

## Alexander Hoekje List

**portfolio** <http://alist.im>

**email** [alist@alum.mit.edu](mailto:alist@alum.mit.edu)

**engineering** C++, Swift, Node.js, Python, Obj-C, C

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Burlington, VT 05401  
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- Experience**
- Simulation Team Technical Lead** BETA Technologies Inc. 09/2020 - Present
- Engineered configuration management system scaling from one to eight piloted simulators enabling engineering, flight test and sales functions.
  - Engineered CAN to React pipeline facilitating rapid synoptics development and accelerating transition to Garmin avionics.
  - In preparation for simulator certification, guided team through decoupling physics, image generation, instructor control and avionics with a microservice architecture intermingling physical and virtualized flight hardware, mostly using C++17.
- Contract Mobile Software Engineer, iOS** Ideaflow Inc. 5/2017 - 9/2020
- Alleviated highest impact technical debt by enforcing encapsulation and testing within Ideaflow's relational note-taking text state machine, programming in Swift.
  - Engineered a formal grammar and parser aligning project vision and unlocking tasks including copy-paste.
  - Launched first and several major releases utilizing instituted CI/CD system.
- Autonomy Software Engineer** Boeing Research and Technology 08/2019 - 06/2020
- Reoriented development around unit testing and transitioned to C++ 11, maturing in-house DO-365 avoidance software for integration into subsidiary's detect and avoid solution.
- Research Assistant** ICAT Lab, Aero-Astro department, MIT 1/2018 - 8/2019
- Masters thesis titled "Assessing Multi-rotor UAV Controllability in Low Altitude Fine-Scale Wind Fields," working with Prof. R. John Hansman.
  - Introduced "control margin" metric to assess unmanned aerial vehicle control by the decomposition of torques involved in a vehicle's stability.
  - Validated by experimental test platform on a customized quadrotor UAV.
- Teaching Assistant** Computer Language Engineering, MIT 9/2018 - 5/2019
- Assisted instruction for two courses on compiler "computer language" engineering: for a static C-variant language (Prof. Martin Rinard), and for a dynamic Python-variety language (Prof. Michael Carbin).
- Contractor** E55 Inc., Gigster Inc., MANNA Inc., CodePath LLC 4/2015 - 1/2017
- For E55, engineered a low-dependency Objective-C framework containing image recognition APIs for iPhone Apps.
  - For Gigster, built a realtime navigation module with off-route detection and Dijkstra route optimization for the "GoKid" kid's carpool App, available on the iPhone App Store. Developed four social media applications with pictures and video.
- For MANNA Inc:
- Designed an algorithm optimizing drone flight paths utilizing the airspace of individual property holders. Test-driven development process in C++.
  - Implemented means to register property ownership and lease on a blockchain using the Google S2 space partition and ErisDB/Etherium smart contracts.
  - Engineered delivery simulator and visualizer using Node.js and front-end JavaScript.

For CodePath (an educational organization):

- Delivered lectures and proctored study sessions for twenty designers implementing their designs as native iPhone applications using the Swift programming language.

**Co-founder and CEO** Headtalk Inc. 1/2014 - 9/2015

- Engineered usemagnet.com, PCBs and the iPhone App for Magnet bracelet letting couples in long distance relationships stay in touch with a tap.
- Led team of three engineers and three designers to deliver Apps for Android and iOS, two wearable devices and a Kickstarter campaign.
- Raised \$140k in venture capital. Participated in Techstars' Boston accelerator, culminating in a "Demo Day" presentation to approximately 500 people.

**Co-founder** ExoMachina Inc. 1/2008 - 12/2013

- Built the Fibromyalgia App with psychiatrist co-founder, helping hundreds of people suffering from the chronic pain disorder track their symptoms.
- Built Domo.io, a website mapping struggling MIT students' questions with advice from peer volunteers. The Domo team included three engineers, a designer and one psychologist. Delivered product in time for MIT final exams in Spring 2013.

**Swÿp Lead** MIT Media Lab, Fluid Interfaces Group 9/2011 - 12/2012

- Created Swÿp, allowing files to be dragged between touchscreen devices.
- Engineered send-ahead thumbnail system to improve UX during payload transfers.
- Integrated Swÿp into the LuminAR augmented reality light fixture.
- Led a three engineer team to Sponsor Week, covered in seven tech news articles.

**Education  
and Selected  
Courses**

Massachusetts Institute of Technology:

Masters of Engineering in Computer Science

2018 - 2019

- Intelligent Multimodal User Interfaces
- Feedback System Design (Introduction to Controls)
- Principles of Autonomy and Decision Making

Bachelor of Science in Computer Science

2011 - 2017

- Computer Language Engineering
- Intermediate Computer Algorithms
- Linear Algebra
- Differential Equations
- Elements of Software Construction
- Medical Device Design
- Aerospace "Unified Engineering" core curriculum

**Flight  
Experience**

Instrument-rated Commercial Pilot with 520+ hours, based at BTV.

2018 - Present

✈ Current training: airplane flight instructor, helicopter initial.

**Patents and  
Achievements**

Systems and methods for data verification at start up. US11453511B1.

9/2022

Apple Design Award, Recipient for Mosaic.io.

6/2013

Bump API contest, honorable mention for peer-to-peer payments with a Bump.

2/2010

Developer of Top-20 Navigation App on App Store, PlaceBook.

1/2009