Andrew McKnight

Résumé

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Education

2013 **M.Sc., Dept. of Computer Science**, Old Dominion University.
- Thesis track in bioinformatics, robotics, image processing and meshing research topics
- Three published papers with two conference presentations
- C++ programming TA for three semesters
- Minor in actuarial mathematics
- Co-led winning seminar group developing traffic analysis iOS app

iOS Experience

Nov 2013 – Current **Insight Therapeutics**, *Medical literature and tools*, Norfolk, VA (remote).
- Stack: ObjC/Swift, MessageUI, Storyboards, CoreGraphics, CoreData, FMDB, SQLite, SSZipArchive, RNCryptor, cocoapods-keys, Trello, BitBucket
- Deliverables:
  - ClotRx & DementiaRx: reference e-pamphlets
    - Hybrid app with WKWebView
    - Searchable, bookmarkable HTML content extracted from PDFs
    - Interactive clinical surveys, print/email report generation
  - Antibiotic Kinetics: antibiotic dosage calculator
    - Ported from another developer's preexisting Android app
  - Current project under NDA
- Multiple releases and design iterations of all apps

Jan – Apr 2018 **121nexus**, *Medical barcode scanning SaaS*, Boston, MA (remote).
- Stack: Swift, AVFoundation, OpenCV, Firebase, cocoapods-keys, AWS, JIRA, BitBucket
- Highlights:
  - Replaced application UI and networking with their new SDK
  - Reimplemented major area of app with new UI and platform API
  - Added crash reporting (Crashlytics) and logging (XCGLogging)
  - Augmented and documented analytics (Firebase)
  - Assisted launches via iTunes (121 Scan) and another internal enterprise app

Dec 2016 – Jul 2017 **Layer**, *Cross-platform messaging SaaS*, San Francisco, CA (remote).
- Stack: C/ObjC/Swift, CocoaPods, OCMock, Specta/Expecta, Jenkins, Rails, Thrift, WebSockets/SPDY, SQLite
- Deliverables: ObjC SDKs for data and UI components, an embeddable app layer and fully-functional sample app
- Highlights:
  - Rearchitected test suite to separate unit tests from integration/end-to-end tests
  - Helped streamline developer environment configuration (Rake, Gems, CocoaPods and git submodules)
  - Migrated old SPDY/Thrift architecture to WebSockets with rewritten Thrift specs
  - Implemented new auth and transport layer using TransitionKit

Apr 2015 – **Twitter Crashlytics**, *Crash reporting SaaS*, Cambridge, MA.
Dec 2016
- Stack: C/ObjC/Swift, Java/Scala/Clojure, Rails, React/Coffeescript, Storm/Heron, Cascading/Scalding, Graphite, Vertica/Zeppelin, Beanstalk/Kafka, Redis/Cassandra, AWS, TeamCity, Chef, Trello, Protobuf
- Deliverables: Crashlytics/Fabric SDKs, Mac app and command line tools, front- and back-end maintenance, Unity iOS support
- Highlights:
  - Streamlined build and release processes with TeamCity agents deployed via Chef
  - Added Bitcode and tvOS compatibility to SDKs
  - Standardized config of all Xcode projects and released the open source FABConfig
  - Maintenance of backend lambda architecture with on-call rotations
  - Pioneered new backend feature to cross-reference common crashes across apps and present developers with suggested fixes

Jan – Apr **MC10**, *Medical wearables*, Cambridge, MA.
2015
- Stack: ObjC/Swift, CoreBluetooth, Android, JIRA
- Deliverables: Companion iOS app for wearable peripheral with BTLE link
- Highlights:
  - Moved all app/demo code into Git repos, no previous SCM
  - Architected SDK and app codebases from the ground up
  - Built out greenfield app, in beta testing on my exit
  - Set up continuous integration and deployment with TeamCity and Fabric
  - Assisted adoption of Agile processes

Jul 2013 – **Raizlabs**, *Mobile consulting boutique*, Boston, MA.
Dec 2014
- Stack: ObjC/Swift, Jenkins, TeamCity, Trello, Basecamp
- Deliverables:
  - Care.com: service seeker/provider matching (4 months)
    - iOS 7 redesign, with perspective zoom effect for a horizontally paged scroll view
    - Dynamic UI generation from server-supplied data
  - B&H Photo: e-commerce (5 months)
    - Custom parallactic scrolling of table view headers
    - Push notifications with deep linking
  - UniFirst: interactive enterprise sales catalog on iPad (8 months)
    - Drag and drop editing of clothing selections, with PDF report generation
  - Invaluable: realtime high-end auction platform on iPad (1 month)
    - Paging of API result display in table/collection views

Oct 2012 - **ODU Systems Lab**, *R&D projects*, Norfolk, VA.
May 2013
- ChirpXM: location based social networking app (defunct)
- Supervised two foreign exchange students
- Prototyped EMR iPad app for CHKD

Aug 2012 – **Old Dominion University**, *Undergraduate capstone project*, Norfolk, VA,
May 2013 (Seminar Project Lead).
- Stack: ObjC, OpenEars and MapQuest SDKs
- Highlights:
  - 7 member team; 4 presentations given to visiting professors and industry executives
  - Sole developer of native iOS application
  - Highest scoring project!

