

BERK ALP YAKICI

Houston, TX 77005 • +1 (713) 859 54 83 • bay@rice.edu • berkalpyakici.com

EDUCATION

Rice University, Houston, TX

Expected 2022

Bachelor of Science in Computer Science, Minor in Data Science and Mathematics - GPA: 3.88/4.00

TECHNICAL SKILLS

Software Engineering

Python, Java, C/C++, SQL/NoSQL, JavaScript, PHP, CSS, HTML

Algorithmic Thinking & Math

Dynamic, Parallel & Concurrent Programming, Linear Algebra, Number Theory

WORK EXPERIENCE

Undergraduate Researcher at Rice University CS Bioinformatics Group, Houston, TX

May - August 2020

- Worked with Prof. Luay Nakhleh on an heuristic divide-and-conquer approach for phylogenetic network inference.
- Wrote an experiment platform on **Java** and **Python** that builds a hitting-set problem and generates the minimal set.
- Utilized 3-SAT solver, graph search algorithms (i.e. **DFS** and **BFS**), and data structures (i.e. **binary** & **spanning trees**).
- The platform reduced the input size from 680 to ~ 30 , coinciding with a $\sim 22.67x$ **speedup** and $\sim 1,625$ less CPU-hours in 24 test cases of varying difficulties. 23/24 test cases successfully produced correct phylogenetic networks.

Back-end Software Engineer Intern at OpenStax, Houston, TX

May - August 2019

- Wrote internal software on **Django** and **Python 3** such as a metadata scrapper and an import/export tool to transfer content in between content-management servers. The software is later open-sourced and maintained on **GitHub**.
- Parsed **Salesforce** data and wrote visualization tools using **MapBox** API to measure and track adoption rate.
- Wrote **OAuth 2.0** interface to allow external services to securely communicate with OpenStax services.
- Focused on automated unit testing and increased the project **code coverage** from 81% to 89% (out of 33,621 lines).

TEACHING EXPERIENCE

Head Teaching Assistant COMP 382: Reasoning About Algorithms

Fall 2020

Head Teaching Assistant COMP 182: Algorithmic Thinking

Spring 2021, Spring 2020

Teaching Assistant COMP 140: Computational Thinking

Fall 2019, Spring 2019

EXTRACURRICULAR PROJECTS

Rocket Engine Control and Testing Software (RESFET)

August 2019 - Present

- Wrote a hybrid rocket engine control software in **C++** that actuates valves, collects raw sensor data, performs ignition, and communicates with a remote dashboard using **UDP** and **TCP** protocols with average 0.2% packet loss.
- Designed a mission control dashboard in **JavaScript** using **Node.JS** and **Sockets.IO** that calibrates, normalizes, and plots the incoming raw data, and the analysis software performs **high-pass filtering** using **Pandas** on Python.

Traffix - Traffic Analytics Software at TAMUhack 2020

February 2020

- **Placed 1st out of 20 entries** in *StateFarm challenge for the best data science application*.
- Developed an interactive map to analyze traffic accidents and their correlation with road features in the U.S. on **Python**.

Virtual Banking Assistant at HackRice 9

September 2019

- **Placed 1st** in *Bill.com challenge for the best API integration* and won **MLH** award for the best use of Google Cloud.
- Built a virtual banking assistant that works with **speech recognition** using **DialogFlow** and **TensorFlow**.
- Prepared and provided corpus to train **HMM** based **machine-learning** algorithm for labelling.

Automated E-Sports Matchmaking Service and Tournament Platform

May 2015 - August 2018

- Built an automated tournament and ranking system using **Node.JS** with +16,000 registered users and +5,000 teams.
- Designed **DBMS** to store more than 100,000 records per table and wrote a middle-layer cache layer on **Node.JS** using **Sockets.IO** to decrease the response time by $\sim 3x$.

LEADERSHIP EXPERIENCE

Officer and I/O Committee Head at Rice Computer Science Club

May 2020 - Present

Avionics Team Lead at Rice Eclipse Rocketry Team and SEDS Rice

December 2018 - Present