Patrick Huarng

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Education

- **The University of Chicago** — Chicago, IL
  Master of Science in Computer Science; GPA: 3.8 — *Aug. 2017 – Jun. 2019*
- **Oregon State University** — Remote; Corvallis, OR
  Post Baccalaureate in Computer Science; GPA: 3.9 — *Jun. 2016 – Aug. 2017*
- **Michigan State University** — East Lansing, MI
  Bachelor of Arts in Finance; GPA: 3.5 — *Aug. 2007 – May. 2011*

Experience

- **M1 Finance** — Chicago, IL
  Senior Software Engineer (Portfolio & Data Tech Lead) — *Nov 2019 - Present*
  - **Performance**: Performance is a Scala, Lagom, Akka, Kafka, SQS service that provides cashflow and performance calculations to our users (serves up more than 450 RPS under peak load). Refactored much of the core logic for money-weighted return calculations, dividend and trade cash flows, re-migrated tens of millions of records, and made the system more stable by handling network failures better and refactoring parts of the app to use a message-based architecture.
  - **Fraud**: Fraud is domain that is housed in multiple different backend services. The solutions I have helped build include: Plaid integrations to get external banking information; Socure integrations to risk-score users when we onboard them; designed and developed a rules-pattern for ACH transfers in/out of M1. All solutions described here use the following technologies: Scala, Lagom, Akka, and Kafka.
  - **Broker**: Broker is a service that accounts for a user's cash, positions, and account information. It is responsible for more than 80% of revenues and is a very critical and complex domain. As a core developer on this system, I have used Lagom and Akka to add new, event-sourced entities to the system (ie. most recently IRA activity and business rules) and resolve issues by hardening the system via bugfix and/or writing additional reactive or batch-based logic.

- **University of Chicago: Center for Translational Data Science** — Chicago, IL
  Software Engineer — *Apr 2019 - Nov 2019 (8 months)*
  - **GDC API**: The GDC API is a Python-Flask system that handles over a 1 million downloads a month and over 10 petabytes of data downloaded annually. Implemented new features like admin endpoints and tarfile download of clinical data.
  - **Reports API**: Convert the reporting features of the GDC API into a microservice. Containerize and deploy the new microservice into various environments. Enhance batch processes to backfill data with additional information (ie. genomic experimental strategy).
  - **ESBuild**: ESBuild is a Python batch-layer system that creates the data for ElasticSearch indices. Refactored and improved caching and denormalization processes of the system improving memory consumption and runtime performance.
- **UChicago Systems Research on Availability, Reliability, and Efficiency** — Chicago, IL
  Research Assistant — *Nov 2018 - May 2019 (6 months)*
  - **MittOS Memory**: Advised by Dr. Haryadi Gunawi and Cesar Stuardo. Research focus is on making distributed systems more performant by being able to signal to other machines that the JVM is in a stop-the-world garbage collection phase. Solutions implemented in OpenJDK 8, Java, and C++.
- **National Opinion Research Center at the University of Chicago** — Chicago, IL
  Software Developer — *Oct 2018 - Apr 2019 (6 months)*
  - **Getting on Track**: Getting on Track is an education application that helps teachers and social scientists measure nationwide kindergarten readiness. Maintained the application, implemented new features, and modernized the Django-JQuery application into separate front-and-backend applications (VueJS and Django-REST).
- **Braintree (a Paypal Company)** — Chicago, IL
  Data Operations — *Jun 2018 - Aug 2018 (3 months)*

- **Batch Systems**: Develop batch systems for the data operations team to process over 12 trillion records. Aggregate various information sources (incidents and other operational data sources) to determine merchant satisfaction levels using a logistic regression model.

- **Information Services Group (ISG)** Detroit, MI; Stamford, CT; Chicago, IL
  Consulting Manager *Dec 2011 - Apr 2019 (8+ years)*
  - **Strategy & Technology Consulting**: Specialist in transaction advisory and cloud advisory. In my consulting career I have been ranked as a top-five consultant in the firm and have been awarded the chairman's club honor twice (an honor given to less than 2% of the company annually).

Projects

- **Project Nora (2020)**: Mobile and web application that allows a user to enqueue from anywhere in the world. My contributions to the system are primarily backend-related work on: AWS, Terraform, Docker, TypeScript, NodeJS, Sequelize, PostgreSQL, and Next.js.
- **BeautyShelf (2019)**: Mobile and web application that keeps track of makeup expiry (beautyshelf.app). Developed the entire web front-and-backend systems in React, Flask (Python), Docker, and AWS.
- **Twitter-Stocks (2019)**: Big-data, Lambda architecture based system with ingestion, batch, serving, speed, and web layers. Built using Kafka, Spark (Scala), Hive, HBase, Flask (Python), and VueJS.

Programming Skills (Interests)

- **Programming Languages**: Scala, TypeScript, JavaScript, SQL, Python
- **Technologies**: AWS, Kubernetes, Terraform, CircleCI, Akka, Lagom, Play, PostgreSQL, NodeJS, React, Kafka