

Topics I know something about

Kotlin (newer programming language developed by company that developed PyCharm/IntelliJ) - can be compiled to JVM or JavaScript

advanced C++ features (covering smart pointers in CS361 and sample paper) but many more

STL data types such as map (hash table), etc.

OpenCV for handwriting recognition

<http://opencv.org>

Design Patterns

OpenGL ES or Metal (variation of OpenGL for embedded systems such as phones)

Cryptography (requires math knowledge/interest also)

hashes

encryption

For students who took iOS course

SwiftUI - new in iOS 13

CloudKit/Core Data syncing - new in iOS 13

need two iOS devices for testing

Xcode UI testing

Swift and Cocoa Touch (iOS apps)

CoreML/Vision framework for machine learning - image/shape recognition

Server side swift (for web development)

Vapor <https://vapor.codes>

other but less popular server side swift options

Perfect <https://www.perfect.org>

Kitura <https://www.kitura.io>

protocol buffers (better serialization than JSON)

<https://developers.google.com/protocol-buffers/>

Swift implementation:

<https://github.com/apple/swift-protobuf>

Other potentially good topics

C#

Android development

NoSQL

Newer programming languages

Go <http://golang.org>

Rust <http://www.rust-lang.org>

Dart <https://www.dartlang.org/>

Erlang <http://www.erlang.org/>

Scala <http://www.scala-lang.org>

web-based topics

HTML5/CSS

Javascript

open source book: <http://eloquentjavascript.net>

Node.js

Angular JS

WebGL

Django or CherryPy (Python web frameworks)

Ruby on Rails

SproutCore <http://www.sproutcore.com/>

Parallel programming using graphics card

CUDA

OpenCL