

# Bailey Wickham

## Contact

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## Personal

🌐 Personal Site: [baileywickham.com](https://baileywickham.com)  
🐙 Github: [baileywickham](https://github.com/baileywickham)  
❤ Running, Surfing

## Publications

📄 I. Gallagher, A. Hasse, B. Wickham, E. Brussel.  
[Poster at MAA Golden Session](#) Spheres of  
Planes in the Generalized Quaternions

## Side Projects

### fuzzer Go

A markov chain based fuzzer written in Go which generates new data based on an input corpus to test applications. Supports multiple markov chains and test corpuses in parallel.

### cont C

A minimal container implementation in C. Uses namespaces, cgroups, overlayfs to create and manage multiple containers.

### runner Go

A cli runner for go programs which uses the internal reflect library to automatically convert function arguments.

### Metaclasses Python

Uses python metaclassing to generate Python classes from CSV files at runtime.

More on [Github](#)

## Education

### 09.2018 – 06.2022 California Polytechnic, SLO

- BS in Mathematics (Pure focus) and Computer Science, 3.5 GPA
- Minor in Chinese (two years of language courses)
- Graduate courses in Field Theory, Point-Set Topology, Algebraic Topology, Programming Languages

Worked with Masters student under Dr. Theresa Migler to characterize power networks from a graph theoretic approach. Studied graph networks and built a framework for ingesting data.

Attended [Simple Group](#), a research seminar with a focus on algebraic topics.

Attended programming languages reading group under Dr. John Clements and Dr. Aaron Keen. Discussed current topics in programming languages and type theory.

## Experience

### 01.2021 – Present Amazon, [IPX Team](#)

Remote/SLO, CA

Junior Developer at Amazon SLO on Indie Publishing Experience team responsible for the publishing workflow for KDP authors. 20h per week October-June, 40h per week June-September. Full time remote for first year.

Added workflow improvements which saved customers ~30 minutes during book republication.

Built internal tools to simplify developer backfills. Built browse tree visualization tools.

Worked on team of three to decide infrastructure path forward for team. Led major infrastructure choices for medium scale component. Led initial planning and development of said component, including CI/CD, designing APIs, integrating with other services through custom DSL.

Summer 2020 –  
Winter 2021

### Frost Undergraduate Research ([Poster](#))

[Frost Research](#), Cal Poly

Participated in undergraduate research in Pure Mathematics under [Dr. Eric Brussel](#). We studied a moduli space of embeddings of complex planes into the quaternions. We then generalized our approach over the generalized quaternions, classifying the embeddings of commutative subalgebras, related affine varieties, and conjugacy classes. We also studied  $H$  from a category theoretic perspective. A paper will be published Fall, 2020.

09.2018 – 12.2020

## Cal Poly CubeSat Lab

### [PolySat](#), [Cal Poly](#)

Led development and deployment of CPCL infrastructure to AWS (~5 machines).  
Wrote Cloudformation templates, ansible scripts to manage deployment.  
Deployment met Cal Poly IT security standards.

Mission Lead of ExoCube II (Spring 2019-Summer 2020), a 3U small satellite as part of NASA's [ELaNa XX](#) program. Led team of ~20 through build, testing, and predelivery phase of the spacecraft. Worked with NASA Goddard, Virgin Orbit, TriSept to organize delivery of spacecraft. Mission funded by NASA, NSF.

ExoCube II successfully launched on Virgin Orbit Q1 of 2021. Worked with current mission lead during initial acquisition and operations.

Developed Embedded Flight Software for CPCL including commits to buildroot, IPC library, beacon and XDR parser.

Summer 2017,  
2018

## Cascade Custom Software

Portland, OR

Junior developer at Cascade Custom Software. Developed full stack web applications for third parties using Angular/Vue, Typescript, SQL Server. Assisted in migration of ~5TB Salesforce production SQL server for third party.

12.2016 – 09/2019

## Melloh.io

Portland, OR

Started a company in high school to create, host and manage websites for small businesses. Worked with clients to create content and manage online presence. Used Django, Python, Apache/Nginx, Wordpress.