Ferhat Elmas **Passionate Developer**

elmas.ferhat@gmail.com
github.com/ferhatelmas

EXPERIENCE

***Stream Inc.**: Chat and Feed API provider* *Amsterdam, NL*
Principal Engineer *June 22 - Now*
Backend Tech Lead *Apr 21 - May 22*
Senior Engineer *Nov 19 - Mar 21*

- Moved data systems from a mix of Keevo (custom DB on top of RocksDB), PostgreSQL, DynamoDB and ElasticSearch to CockroachDB. Challenges:
  - Amount of data
  - Zero down time
  - Parallel feature development and changing schemas
- Implemented campaigns within the chat to be able to send and to track millions of messages in an automated and customizable way. Challenges:
  - The speedy delivery of massive amount of messages and their tracking and analytics
  - Auto speed adjustments not to DDOS internal subsystems
  - Reliability and extracting enough information for users on errors
- Added open Graph URL enrichment support for shared links. Challenges:
  - Rate limiting, geographical and cloud IP blocking, robots.txt honoring, Javascript rendering
  - Slow target servers
  - Provided customization to the users to how/what to pick from targets
- Implemented a custom CDN on top of S3 and CloudFront. Challenges:
  - Support of various file formats and analytics
  - Optimizations: auto compression, resizing, thumbnailing
  - Privacy controls: refreshment, metadata removal, virus protection
- Implemented push notifications for chat. Challenges:
  - Customization: events, features (translation, collapsing, etc.), multi bundle and tenancy, etc.
  - Various provider support and compatibility between different platforms
  - Performance and the removal of the historical supported max limit of members in a channel
- Implemented message and user search via ElasticSearch for chat. Challenges:
  - No down time migration from PostgreSQL
  - Reusing query parsing and code generation layer from PostgreSQL
  - Indexing of very frequently changing data such as last active time of users
- Added aggregated feed ranking with user provided rules. Challenges:
  - Pressure on the latency due to the amount of data, at least 15x increase
  - Incremental computation and caching the results
  - Working with a custom database which lacks necessary query capabilities
- Added realtime updates for each operation within feed product. Challenges:
  - Scalability due to the nature of the load and slow consumers of the customers
  - Analytics and retry capabilities
- Added batching to external analytics and internal billing tracking APIs. Challenges:
  - Handling money
  - Throttling and implementation of a cost effective automated queueing system
  - TTL of data
- Added automatic sharding Keevo (custom DB on top of RocksDB) in feeds. Challenges:
  - No down time migration
  - Good key selection, handling hot shards and automatic provisioning
  - Handling raft overhead
- Moved statistics from PostgreSQL to Keevo, the source of truth. Challenges:
  - Backward compatibility for the same querying interface without overhead
  - Incremental and scratch counting according to the demand
  - Automatic alerting engine and also custom rule support

AgFlow *Geneva, CH*
CTO *Dec 16 - Oct 19*
Senior Developer *Feb 15 - Nov 16*

- Leveraged machine learning to create automated data pipeline to collect data through different mediums. Challenges:
  - High variable and error-prone sources: natural text emails, HTML/Excel/PDF/OCR, etc.
  - Missing, ambiguous and sometimes intentionally wrong data

  - Syntetic data generation for the gaps and forward prediction
  - Useful human involvement and its support with enough meaningful feedback
  - Integration of other supportive data types to commodity prices such as transport pricing and queueing delay, quality information, taxes, crop amounts, country economical facts, etc.
- Implemented easy to use API to serve collected data. Challenges:
  - Support for various transports such as JSON, RPC, Excel, FIX, SQL, etc.
  - Privacy of the data sources
- Introduced cloud-native infrastructure, data system and versioning. Some examples from the stack are K8s, Rancher, Rook, TimescaleDB, Pachyderm, Drone, Prometheus. Challenges:
  - Changing architecture and infrastructure while adding new features fast and adapting a machine learning stack at the same time
  - Not enough battle tested experience in the community or in the team, and selection should support growth for the foreseeable future
- Modernized the web client via TypeScript from CoffeeScript and implemented the first version of mobile clients in Flutter. Integrated various 3rd party APIs to offload non-critical pieces such as Twilio for WhatsApp data source, TypeForm for structured input from contributors, Auth0 for auth and session sharing prevention, Stripe for subscriptions, Pusher for data sync in clients and push notifications. Challenges:
  - Technologies were new and team didn't have enough experience
- Scaled the development team from 2 to globally distributed 11 members.

