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# Chris Powers

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## EDUCATION

**Master of Electrical Engineering and Computer Science**, University of California Berkeley May 2020  
**Bachelor of Electrical Engineering and Computer Science**, University of California Berkeley (GPA: 3.91) May 2019  
**Courses:** Data Structures, Algorithms, Operating Systems, Computer Security, Advanced Robotics, Machine Learning, Artificial Intelligence, Deep Reinforcement Learning, Deep Neural Networks, Optimization Models, Probability and Random Processes, Signals and Systems, Feedback Control Systems, Real Analysis, Abstract Algebra

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## EXPERIENCE

**Yelp Software Engineering Intern:** Summer 2018

- Designed and built new intuitive ads cancellation flow from the ground up while retaining key functionality
- Made it easier for thousands of advertising Yelp business users to redeem promotional offers
- Full stack development with React and Redux frontend and Python backend on the business monetization team

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## RESEARCH

**Berkeley Deep Drive** with Professor Trevor Darrell Fall 2018-Present  
**Collaborative Image Annotation:**

- Enabled real time, robust synchronization between users simultaneously labeling the same set of images
- Managed team of four undergraduates in updating backend codebase from Golang to Node.js/Typescript

**Scalable Model Serving:**

- Set up a measurably fast and scalable network of servers using AWS, Ray, and GRPC in order to send users' annotations to backend computer vision models and return predicted labels to assist users on next image

**UC Berkeley Automation Lab** with Professor Ken Goldberg June 2016-May 2018  
**Web Labeling Tool:**

- Designed web interface for demarcating and labeling objects in images taken by the robot in real time
- Enabled communication between server and robot, and integrated with crowd-sourcing platform

**Bed Making Robot:**

- Applied Imitation Learning to teach a home robot how to make a bed and an industrial robot part separation
- Boosted performance with data augmentation, and evaluated performance with OpenCV contour detection

**Automated Object Sorting:**

- Designed manipulation and vision algorithms to declutter a pile of objects and sort the objects into categories
- Operated on legos in the TRI hackathon and on machine shop parts in the Siemens FutureMakers Challenge

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## PROJECTS

**Deep Image Colorization:** Spring 2019

- Used Pix2Pix conditional GAN to colorize images, and implemented transfer learning between different datasets

**Piano Playing Robot:** Fall 2018

- Improved standard path planning to achieve clear sounding notes and allow playing with two hands simultaneously
- Created algorithm to compute 3D positions of piano keys from a camera image taken from the moving robot arm

**Music Transcription:** Spring 2018

- Extracted sheet music from audio waveform using Fourier analysis and heuristics to segment and classify notes

**Pacman Artificial Intelligence:** Spring 2017

- Created Q-learning A.I. agent that won first place in player vs. player contest in class of 400 students

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## SKILLS

**Programming:** Python, Javascript, C, Java, Golang, Unix scripting, Typescript

**Software:** React.js, Redux.js, Node.js, Tensorflow, OpenCV, NumPy, Git, HTML/CSS, Ray, Redis, AWS, websocket