Chris Ball

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2020/05- **Lead Application Security Engineer**, Zoom Video Communications. *Skills: Vulnerability research, code review, fuzzing.*
Working on the Offensive Security team as the technical lead for Application Security, performing penetration tests and vulnerability research across all of Zoom's products and services. I also work as the technical lead and incident commander for Zoom's Product Security Incident Response Team (PSIRT), performing triage and analysis of high-impact vulnerabilities, as well as giving regular executive briefings on behalf of PSIRT.

While at Zoom, I've been fortunate to attend Richard Johnson's *Advanced Fuzzing and Crash Analysis* training, as well as many CodeQL workshops with GitHub. I'm a dedicated Capture The Flag player, and qualified for and competed in the DEF CON CTF Finals 2022 with team Samurai.

2015/09- **Engineer**, Keybase, Inc. *Skills: Go, JavaScript, Node, Electron, iOS, Android, React.*
2020/05 Keybase was a cryptography startup, and was acquired by Zoom in mid-2020. I joined as an early engineer, and worked as a generalist across Keybase's client-side desktop and mobile apps and server-side infrastructure. I also took responsibility for infosec tasks such as conducting internal penetration tests and managing the bug bounty.

2015/03- **Sabbatical**, Recurse Center. *Skills: Distributed Systems, Node.*
2015/07 The Recurse Center runs an intensive three-month programming workshop (like "a writers' retreat for programmers") in New York City. As an attendee I created a project called GitTorrent – a "decentralized GitHub", using BitTorrent for peer-to-peer Git repository hosting, a Distributed Hash Table for user data, and Bitcoin's blockchain for user registration.
I presented GitTorrent at the Data Terra Nemo conference on decentralization in May 2015.

2013/06- **Vice President of Engineering**, FlightCar, Inc. *Skills: Django, Python, JavaScript, Node, AWS, HTML5, CSS3.*
2015/03 FlightCar was a carsharing startup operating at airports. I joined as their first developer hire after seed funding, and was promoted to VP of Engineering in September 2013. FlightCar raised $13.5M in Series A funding in September 2014, and was ultimately acquired by Mercedes-Benz. I was responsible for technology development, hiring, and ensuring high availability at a 24/7 business running at twelve physical airport locations.

Alex Fringes and I built a telepresence robot for a remote member of our team using Arduino, a motorized pan head, Bluetooth Low Energy, and iOS.

2006/10- **Lead Software Engineer**, One Laptop Per Child. *Skills: Python, Linux kernel, C, Android.*
2013/06 Software generalist work throughout OLPC's software platform. While working at OLPC I took over as the upstream Linux kernel subsystem maintainer for the MMC/SD/SDIO card subsystem, from 2010 to 2015.

- **Prototype to production** – Participated in four "factory bring-ups" in China and Taiwan as the hardware bring-up team's software support, helping to debug and test early laptop prototypes for each of OLPC's four laptop models.
- **UX research** – Modified "Vino" remote desktop to create a Multi-pointer Remote Desktop.
- **Automated testing** – Created a "Tinderbox" for OLPC: an automated hardware and software test harness (written in Python) that can upgrade an OLPC laptop, run a test suite against each new build, and take power measurements.
- **Kernel drivers** – Worked on OLPC's wifi, video, audio, SD, and camera drivers.
- **Offline Wikipedia** – Led OLPC's WikiBrowse project to create compressed offline Wikipedia snapshots for the XO. WikiBrowse has been used to bring a snapshot containing the most popular 30,000 Spanish Wikipedia articles to hundreds of thousands of children in Peru, as described in this blog post.
- **Android app** – Worked on OLPC's Literacy Project in Ethiopia, which introduced Android tablets with educational apps to illiterate villages. I wrote an Android app for assessing progress with pre-literacy concepts, and analyzed the data it generated. More details are in a short video by CNN and a Technology Review article. We published Growing Up With Nell: A Narrative Interface for Literacy.

