

# Marcus Sjolin

ENGINEERING & PRODUCT

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## Summary of Skills

- Python and C++
- Robot Operating System
- PySpark
- Databricks
- React
- Tableau
- Vim
- Git

## Work Experience

### Embark Trucks Inc.

San Francisco, CA, USA

#### HEAD OF PRODUCT

September 2020 - Present

- Developed AV software for downtown Oakland as technical lead of 20+ SWEs enabling a \$295M fundraise
- Founded and grew the Product organization to ~25 people (reporting to CTO) with sub-teams for Data Science, Data Engineering, Product Management, Systems Engineering and Release Management
- Developed company-level North Star metrics and analyses to help improve AV performance and reliability by several orders of magnitude
- Architected ETL pipelines to enable querying and analysis of on-road and in-simulation scenarios and safety metrics
- Conducted code and design reviews for major Data Science and Data Engineering projects, such as the introduction of TimescaleDB
- Wrote Concept of Operations and Product Requirements to deploy mature trucks into Knight-Swift's fleet as part of the Truck Transfer Program
- Derived Product and System requirements with Engineering stakeholders based on customer feedback, metrics and kinematics-based analyses

#### PRODUCT LEAD

August 2019 - September 2020

- Authored patent application for state machine based automated extraction of on-road driving scenarios written on top of PySpark
- Led special project of 15+ engineers that developed and hardened autonomous features for \$70M Series C fundraise led by Tiger Global
- Prototyped and analyzed safety metrics like TTC, PET and more in Databricks based on literature like Mobileye's Responsibility-Sensitive Safety
- Established Operational Design Domain (ODD) requirements from analysis of on-road data
- Built pipeline to extract on-road issues and automatically upload to Jira for prioritization and triage

#### SOFTWARE ENGINEER

May 2017 - August 2019

- Led team of 10+ that built first truck to drive 300+ miles from Phoenix to Los Angeles fully autonomously
- Created and hardened a San Francisco driving loop from scratch for candidates and investors, leading to \$30M Series B led by Sequoia
- Developed real-time lane tracking algorithm using noisy and occluded lane line detections to generate smoother and more realistic scene
- Built an on-truck diagnostics system to record compute resource utilization across ROS nodes and wrote data pipelines to analyze results
- Re-architected and re-wrote several software nodes to improve timing performance based on compute utilization analysis
- Wrote and fixed ROS sensor drivers for cameras and radars to improve uptime and reliability

### WhatsApp Inc.

Menlo Park, CA, USA

#### SOFTWARE ENGINEER INTERN

January 2017 - April 2017

- Developed inline Emoji suggestions for WhatsApp Web using React to provide simplified Emoji search and discovery
- Implemented proof-of-concept work to connect WhatsApp Web client directly to Android phone over local WiFi network using HTTP server

### Wish (ContextLogic Inc.)

San Francisco, CA, USA

#### SOFTWARE ENGINEER INTERN

April 2016 - September 2016

- Re-architected network and image libraries for all Wish Android apps for rewrite which increased average session length by 10-14%

### Hipmunk Inc.

San Francisco, CA, USA

#### SOFTWARE ENGINEER INTERN

September 2015 - December 2015

- Overhauled UI and functionality of the Hipmunk Android app to allow users to plan and book trips as part of Hipmunk Discover

### Pebble Technology Corp.

Palo Alto, CA, USA

#### ANDROID SOFTWARE ENGINEER INTERN

January 2015 - May 2015

- Developed Android support for Calendar and Weather features on the Pebble Time smartwatch using The Weather Channel API

## Projects & Distinctions

### Drivable Surface Detection

ECE 457B (Waterloo, Canada)

PYTHON, TENSORFLOW, NUMPY

April 2018

- Implemented a convolutional neural network (using VGG) to detect drivable surface using a fusion of camera and LiDAR data

### Berkeley Artificial Intelligence Course

edX (Online)

PYTHON – CONSTRAINT PROPAGATION, MARKOV DECISION PROCESSES ETC.

January 2015 - May 2015

### Stanford Machine Learning Course

Coursera (Online)

PYTHON, OCTAVE – LOGISTIC REGRESSION, SVMs, CLUSTERING ETC.

June 2014 - September 2014

## Education

### University of Waterloo

Waterloo, ON, Canada

BACHELOR OF SOFTWARE ENGINEERING, HONORS, CO-OP

2018