Unit9, Innovative Studio *London, UK*
Backend and Infrastructure Developer *Aug 14 - Jan 15*

- Full backend implementation of San Pellegrino Real Foodie competition website. Challenges:
  - Tight deadline, changing requirements, globally distributed team, totally new stack(PHP/Symfony and Angular) and no control over infrastructure
- 3.5 TB tweet analysis to extract brand impressions in terms of location, age, keyword, etc. to show importance of Twitter for brands, which was Twitter 2015 CES experience. Challenges:
  - Tight deadline and delayed/multiple times changed data from Twitter
  - User information wasn't there and required machine learning model to fill the gaps
  - Provided infrastructure wasn't enough to process/serve the amount of data which required a lot of byte shaving tricks

Indico @ CERN *Geneva, CH*
Software Developer *Mar 13 - Aug 14*

- Integrated MVC and structured coding, and extracted microservices which easily enabled using multiple databases for better scalability and speed
- Designed and implemented highly scalable and extensible polyglot storage system OODBMS (ZODB) + RDBMS (PostgreSQL) + NoSQL (Redis and MongoDB)
- Brought Python 3 that results easier maintenance and faster application with fixed many bugs thanks to new Unicode handling
- All in all, made the ground work for the next decade of CERN Event management application

Community Software Lab *Massachusetts, US*
Software Developer *Jun 11 - Feb 12*

- Transition of social service search engines *mvhub.com* and *northshoreport.org* to MVC architecture for easier development and maintenance
- Custom ORM to provide backend agnostic storage system which enables plug and play between different DBMSs
- Normalized DB schema for fixing various update bugs and improved performance

Bogazici University Civil Engineering Department *Istanbul, TR*
Software Developer *Mar 11 - Jun 11*

- Customizable incident detection and load generation plugins for Paramics, a full featured simulation tool used by the department
- Implemented *Traffic Simulator* to test the performance of the congestion/incident detection research algorithms that aren't easily simulated in their tools.

Bogazici University Computer Engineering Department *Istanbul, TR*
Teaching Assistant *Feb 11 - Jun 11*

- CMPE 230 - *System Programming*, teaches compilers, linkers, loaders, Unix and system calls, and uses assembly, make, C and Perl.
- Helped students to prepare 3 projects and graded them, a minimal log parser for *Apache Web Server*, a command line client for *AWS* and a graphical user interface for *wget*

Commencis (previously Monitise/Pozitron) *Istanbul, TR*
Software Developer *Jan 09 - Jun 11*

- *SessionSwitch Service*, a monitoring tool that keeps track of what developers do on their machines. After putting it in place, it seemed everybody worked longer
- *kapalidevre.com digital signage system* that enables customers to prepare custom playlists and to play them on multiple machines at the same time indefinitely such as screens at shopping malls. Rejuvenated the desktop client and integrated multiple web services to provide long-time lacking features such as news, weather forecasts, radio, etc.
- *Download Manager*, a web application to serve versions of mobile applications at pre-smart-phone era according to phone specification. A much simpler version of Google Play.
- Implemented custom simple Nagios, *Server health watcher aka Big Brother*, for analytics and emergency recovery
- Implementation of a manager for logs and notifications for mobile banking at Turkish IsBank
- Domain specific editor for a custom XML-based language, that is used to define the hierarchy of the code written by the company

COMPUTER SKILLS

- Solid background on **data structures**, **algorithms** and **distributed systems**
- Experienced developer on **Linux** environment
- Mostly drives **Go/Python/JavaScript** but can also pick up any language according to the needs
- Experienced in **RDBMSs (CockroachDB, PostgreSQL)**, **time-series DBs (TimescaleDB / Prometheus)**, **NoSQL DBs (Redis / etcd / ElasticSearch / DynamoDB)** and used **RabbitMQ / NATS / Kafka** for communication, and leveraged **Envoy / K8s / Terraform / Ansible** as part of the critical infrastructure

EDUCATION

Master of Science, Computer Science, with Internet Computing Specialization 2014
School of Computer and Communication Sciences
Swiss Federal Institute of Technology in Lausanne(EPFL), Switzerland
Thesis: *"New Storage System for Indico, Event Management at CERN"*
Semester Project: *"Nokia Mobile Data Challenge - Demographic Attributes"*
Extra Project: *"Squall, Online Query Processing Engine on top of Twitter Storm"*

Bachelor of Engineering, Computer Engineering 2011
Faculty of Engineering
Bogazici University, Istanbul, Turkey
Thesis: *"Social Analysis on DeviantART"*