2005/07- **Internet Services Engineer**, Netcraft Ltd. *Skills: C, PHP.*
2006/09 Netcraft has been performing analytics on the Internet since 1995. I ran tests against large blocks of Internet hosts, analyzed the results, and developed new tools. I performed security penetration tests on customer websites, and wrote a request tracker for Netcraft's "Takedown" service for phishing sites, based on the Mantis bugtracker (written in PHP).

2003/09-2005/09 **Research Associate**, Cambridge University. *Skills: C, C++.*
Working in the Cambridge University Physics Department's Inference Group under Prof. David MacKay, as lead developer and project manager of the Dasher Project, which is an open-source text entry system with roots in information theory and arithmetic coding. Dasher is written in C and C++, my role involved development of new features and managing Dasher's open-source developer community.

Publications:
Efficient communication with one or two buttons
Efficient communication by breathing
Dasher's One-button Dynamic Mode – Theory and Preliminary Results

2002/06-2002/09 **IT Analyst**, Morgan Stanley UK. *Skills: Unix, Perl.*
Took part in a three-month summer internship for Morgan Stanley's internal IT department based in Canary Wharf, London, working in the Unix Engineering, Information Security and Floor Support groups.

2000/12-2002/06 **Web Engineer**, FAST Web Media Ltd. *Skills: SQL, Oracle, Perl.*
Working part-time (20 hours/week, alongside my undergraduate degree), I maintained one of the layers in FAST's search engine: a large repository of Perl code responsible for scraping and parsing HTML coming from the web and placing structured data into an Oracle database on Linux. While working at FAST, I began my contributions to free software with some modules in Perl's CPAN archive, some patches to Perl itself, and technical writing about the process of web spidering.

Publications:
Articles for perl.com: Create RSS channels from HTML news sites, Screen-scraping with WWW::Mechanize.
Two chapters of Spidering Hacks, published by O'Reilly and Associates.

Education

2000/09-2003/09 **B.Sc. (Hons) Computation**, University of Manchester Institute of Science and Technology (UMIST).
Undergraduate degree, with classes in computer science and mathematics. Throughout my degree, I helped to maintain the University of Manchester Computer Society's Unix network as a volunteer systems administrator. My undergraduate thesis ("A Java compiler retargeted at .NET") explored an interest in compiler design, modifying an existing Java compiler (IBM's Jikes, written in C++) to output .NET assemblies instead of Java classes. The conversion was somewhat fragile, and there were some types of inheritance it couldn't handle, but it was able to emit working .NET bytecode for a wide range of the small Java programs in its test suite.

Personal projects

- **New web technology** – I'm excited about WebRTC (a standard for peer-to-peer audio/video and general data transfer between web browsers). In 2013 I blogged about an experiment I created with JavaScript to use WebRTC in a more decentralized way. I've since added Node support to the project, and in 2014 WebRTC Conference and Expo named me a WebRTC Pioneer for this work.
- **Puzzles** – I have competed in MIT's Mystery Hunt on Team Codex since 2009. In 2011, we won the hunt: this made us responsible for putting together the 2012 hunt, which was a large organizational and technical challenge. and applications in the Xorg project on different classes of machines.
- **Arduino** – I enjoy learning about embedded hardware, especially microcontrollers. In March 2010, Mad Price Ball and I made an e-mail counting t-shirt using an Arduino Lilypad. It went somewhat viral, with articles on sites like Engadget and more than 160,000 views on the YouTube video.
- **Collaboration tools** – From 2008-2012, I maintained Bugs Everywhere, a "distributed bugtracker" written in Python.
- **Data visualization** – Mad Price Ball and I wrote ExploreTree, a tree visualization program written in the Processing programming language. ExploreTree was a winning entry in the 2009 Processing Time code jam at MIT.
- **Diversity** – In 2006, Hanna Wallach and I proposed and ran the GNOME Women's Summer Outreach Program, which raised USD $20k in grants to fund six summer internships for women on the GNOME project.

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https://printf.net/resume.pdf — Last updated: August 20, 2022. Typeset using Fira Sans in XeTeX.