Tell us about the features and technologies you used in your Swift playground.

Features

I have always been fascinated by navigating with GPS. Apps such as Maps provides turn-by-turn directions effortlessly. There are hundreds of thousands of roads and tens of thousands of cities, how does an App know what’s the fastest route to my destination? In my Algorithm and Data Structure class, I learned about graphs and Dijkstra’s algorithm, used for path planning.

If you've shared or considered sharing your coding knowledge and enthusiasm for computer science with others, let us know.

When I was thirteen, my parents gave me my first computer, a MacBook Pro. Ever since installing Xcode 5.0 on my computer, I have been in love with computer science, especially developing apps for iPhones, Apple Watches, and Macs. In middle school, I have created a Run Tracker with smart workout feedback, an elegant task manager, computer vision and machine learning demos… My experience as an Apple Developer taught me many lessons about app development, computer science, but more importantly about collaboration and hardworking.

In high school, I broadened my scope by taking several computer science classes. In my Data Structure and Algorithm class, I used my knowledge in Objective-C and Swift to create SpriteKit apps for visualizing binary search trees, sorting algorithms, and much more. For my independent research project, I explored machine learning with iOS and Swift. After some extensive research, I created my own Swift neural network libraries. I am looking for more uses for machine learning in my current and future apps.

Beyond app development, I am also a passionate machine learning researcher and electrical engineering. From building a quadcopter from scratch to designing and making a 16-bit microprocessor, I love problem-solving and creating things with my own hands. For the past two years, my friend and I embarked on a rewarding and arduous journey to build a self-driving golf cart. Given the budget, material, and our limited knowledge, we had to find unique and simple solutions to complex issues. With all our knowledge of mechanical and electrical engineering and iterations of designs and failures, we finally added electrical control to steering, throttle, and brakes. The hard work didn’t stop there. Months of research in machine learning and computer vision finally paid off. With a simple camera and complex software, the vehicle could avoid obstacles, autonomously follow the road, and localize in complex environments.

Beyond the classrooms, I am keen to share my passion and knowledge in computer science and app development with others. I co-lead the App Development Club at my school. Our goal is to empower the community through coding and engineering. We have created an app for the school news and information website, which is currently available on the App Store. For more than a year now, the App Development has been hosting an Hour of Code every Sunday during the school year. We bring together local elementary school students and participate in coding activities. The students are immediately captivated by the creative activities with Swift Playground and LEGO Mindstorm Robots. Last year, I had the honor to present a TEDx talk about my work in machine learning. During the talk, demonstrated computer vision and machine learning techniques with iOS apps that I made. With technologies like the iPhone and other incredible Apple platform, the sky is no longer the limit.

Looking back, my amazing experience with computer science and engineering started with an iOS app and Xcode. In 2016 and 2017, I have been incredibly honored to attend WWDC as a scholarship recipient. Those experiences allowed me to see the beautiful combination of the best technologies with the brightest minds. This year, once again, WWDC would be another humbling experience. Thank you for your time and attention. I look forward to an incredible WWDC.

**If you have one or more apps on the App Store created entirely by you as an individual, tell us about them.**

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