Andrew McKnight

Curriculum Vitæ

✉ *andrew@mcknight.rocks*
http://armcknight.com

Education

2013 **M.Sc., Dept. of Computer Science**, Old Dominion University.

- Thesis track in bioinformatics, robotics, image processing and meshing research topics
  - Thesis: "Protein Loop Length Estimation from Medium Resolution CryoEM Images"
- Three published papers with two conference presentations
- C++ programming TA for three semesters
- Minor in actuarial mathematics

Publications

2013 **Estimating loop length from CryoEM images at medium resolutions**, *http://www.biomedcentral.com/content/pdf/1472-6807-13-S1-S5.pdf*.

2013 **Estimating Lower Bounds on the Length of Protein Polymer Chain Segments using Robot Motion Planning**, *https://class-pages.pages.cs.odu.edu/crtcpub/publications/estimating-lower-bounds-on-the-length-of-protein-polymer-cha-2013/*.

2012 **CryoEM Skeleton Length Estimation using a Decimated Curve**, *https://class-pages.pages.cs.odu.edu/crtcpub/publications/cryoem-skeleton-length-estimation-using-a-decimated-curve-2012/*.

Experience

Jan 2021 – Current **Sentry**, *Senior iOS Developer*, Remote, (FTE).

- Application observability platform
- **Stack**: Objective-C++, Swift, XcodeGen, GitHub Actions, SauceLabs
- **Deliverables**:
  - Sentry Cocoa SDK: mobile app crash and performance monitoring
    - **Highlights**:
      - Integrating Specto's profiling feature into Sentry's Cocoa SDK
      - User Feedback widget: first user-facing UI shipped in Sentry Cocoa SDK
      - Wrangled sample and demo apps for developers and Sales team
      - Numerous improvements to CI and build system

Nov 2019 – January 2021 **Specto**, *Senior iOS Developer*, Remote, (FTE).

- Mobile app profiling SDK with shared C++ core between iOS and Android
- **Stack**: Objective-C++, Swift, Go, Python, Jinja, Bazel, XcodeGen, GitHub Actions
- **Deliverables**: Mobile app profiling SDK with shared C++ core between iOS and Android, Python scripts to generate scoped Xcode projects from Bazel targets (pre 'rules-xcode')
- **Highlights**:
  - Python scripts to generate scoped Xcode projects from Bazel targets (pre 'rules-xcode')
  - Acquired by Sentry in December 2020

Jan 2019 – Oct 2019 **Rightpoint Consulting**, *Senior iOS Developer*, Remote, (Contract-to-Perm).

- Security-focused app and SDK (NDA)
- **Stack**: Swift, SwiftGen, SwiftLint, Sourcery, CircleCI, Postman, Browserstack, Countly

Jan – Apr 2018 **121nexus**, *iOS Developer*, Remote, (Contract).

- Medical inventory management app/SDK with barcode/QR scanning
- **Stack**: Swift, AVFoundation, OpenCV, Firebase, cocoapods-keys, AWS
- **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**, *iOS Developer*, Remote, (FTE).

- In-App Messaging SDK
- **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 – Dec 2016 **Twitter**, *Software Engineer*, Cambridge, MA, (FTE).

- Mobile app crash reporting and analytics
- **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 and analytics, 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 2015 **MC10**, *iOS Developer*, Cambridge, MA, (FTE).

- Companion iOS app for wearable peripheral with BTLE link
- **Stack**: ObjC/Swift, CoreBluetooth, Android
- **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 – Dec 2014 **Raizlabs**, *iOS Developer*, Boston, MA, (FTE).

- **Stack**: ObjC/Swift, Jenkins, TeamCity
- **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 – May 2013 **ODU Systems Lab**, *R&D projects*, Norfolk, VA, (Student Intern).

- **Deliverables**:
  - ChirpXM: location based social networking app (defunct)
  - Prototyped EMR iPad app for CHKD
- **Highlights**:
  - Supervised two foreign exchange students
  - Facetime with onsite clients

May – Oct 2013 **Intergraph**, *.NET CAD Application*, Hampton, VA, (Intern).

- **Stack**: C#, VisualBasic, SQL, QF-Test, Coverity, Visual Studio, TeamFoundation
- Automated framework- and GUI-level testing, regression testing in numerical modules
- Manual acceptance testing for new features and fixes

Aug 2012 – May 2013 **Old Dominion University**, *Undergraduate capstone project*, Norfolk, VA, (Seminar).

- **Stack**: ObjC, OpenEars, MapQuest
- **Highlights**:
  - Co-lead of 7 member team
  - 4 presentations given to visiting professors and industry executives
  - Sole developer of iOS component of total solution
  - Highest scoring project!

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

Nov 2011 – Current **Insight Therapeutics**, *Medical*, Norfolk, VA & Remote, (Contract).

- **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
  - eConsent: HIPAA-compliant informed consent app for clinical trials
    - Interactive quiz-based presentation of study details
    - Signature collection and export to PDF
    - Interface with backend API to upload finished consents
- Multiple releases and design iterations of all apps

Honors & Awards

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

2012 **Graduate with Distinction**, *Awarded with B.Sc.*, Old Dominion University.

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

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

2010 – 2011 **Dean's List**, Old Dominion University.

2009 **Summa Cum Laude**, Piedmont Virginia Community College.

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