National Merit Scholar, Graduated May 2017

Conference Presentations

PyoFuel: Using Python and Pathway Tools to engineer synthetic biofuel
Sole Author more
Dec 2016
Colorado

- Int'l. Soc. for Computational Biology / Rocky Mountain Bioinformatics Conference (poster session)

Projects

Lentil - A Musician's Feedback Service
Independent Project repo demo
Summer 2018 - present

- Conceive, design, and implement a web-based musician feedback service (ReasonML + React)
- Musicians submit recordings of performances and receive pointed feedback from teachers
- Front-end with ReasonML + React, back-end with Hasura's GraphQL + Postgres database

Physics Sunset
Independent Project repo demo
Summer 2017

- Design and implement browser-based interactive graphical simulation of a physics problem (ReasonML)

Disease Transmission Analysis
Spring 2018

- Design and implement rooted-directed minimal spanning tree algorithm (Python)
- Analyze genetic + epidemiological data from 2011 disease outbreak to infer the disease transmission tree

DNA Sequence Alignment
Spring 2018

- Design and implement DP solutions to two DNA sequence alignment problems (Python)
- Align human and fruit-fly protein sequences to identify the PAX domain within the "eyeless" gene

Phylogenetic (Evolutionary) Trees
Spring 2018

- Infer the optimal evolutionary tree, given DNA sequences for the leaf taxa (Python)

Hidden Markov Models and Part-of-Speech Tagging
Spring 2018

- Implement statistical learning of HMM using training corpus of pre-tagged sentences (Python)
- Implement Viterbi algorithm to assign part-of-speech tags to new sentences using trained HMM

Chef Arduino
Independent Project repo
2010 - 2011

- Conceive, design, build, and program an Arduino-based robot to test properties of food samples

Software Development Skills

Programming Languages & Frameworks
2013 - present

- Proficient: Python, Java, ReasonML/OCaml, React
- Basic: C, Racket, Pyret, Elm, Html, Numpy, Hasura's Postgres + GraphQL

Software Design
2013 - present

- Systematic Program Design - Designing Data & Functions, EdX course based on HtDP2
- Basics of functional programming with types

Software Testing
2017 - present

- Test-driven development, unit-tests, property-based tests
- Python testing using Pytest, Java testing using JUnit 5 & QuickTheories

Work Experience

UT Austin Summer Research Academy - College of Natural Sciences
Summer Intern
2015, 2016
Austin, TX

- DNA extraction, splicing, and recombineering of the DHX35 gene using E. coli
- Worked with Dr. Al Mackrell in the Vertebrate Interactome Mapping Lab
- Conducted computational Flux Balance Analysis on cyanobacteria engineered for biofuel

Organizations and Activities

- CSters: Women in Computer Science, Rice University — 2017 - present
- CS Club, Rice University — 2017 - present
- Society of Women Engineers (SWE), Rice University — 2017 - present
- SASE: Society of Asian Scientists and Engineers, Rice University — 2017 - present
- Club Tennis, Rice University — 2017 - present
- Music: sing, record, perform, take lessons soundcloud youtube — 2007 - present
- PyLadies: Austin community of women Python programmers, team programming, presentations — 2015 - 2017