

# Zach McCormick

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## SUMMARY

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Zach is a software engineer and manager passionate about building and maintaining global-scale distributed systems. He has experience with distributed systems, web applications, and mobile applications across a variety of industries, including marketing automation, fintech, IoT, healthcare, and mobile cybersecurity, as well as across a variety of languages and technologies, including Python, Java, JavaScript, Ruby, PostgreSQL, MySQL, MongoDB, Redis, and others. He currently works for Braze managing the engineering team behind Canvas, a workflow engine for marketing automation that is responsible for orchestrating hundreds of millions of messages per day.

## PROFESSIONAL EXPERIENCE

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- **Braze (formerly Appboy)** New York, NY  
*Engineering Manager - Messaging & Automation Team* Jun 2019 - Present
  - **Manager and Scrum Master:** Led Scrum methodology for the Messaging and Automation Team (9 direct reports).
- **Braze (formerly Appboy)** New York, NY  
*Senior Software Engineer - Messaging & Automation Team* Mar 2018 - Jun 2019
  - **Member of Messaging and Automation Team:** Created and enhanced high-frequency features of "messaging pipeline", including Frequency Capping and Audience Segmentation, involving Ruby, MongoDB, Redis, PostgreSQL, and Memcached.
  - **Member of Platform Infrastructure Team:** Re-engineered local development paradigm using Docker Compose. Migrated most CI work to Buildkite with Knapsack, reducing build times by over 50 percent. Integrated CodeCov, Danger, and various static analysis tools to build process.
  - **Postgres Task Force:** Realized need for cross-team task force to implement Postgres at scale (Amazon Aurora). Coordinated multiple stakeholders across product management, DevOps, and engineering teams.
  - **Integration and Enablement - Datadog:** Took responsibility for Datadog integration in platform code, involving multiple phone calls, canary deploys, and debugging around issues related to Ruby traces, MongoDB spans, and more. Led enablement to entire product organization via Lunch and Learns and extensive documentation.
- **Trailblazing Technology LLC** Nashville, TN  
*Principal Consultant / Owner* Jun 2011 - Mar 2018
  - **Learning Sciences Observation Application (LSOA):** Produced an iPad application using an agile methodology to provide teachers with an efficient interface for rapidly capturing evidence of students learning.
  - **Several Private Contracts:** Assisted in litigation research and code review for a variety of technology patents involving mobile operating systems, audio encoding/decoding, engine micro-controller design, sensor fusion algorithms, and human-computer interaction.
  - **Private Contract:** Assembled a data-cleaning and machine learning research pipeline to ingest patient data for prison populations to predict the likelihood of suicide to automatically flag high-risk patients.
  - **Online Timeline Follow-Back (O-TLFB):** Implemented a commonly used Timeline Follow-Back survey as an online service to aid in collecting of research data for Renée Martin-Willett at UC Boulder.
  - **Private Contract:** Produced a Python 3 application performance monitoring (APM) solution for on-premise or SaaS deployment. The software could record data, display graphs, and execute local or remote scripts.
  - **Private Contract:** Finalized and verified the correctness of a plugin for HPE LoadRunner for performance testing of various IoT protocols.
  - **DSyM SaaS Application:** Developed a SaaS application for scoring texts according to decoding difficulty for researchers at Vanderbilt University.
  - **SchoolTube:** Migrated a YouTube-like web application from Rackspace to AWS and upgraded foundational technologies in the process (upgraded Django, moved to NGINX, moved to Waitress, etc.).
  - **Computer-assisted Personal Interviewing (CAPI) Application:** Designed and implemented an Android tablet application for interviewing and surveying refugees who may have limited prior exposure to technology or limited literacy or numeracy skills.
  - **PhoneTcB:** Developed an Android application for detection of neonatal jaundice via typical 3rd-world smartphone hardware in coalition with the research group of Prof. Chetan Patil at Temple University.
- **HoneyCo Homes** Nashville, TN  
*Product Engineer* Aug 2016 - Apr 2017
  - **Startup Engineering/First Engineer:** Designed smart home IoT hardware/software architecture, wrote front-end and back-end code, managed deployment and infrastructure, recruited engineers and product managers, and led the technical team.
  - **Installation and Support:** Designed installation, equipment management, and operational processes. Installed and supported several software/hardware deployments.

