

Thomas Barron, Resume

LINKS

- Personal website: <https://tbarron.xyz/>
- Github: <https://github.com/tbarron-xyz>

EMPLOYMENT

- Lucendi** (Los Angeles, CA), Fullstack Software Engineer, May 2019 – present.
- We develop computational microscopy systems for various biotechnology applications. We are grant-funded and are developing initial prototype systems.
 - I build our client-server systems that allows a user to communicate local sensor data to a remote server.
 - I manage our local and cloud server infrastructures. We have various Linux GPU machines on-site and on AWS.
 - I manage our Bitbucket environment, with Jira/Slack integration, Bitbucket Pipelines builds on every commit and pull request.
 - On our C++/CUDA applications, I have refactored a monolith into shared libraries and subprojects, including linux CLI executables to be called in a distributed fashion by worker queues, and cross-platform builds.
 - I write other applications as necessary in C# (.NET Core) and Typescript+React as well.
 - As one of the initial employees I assisted in developing the company's basic employee workflow, e.g. commit to git every day before you leave your computer, use git branching heavily, make lots of Jira items and keep them up to date, make Bitbucket pull requests for everything before merging into master.

Galehead Development (remote – Boston, MA), Software Engineering Consulting, October 2018 – May 2019.

- General consulting and contracting: advising on topics of optimization and organization, working directly in the code base for items that they agree they'd like to see. Implementing and managing the Gitflow branching model.
- OpenLayers frontend (using TypeScript+React) with Flask/PostGIS/Geoserver backend.

Churchill Navigation (Boulder, CO), Software Engineer, January 2018 – September 2018.

- My role: Sole developer for <http://churchillnavigation.com/earthscape/>, a video hosting/management service that synchronizes timestamped metadata playback side-by-side with video playback.
- Most work focused on integrating HLS livestreaming, over a cellular network, into the existing video/data extraction/delivery pipeline. Hardening several components to ensure reliable behavior even in the case of moderate packet loss. SRT as transport protocol.
- Duties involve new feature development, old code maintenance/bug fixes, code deployment, AWS infrastructure management. Also involved customer interaction, physical installation of equipment onto helicopters, and nearly complete self-direction (no-management company structure).
- React frontend with grunt/browserify toolchain. Python + Flask backend with Celery workers (RabbitMQ broker) for handling compute-intensive tasks. Some Golang microservices.
- All-AWS infrastructure (EC2 Ubuntu, RDS PostgreSQL, S3, Elastic Transcoder, IAM, ElastiCache Redis) with Ansible for deployment management.

CoreLogic (Oxford, MS), Software Engineer, August 2016 – December 2017.

- Role: fullstack web and backend services developer.

- Working closely with business stakeholders to understand design requirements and plan effective solutions to business needs.
- Writing new responsive SPA frontends in TypeScript with Angular 2+. Making improvements to existing frontends written using Knockout.js, Angular 1, and plain Javascript. HTML5/CSS/JS. Extensive gulp/webpack tooling for compiling and bundling.
- Writing performant backend applications in C# on .NET Core or .NET Framework using ASP.Net (WebAPI). Incoming data to our REST and RPC API endpoints are processed and stored. Outgoing data is supplied to our external clients and partners, including large banks and the IRS. High-throughput systems use RabbitMQ as a work queue. Data is supplied via APIs to our various frontend clients, both desktop and mobile.
- Automating testing, builds, and deployments using Microsoft TFS.
- Supporting fellow developers when I have some knowledge that could be shared. Being available for pairing and debugging sessions. Holding my team's work to a high standard through code reviews.

SAMPLE PERSONAL PROJECTS

- Twitch chat analytics
 - Running on an AWS EC2 instance (headless Ubuntu)
 - **Chat monitor (Golang)**
<https://github.com/tbarron-xyz/twitch-chat-monitor>: Grabs the top 25 live streams from the twitch.tv API, listens to the chat feeds for those streams, performs some basic analytics, caches state in Redis, and backs up to DynamoDB for time series data storage.
 - **Web server (Node.js)**
<https://github.com/tbarron-xyz/tbarron.xyz-express-server>: WebSockets push fresh data to all active frontend clients once per second. Queries DynamoDB to retrieve time series data when requested via API.
 - **Client-side (React + TypeScript via SystemJS)**
<https://github.com/tbarron-xyz/tbarron.xyz-react-frontend>: uses WebSockets to receive fresh data pushed from the server once per second & display it. Graphs the last 24 hours of time series data (obtained via API).
 - ~10 GB of chat traffic analyzed per day

EDUCATION

University of Kentucky

- B.S., Mathematics (May 2016)
- Minor in Physics

PUBLICATIONS

- T. Barron, C. O'Neill, R. Pelayo. *On the set of elasticities in numerical monoids*. [arXiv:1409.3425](https://arxiv.org/abs/1409.3425). *Semigroup Forum*. 2015.
- T. Barron, C. O'Neill, R. Pelayo. *On dynamic algorithms for factorization invariants in numerical monoids*. [arXiv:1507.07435](https://arxiv.org/abs/1507.07435). *Mathematics of Computation*. 2016.
- Two algorithms from the above are included in the package `NumericalSgps` for `GAP`, a popular computational discrete algebra software.