Patrick Yu

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EDUCATION

University of California, Berkeley Aug 2017 – May 2021
Computer Science Major Technical GPA: 3.5

- Relevant Coursework:
  Data Structures, Designing Information Devices and Systems, Efficient Algorithms and Interactable Problems, Artificial Intelligence, Optimization Models and Applications, Computer Architecture

PROJECTS

Bear Maps April 2018

- Created a web mapping application using Java that allows users to search for locations and shortest paths around Berkeley, including the option to zoom onto different map locations by reselecting pixels.
- Uses Map Rastering to convert the information on a map to a pixel-by-pixel image and uses shortest path algorithms, such as A* and Dijkstra's, to find the optimal path between two locations.

Machine Learning Design December 2018

- Built a multi-layer neural network in Python to solve a variety of machine learning problems, including linear and nonlinear regression, handwritten digit classification, and language identification.
- Neural net uses batch gradient descent to minimize square loss on multiple layers separated by the ReLU function to approximate the given data and classify digits from the MNIST dataset.
- Recurrent Neural Net is used to identify the language of a given word by implementing a hidden set of layers to summarize the list of characters into a set of nodes that are applied with the ReLU function.

NP-Hard Algorithm Design November 2018

- Designed an efficient algorithm for the NP-Hard problem of producing a partition of an undirected graph that maximizes the percentages of valid edges between vertices given subsets of invalid edges.
- First design used max-flow where valid vertices are given a higher capacity in order to find a min-cut that would be equivalent to the partition.
- Second design used linear programming to assign constraints to satisfy the validity of edges and used heuristics to maximize the percentages of valid edges in each partition.

EXPERIENCE

Code Coach October 2018 - Present

- Works at The Coder School Berkeley as a Code Coach, teaching students from ages 7-18 the fundamentals of coding and exploring the various applications of programming.
- Guide beginner students through creating games and projects with Scratch and Snap, building up core ideas of coding including conditional statements, loops, variables, and problem solving.
- Work with advanced students to explore the fundamentals of Python, create and design websites with HTML/CSS and JavaScript, learn the basics of Java, and apply all related ideas towards problem solving and algorithm design.

Academic Intern Jan 2018 – May 2018

- Helped students during labs and office hours by assessing the students' understanding of material with weekly lab check-offs and guiding students through difficult problems.
- Assisted the TA with preparing material to build students' knowledge of the curriculum, covering topics such as higher-order functions, recursion, trees, and memory/runtime.

SKILLS AND INTERESTS

Skills: Python, Java, C, SQL, JavaScript, Go, HTML/CSS, LaTeX, Microsoft Office
Languages: Advanced Conversational and Written Mandarin Chinese