



I am a principal engineer and software architect who creates applications, services, data pipelines and tools.

## **ChartHop – Senior Principal Software Engineer – 2021-present**

*ChartHop is a People-Ops web platform that offers analytics, org chart visualization, headcount planning, and other HR tools. ChartHop's mission is to help build transparent and human-centered workforces.*

**Key Technologies:** Kotlin, Docker, AWS services, MongoDB, Gradle, Jenkins, PostgreSQL, Dropwizard

- Led the creation of a Data Engineering function.
- Architected and coded an ETL pipeline in Kotlin to feed a data analytics pipeline.
- Wrote data model code generation to move from JSR-269 to Kotlin Symbol Processing.
- Wrote a fast BSON deserializer that tripled read performance over Jackson deserialization.
- Ported the build system to Kotlin DSL and made changes that resulted in halving the back-end build time.

## **Measures for Justice - Lead Software Architect / Director of Data Engineering – 2015-2021**

*Measures for Justice collects criminal justice data at the county level across the U.S. and calculates performance measures that can serve as the basis of reform. Because there are no national standards, the data must be cleaned and coded according to a rigorous methodology to be made comparable across agencies and locations.*

**Key technologies:** Kotlin, Docker, React, D3.js, PostgreSQL, AWS services, Tableau, Python

- Established a Data Engineering department, with the goal of moving MFJ's data processing workflow from scripts written in SPSS Statistics software to a production-quality, scalable data pipeline.
- Managed seven engineers in the Data Engineering department.
- Co-architected and built a data pipeline that automates data assessment, data wrangling, ETL, and aggregation tasks.
- Created a fast, simple, compact, type-safe file format for tabular data storage.
- Created a reader and writer for the proprietary SPSS SAV file format, using reverse-engineering documents from the PSPP project and original reverse-engineering work.
- Created a library to simplify and standardize reading and writing tabular data formats, including CSV, Excel, Avro, ARFF, and relational databases.
- Created a PEG-based parser for SPSS's Syntax scripting language to enable code analysis and porting.
- Created desktop tools for researchers to configure and run data pipeline jobs.
- Operationalized machine-learning libraries created by outside partners to automate classification tasks.
- Implemented client-side code for the data portal, with a focus on charts, maps and other data visualizations.
- Designed and implemented the measure calculation engine, which aggregates case-level data to a multi-dimensional map that makes filtering by location and various defendant demographics possible.

## **DriverCheck - Lead Developer/Architect – 2010-2015**

*DriverCheck provides drug and alcohol testing and occupational health services to organizations across Canada and the U.S., with a focus on safety-sensitive occupations and fitness-for-duty evaluation.*

**Key technologies:** Java, Apache Tomcat, MongoDB

- Co-architected and built a system to replace the legacy drug testing and occupational health management system that the organization had outgrown. The new system uses a REST API to serve both internal users and external clients.
- Designed and implemented a fast ORM layer for data access.
- Designed and implemented the government-compliant random selection process for drug testing.
- Designed and coded the server-side functionality for various system modules, including billing, accounting and scheduling.
- Planned and executed the data migration from the old system to the new one.
- Designed and coded a domain-specific language for users to create data validation rules.
- Designed and implemented an HTML-based reporting engine with a multi-threaded task engine and rendering to PDF print media.

## **Education - Pennsylvania State University - B.A., Philosophy**