- SmileDirectClub** Nashville, TN  
*Senior Systems Engineer* *Oct 2015 - May 2016*
  - Dockerization:** Reworked organization-wide software deployment process using Docker to reduce cost, improve reliability, and ensure repeatability/consistency within one month of joining the team.
  - Microservices to Monolith:** Migrated a suboptimal microservice architecture to a monolithic Django application to enable engineering team to maximize efficiency by leveraging mature open-source libraries and components.
  - Data Warehousing:** Established a data warehouse for single-source-of-truth analysis of business's CRM, ERP, and eCommerce processes.
- CircleUp** San Francisco, CA  
*Remote Engineer* *Feb 2015 - Oct 2015*
  - Django Web Application:** Developed software in Python using the Django framework to improve and add new features to CircleUp's investor/company marketplace.
  - Mechanical Turk:** Engineered a solution using Amazon Mechanical Turk to gather "soft" information (that could not be automatically scraped) about companies and industries for a data gathering utility to provide unique market insight for investors.
  - Big Data Integration:** Integrated various data sources and external APIs with analysis tools to provide unique insight for both entrepreneurs and investors using Big Data approaches like data mining and machine learning.
- Spotwise** Nashville, TN  
*Co-founder* *Mar 2014 - Apr 2015*
  - Founding Research:** Developed initial software product for participation in the Multi-City Innovation Challenge in 2014 (between Boston, Nashville, Charlotte, and Palo Alto) and produced presentation and video, leading to our acceptance at the Jumpstart Foundry.
  - Team Building:** Created founding team (both engineering and business development/corporate team) in the Spring of 2014 before our entry into the Jumpstart Foundry startup accelerator.
  - Engineering Management:** Led engineers to build prototypes and mockups needed by corporate team to pivot quickly and determine the optimal trajectory of the company post-funding.
- Optio Labs** Nashville, TN  
*Senior Development Engineer / Director of Research* *Aug 2012 - Jan 2015*
  - Corporate Strategy:** Participated as part of the executive leadership team in the creation of a strategy to steer the company from research and development of features aimed toward system integrators, to the development of products for end users.
  - Mobile Cybersecurity Market Research:** Executed market research from a technical perspective for all existing and future projects to determine competitor offerings, differentiating factors in our products, and overall market direction.
  - Mobile OS Policy Engine:** Developed and architected a highly flexible policy engine and communications framework for Android and Spring that eventually led to the Optio Labs' product named Kodomo.
  - OptioCAC:** Designed and implemented industry leading Android CAC/PIV smartcard middleware, simplifying use of smartcards and hardware cryptographic tokens for application developers.
  - OptioCore:** Researched and developed prototypes with a team for several innovative security products based on the in-house OptioCore framework, such as a workbench for behavioral analysis of Android malware and multi-persona support for Android with an NSA-grade cryptographic barrier between personas.

## EDUCATION

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- Vanderbilt University** Nashville, TN  
*Bachelor of Science in Computer Science and Mathematics; GPA: 3.5* *Aug 2009 - May 2013*
  - Activities & Societies:** Phi Gamma Delta, Vanderbilt Mobile Applications Team, Vanderbilt Student Government
- Budapest University of Technology and Economics** Budapest, Hungary  
*Semester abroad studying Software Engineering* *Spring 2012*

## TALKS AND PRESENTATIONS

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- MongoDB World 2019** New York, NY  
*How Braze Uses the Aggregation Pipeline for Lean, Mean, and Efficient Scaling* *June 17, 2019*
- Datadog Dash 2019** New York, NY  
*How Small Changes Can Make Huge Waves* *July 17, 2019*

## PUBLICATIONS

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1. R. Martin-Willett, Z. McCormick, W. Newman, L. Larsen, M. O. Torres, and L. Bidwell, "The transformation of a gold standard in-person substance use assessment to a web-based, redcap integrated data capture tool," *Journal of biomedical informatics*, vol. 94, p. 103186, 2019
2. R. Martin-Willett, M. Blevins, L. Bailey, Z. McCormick, and M. Aliyu, "Interdisciplinary wellbeing construct developed among resettled refugees," *Journal of International Migration and Integration*, vol. 20, no. 1, pp. 15–30, 2019
3. R. Martin-Willett, Z. McCormick, and M. Aliyu, "Novel tablet-based personal interviewing application use among newly resettled refugees," *Health and Technology*, vol. 8, no. 1-2, pp. 57–61, 2018
4. A. P. Dumont, B. Harrison, Z. T. McCormick, N. G. Kumar, and C. A. Patil, "Development of mobile phone based transcutaneous bilirubinometry," in *Optics and Biophotonics in Low-Resource Settings III*, vol. 10055, p. 100550T, International Society for Optics and Photonics, 2017
5. J. White, Y. Pan, and Z. McCormick, "Addressing the challenges of http-based mobile/cloud interaction," in *2014 2nd IEEE International Conference on Mobile Cloud Computing, Services, and Engineering*, pp. 200–209, IEEE, 2014
6. D. C. Schmidt and Z. McCormick, "Creating and teaching a mooc on pattern-oriented software architecture for concurrent and networked software," in *Proceedings of the WaveFront Forum at the SPLASH 2013 conference*, 2013
7. D. C. Schmidt and Z. McCormick, "Producing and delivering a coursera mooc on pattern-oriented software architecture for concurrent and networked software," in *Proceedings of the 2013 companion publication for conference on Systems, programming, & applications: software for humanity*, pp. 167–176, 2013
8. Z. McCormick and D. C. Schmidt, "Data synchronization patterns in mobile application design," *Vanderbilt University*, pp. 1–14, 2012