BERK ALP YAKICI

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EDUCATION

Rice University, Houston, TX *Expected 2022*
Bachelor of Science in Computer Science, Minor in Data Science and Mathematics - GPA: [redacted]

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 ~ 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*