J. David Lee

Warmondstraat 122 HS
1058 KZ Amsterdam
☎ *06 4767 7304*
✉ *johnl@crumpington.com*

Employment

2020-Present **Stream**, *Senior Back-end Engineer.*

- Designed and developed a concurrency limiter to avoid load spikes on back-end services. The code allows configuration of limits per-endpoint and per-client. The limiter was deployed on API nodes around the world handling tens of thousands of requests per second.
- Redesigned and built a tiered in-memory/Redis key-value caching system to handle high throughput requests for client configuration. The system is composed of an in-memory LRU cache on top of a shared Redis cache. The system provides error caching, thundering herd mitigation, out-of-band change detection, versioning, and bounded memory usage.

2018-2020 **Suburbia (ING)**, *Lead Architect/CTO.*

- Managed a dedicated team in the development of a fingerprinting and tagging interface and API. The system allows humans and applications to tag billions of rows of receipt line-items with the product, brand, and company information necessary to inform our users' investment decisions.
- Managed and participated in the development of customer-facing data access services, including web, SFTP, and S3 compatible interfaces. These services provide customers with familiar ways of accessing data regardless of their level of technical expertise or experience.
- Developed a distributed build system able to ingest and process millions of records per second from disparate providers into a data-set suitable for analysis by both internal and external customers.

2017-2018 **Nxchange B.V.**, *Developer/Lead Architect.*

- Designed and developed software providing a uniform API to access liquidity in the currency markets. The software provides volume-based pricing and trade execution for internal systems. Integration with major banks was accomplished with FIX protocol connections. Coordinated validation of functionality with banks and internal stakeholders. This system was handling 30 million dollars a day in trades soon after release.
- Designed and developed back-end systems to support real-time trading screens for a large institution and its clients. The system provides real-time volume-based pricing and order types including pre-quoted, stop, and limit. The system can synchronously cover orders to eliminate risk, or send orders to a trading desk.
- Integrated with a large international bank in order to provide customers with externally-insured cash trading accounts. The integration limits risk for customers, and eliminated the technical and regulatory issues associated with holding cash on clients' behalf.
- Planned architectural changes to back-end systems to isolate independent components, simplify new development, and improve performance and reliability. The systems in question support functionality including wholesale and retail sales, retail stock and bond trading, and professional currency trading.

2015-2017 **Readmore B.V.**, *Developer/First Employee.*

- Designed and developed an API in Go to support iOS, Android, and web applications. To the extent possible, the application's configuration was moved into the back end, allowing on-the-fly changes to app-store parameters, security settings, analytics, and UI elements. Integration with 3rd party CRM systems was accomplished via a number of web-hooks.

- Designed and developed an Android application to take advantage of the API described above. Modified legacy iOS application to utilize the new features provided by the API.

- Developed a system to generate responsive websites from static documents. The system was composed of three components: (1) An interface for users to upload and edit content and configuration (2) A public-facing website (3) An interface allowing editors to generate markdown from a user's uploaded content.

2014-2016 **Crumpington Consulting**, *Consultant.*

- Developed full-stack, customer-facing web application using Go, MariaDB, Beanstalkd, Bootstrap, and jQuery, and integrating services including Mozilla Persona, OpenStack Swift, Stripe, Dwolla, and Mailgun. Built site from the ground up while working with the client to refine and clarify the design, leading to a clean, maintainable implementation.

- Performed analyses of employment and payroll data for a construction company's legal team to generate reports in support of a lawsuit settlement process. The analysis identified problems with book-keeping and provided legal counsel with accurate information necessary for negotiations on a tight schedule.

2007–2014 **University of Wisconsin-Madison**, *Programmer/Analyst and Research Assistant.*

The Plasma Physics Group at the University of Wisconsin-Madison conducts experimental, theoretical, and computational research in areas including magnetic confinement for fusion plasmas and investigation of fundamental physics processes in astrophysical plasmas.

- Created data-acquisition and analysis system for a US Department of Energy funded multichannel x-ray spectrometer experiment, including a high-performance pulse-identification algorithm in Python and C. The system enables scientists to investigate high-energy electron production and confinement within a plasma, and has provided data for a number of publications.

- Developed consolidated on-line logging system for the Madison Symmetric Torus experiment. The system serves as a central, shared repository of scientific notes, experimental operation and safety data, and continuously recorded sensor data. In addition, it provides tools for querying and plotting sensor and plasma discharge characteristic data. The system is used by over 100 scientists, and is required for daily operation of the experiment. In over five years of continuous operation, the system has not experienced any unscheduled downtime.

- Worked with a small team of physicists to develop a database of plasma characteristics for over 300,000 plasma discharges encompassing over 5 TB of data. Performed database design and administration, and developed routines to generate summary characteristics from raw plasma data. The database and associated web interface allow scientists to identify plasma discharges using over 50 computed characteristics.

- Redesigned data analysis routines for a plasma temperature diagnostic, improving computational performance by a factor of 100. The improved performance allowed the Plasma Physics department to replace a 22 machine cluster with a single computer. This change reduced experimental costs, decreases the amount of time spent waiting for data processing, and allowed scientists to increase the number of measurements per discharge from 2 to over 30.

2004–2006 **Marshfield Clinic Information Systems**, *Programmer/Analyst.*

Marshfield Clinic is one of the largest group medical practices in the United States, with more than 700 physicians, 6,000 employees, and 50 locations in northern, central and western Wisconsin.

- Worked on a two-man team to design, implement, and support a hierarchical document storage system and associated GUI for a medical records application used by thousands of health-care workers. This work was done in support of a contract to provide digital medical records software to an associated hospital while retaining their previously existing organizational structure.

- Worked on a small team integrating a custom hardware dictation device into a structured document editor to streamline the radiology work-flow. The system improves efficiency by allowing radiologists to navigate between images, dictate notes, and have those notes transcribed without interacting with their workstations.

- Wrote tracking and reporting system for digital transcription jobs on top of a legacy in-house database. The new system obviates the need for time-consuming manual report generation and allows management to reduce backlog and wait-time for transcription services for hundreds of health-care providers.

Education

2014 **University of Wisconsin-Madison**, *Master of Science in Plasma Physics.*

2002 **University of Wisconsin-Madison**, *Bachelor of Science in Computer Sciences.*

Publications and Presentations

2015 **A high time resolution x-ray diagnostic on MST**, *Ami M. DuBois, John David Lee, Abdulgader F. Almagri*, Review of Scientific Instruments, prepublication.

2015 **Overview of results from the MST reversed field pinch experiment**, *J.S. Sarff et al.*, Nuclear Fusion, 55 104006.

2013 **Constraining Z_{eff} and particle diffusion using x-ray spectroscopy on MST**, *J.D. Lee, A.F. Almagri, J.K. Anderson, B.E. Chapman, J.S. Sarff, R.W. Harvey*, APS-DPP-13 Denver, Colorado, presentation.

2013 **Overview of results from the MST reversed field pinch experiment**, *J.S. Sarff et al.*, Nuclear Fusion, 53 104017.

2012 **Fast electron studies using a multichord x-ray spectrometer on MST**, *J.D. Lee, A.F. Almagri, J.A. Goetz, B.E. Chapman, J.S. Sarff, R.W. Harvey*, APS-DPP-12 Providence, Rhode Island, presentation.