Other Experience

May - Oct 2013   **Intergraph**, *.NET CAD Application*, Hampton, VA, (Intern).
- Stack: C, VisualBasic, SQL, QF-Test, Coverity, Visual Studio, TeamFoundation
- Image processing, robotics and machine learning applications in bioinformatics
- Multiple publications and conference presentations

Aug 2012 - May 2014   **Old Dominion University**, Norfolk, VA, (Research Assistant).
- Java and C++ algorithm development utilizing CGAL, Boost and Jama
- Image processing, robotics and machine learning applications in bioinformatics
- Multiple publications and conference presentations

Aug 2012 - May 2014   **Old Dominion University**, Norfolk, VA, (Lab Instructor).
- Online delivery of CS 333: Problem solving and programming in C++
- Lab instructor for CS 250: Intermediate programming in C++
- Assistant instructor for CS 150: Introduction to programming in C++
- Website maintenance, grading, general student guidance

Personal Projects

Apps   **Trgnmtry**, https://itunes.apple.com/us/app/trgnmtry/id1146667288.
- Draws a set of chosen trigonometric measures on a unit circle, around which a user drags their finger
- Stack: Swift, CoreGraphics, Pippin, CocoaPods

Delaunay Triangulator, https://itunes.apple.com/us/app/delaunay-triangulator/id657596160.
- Maintain a Delaunay triangulation of points from touch input on the screen
- Stack: C/ObjC/Swift, CoreGraphics, CocoaPods

Dat Bread Dough., https://itunes.apple.com/us/app/dat-bread-dough/id1214735558.
- Store bread formulas/recipes, along with custom ingredients and brands, with in-app purchases to unlock full functionality
- Stack: Swift, Core Data, Pippin, CocoaPods

Devtools   **Pippin**, https://github.com/TwoRingSoft/Pippin.
- Collection of protocols and adapters for common iOS architecture and infrastructure, and extensions

Vrsnr, https://github.com/TwoRingSoft/Vrsnr.
- Extensible Swift CLI automating version management for devtool makers

Science   **Colloquial Swift**, https://github.com/armcknight/colloquial-swift.
- An experiment that surveys Swift repositories and analyzes how the language and stdlib are extended

MaVec, https://github.com/armcknight/MaVec.
- Classes for matrices and vectors, wrapping Accelerate's functions and adding from-scratch routines

Honors & Awards

2013   **Gene Newman Award**, *Best overall paper*, Virginia Modeling, Analysis and Simulation Center Capstone conference.

2012   **Undergraduate Research Award**, *Outstanding undergraduate achievement*, ODU Spring Undergraduate Research Fair.

2011   **First Place**, ODU-ACM Programming Contest.

Teaching and Presentations

May 2018   **iOSDevCampCO**, *Colloquial Swift (45 min)*, Colorado Springs, CO.
- Presented findings from Colloquial Swift personal project (see entry in previous section)

Jun 2017   **CocoaHeads Boston**, *UIViewController Decomposition and UI Reuse (20 min)*, MIT, Cambridge, MA.
- Discussing strategies to separate responsibilities from UIViewControllers and a library of reusable UI components, e.g. animated transparent modal presentation with a close button

Jan 2017   **Boston Algorithms Meetup**, *HyperLogLog (20 min)*, Twitter, Cambridge, MA.
- Helped organized this initial meeting of the group
- Covered the theoretical workings of the HyperLogLog algorithm, with a copresenter giving a working demostration

Jul 2016   **Girls Who Code**, *iOS Dev Session*, Twitter, Cambridge, MA.
- Part of GWC summer internship covering programming first principles to full-stack style development
- Designed and led iOS session where we built a Flappy Bird clone, introducing them to Xcode as an IDE, Interface Builder, Playgrounds and Swift

Mar 2016   **mDevCon**, *Command and NSOperation (45 min)*, Amsterdam, NL.
- Delivered presentation on the Command software design pattern, and NSOperation
- Introduced subclasses we open sourced at Crashlytics for asynchronous and compound operations
- Previously delivered at a lunchtime tech talk at Twitter, Cambridge, MA (Nov 2015) and CocoaHeads Boston meetup, MIT, Cambridge, MA (Dec 2015)

Oct 2015   **NeighborNest**, *Web Dev Session*, Twitter, San Francisco, CA.
- Community program to help advocate technology literacy
- Assisted in session where students worked on a Twitter clone, teaching functional programming concepts, Javascript, and some front- and back- end concepts

2013   **VMASC Capstone Conference**, *Estimating lower bounds on the length of protein polymer chain segments using robot motion planning*, Suffolk, VA.
- Presented research on using computational geometry and motion planning algorithms to model protein molecule structures
- Best paper award

Oct 2012   **IEEE WCSB**, *CryoEM skeleton length estimation using a decimated curve*, Philadelphia, PA.
- Presented research on using a dynamic graph algorithm to identify protein molecule substructures from 3D images