

# Keith F. Ma

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## Skills

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**Languages** Python, Javascript, MATLAB, C, Fortran, Shell, SQL

**Tools** AWS, Airflow, Postgis, Docker, GDAL/OGR, scipy, SQLAlchemy, celery, flask, pytest

## Experience

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### Indigo Ag

Boston, MA

STAFF SOFTWARE ENGINEER

March 2023 - Present

SENIOR SOFTWARE ENGINEER

January 2019 - March 2023

- Building a multi-model quantification suite for a complete accounting of CO<sub>2</sub> emissions per bushel harvested.
- Led development of new life-cycle emissions model designed to be lightweight (no special infrastructure), fast (<1s per farm), maintainable (easy reference data updates), and scientist-friendly (detailed human-readable results).
- Lead engineer for “gapfilling” service to populate missing/invalid farm management data in accordance an externally-verified carbon credit generation protocol. Integrates a wide range of data sources (e.g., surveys, ML predictions, etc.) to reduce customer data entry burden.
- Designed and implemented tools for visualization and analysis of medium resolution satellite imagery (20m/pixel), including an on-demand image tiling service for interactive image layers with adjustable styling covering multiple continents.
- Support team performance and cohesion by mentoring junior engineers, sharing knowledge with peers, and working with product management to build and refine requirements, set milestones, and prioritize tasks to meet them.

### TellusLabs (acquired by Indigo Ag)

Somerville, MA

SOFTWARE ENGINEER

August 2018 - January 2019

- Core developer for global satellite analytics platform focused on monitoring and predicting agricultural yields

### Insight Data Science

Boston, MA

DATA SCIENCE FELLOW

June 2018 - Present

- Built an MVP navigation app that optimizes for comfortable outdoor travel by simulating sunlight along potential routes from dense LiDAR points and the OpenStreetMap graph.

### Boston Fusion Corp

Lexington, MA

RESEARCH SCIENTIST

June 2016 - May 2018

- Created analytical tools leveraging ML to address a wide range of Department of Defense needs. Projects included adaptive decision support systems, data exploration via multi-level graphs, and gaming artificial intelligence.

### Boston University Research Computing Services

Boston, MA

SCIENTIFIC PROGRAMMER / ANALYST

Sept. 2014 - June 2016

- Consulted with BU faculty and students to design, optimize, and parallelize research software for HPC clusters.

### Yale University Department of Geology & Geophysics

New Haven, CT

DOCTORAL CANDIDATE

Sept. 2007 - Sept. 2014

- Designed and built a distributed numerical model to simulate erosion by rivers and glaciers.
- Created a method for reconstructing past topography by decomposing and scaling modern topographic features.
- Built an analog model of mountain formation and developed software for instrument control and measuring velocity fields from experiment imagery.

## Education

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### Yale University

New Haven, CT

M.PHIL IN GEOLOGY & GEOPHYSICS

December, 2009

### Brown University

Providence RI

BA IN GEOLOGY - BIOLOGY

May, 2005

