

# Rob McColl

Software Engineer + Architect. Experience from embedded solutions to web-scale encryption platforms, early-stage startups to government research and enterprise IT. Innovative solutions to challenging problems.

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## EXPERIENCE **Co-Founder and CTO, Documi, Inc.** | SEP 2021 - PRESENT

Developed encrypted document distribution, control, and telemetry platform with real-time streaming, dynamic rules engine, page level control, multiparty key infrastructure with forward secrecy, mobile and web client libraries + applications, document viewer, rules editor, messaging, telemetry views. Shared responsibilities for running and leading the company with co-founder.

## **Co-Founder and Head of Engineering, Nix Software, Inc.** | SEP 2018 - AUGUST 2021

Led design and development of consumer data protection management platform for GDPR/CCPA compliance, with fully automated data rights management. Integrations for Magento, Salesforce, HubSpot, and MuleSoft. Produced comprehensive documentation, APIs, and usage examples. Actively participated in sales and marketing activities, collaborating with the CEO and CMO. Worked closely with customers to implement and refine products.

## **Platform Architect, Ionic Security, Inc.** | May 2014 - SEPT 2017

Designed and led the development of a document store on top of Cassandra, optimizing secondary indices for efficient querying. Redesigned the system architecture, significantly reducing the minimum footprint and enabling horizontal scalability on a single node. Designed and developed high-performance multi-datacenter key management infrastructure capable of generating, encrypting, and storing ~10,000 keys / second per tenant. Developed cloud or on-prem authentication infrastructure with support for SAML, OAuth, Email, cross-tenant federation. Designed key addressing scheme and system routing.

## **Research Scientist, CTISL, Georgia Tech Research Institute.** | AUG 2012 - May 2014

STINGER dynamic graph technology to analyze large streaming semantic and temporal datasets under the DARPA ADAMS program. Developed a client-server architecture, templated parsing tools, integrated analytics, and web-based visualizations and front ends for streaming data analysis problems. Developed tools for the analysis, exploration, and representation of XDL-level FPGA configuration.

## **Research Assistant, HPC Lab, Georgia Tech** | AUG 2010 - AUG 2012

Researched large-scale high-performance parallel streaming graph applications for multi-core and massively multithreaded architectures. Conducted research in application-driven design for future architectures under the DARPA UHPC program.

## **Client Support Team, Mercedes-Benz U.S. Intl. I.T. Dept.** | SUMMER 2006 - 2010

## **Software Development Intern, Toshiba DPDC** | JAN 2009 - SEPT 2009

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## EDUCATION **Masters of Science, Computer Engineering, Georgia Institute of Technology** | AUG 2012

GPA 3.90 - Incomplete PhD Work

## **Bachelors of Engineering, Computer Engineering, Vanderbilt University** | May 2010

GPA 3.92 - summa cum laude

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## TECH SKILLS

Go, JavaScript, React, Dart, Flutter, Lua, C/C++, OpenMP, CUDA, Java, Python, Kotlin, PHP, C#, PostgreSQL, Redis, SQLite, MongoDB, Graph Databases, Casandra, Docker, Kubernetes, GCP, AWS, Windows / Linux / MacOS, nix command line tools, CI/CD pipelines

\*see <https://robmccoll.com/pages/resume/> for full list + what I know and have done in each

## PATENTS

Systems and Methods for Requiring Cryptographic Data Protection as a Precondition of System Access. U.S. Patent 11210412. Filed Feb. 1, 2018, Issued Dec. 28, 2021.

Systems and Methods for Encryption and Provision of Information Security using Platform Services. U.S. Patent 10020936. Filed April 3, 2017, Issued July 10, 2018.

Systems and Methods for Encryption and Provision of Information Security using Platform Services. U.S. Patent 9614670. Filed Feb. 6, 2016, Issued April 4, 2017.

## PUBLICATIONS

R. C. McColl, D. Ediger, and D.A. Bader. "Many-Core Memory Hierarchies and Parallel Graph Analysis," Poster Session, 15th SIAM Conference on Parallel Processing for Scientific Computing (PP12), Savannah, GA, February 15-17, 2012.

O. Green, R. McColl and D.A. Bader, "GPU Merge Path - A GPU Merging Algorithm," Conference Presentation with Proceedings, 26th ACM International Conference on Supercomputing (ICS 2012), San Servolo Island, Venice, Italy, June 25-29, 2012.

O. Green, R. McColl and D.A. Bader, "A Fast Algorithm for Streaming Betweenness Centrality," Conference Presentation with Proceedings, 2012 ASE/IEEE International Conference on Social Computing, Amsterdam, The Netherlands, September 3-5, 2012.

D. Ediger, R. McColl, J. Riedy and D.A. Bader, "STINGER: High Performance Data Structure for Streaming Graphs," Conference Presentation, The 16th Annual IEEE High Performance Extreme Computing Workshop (HPEC), Lexington, MA, September 10-12, 2012.

T. Senator, D.A. Bader, et al., "Detecting Insider Threats in a Real Corporate Database of Computer Usage Activities," 19th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), Chicago, IL, August 11-14, 2013. (726 papers submitted: 17.4% acceptance rate)

J. Fairbanks, D. Ediger, R. McColl, D.A. Bader and E. Gilbert, "A Statistical Framework for Streaming Graph Analysis," IEEE/ACM International Conference on Advances in Social Networks Analysis and Modeling (ASONAM), Niagara Falls, Canada, August 25-28, 2013.

R. McColl, O. Green, and D.A. Bader "A New Parallel Algorithm for Connected Components in Dynamic Graphs," The 20th Annual IEEE International Conference on High Performance Computing (HiPC), Hyderabad, India, December 18-21, 2013. (196 papers submitted: 25.0% acceptance rate)

R. McColl, D. Edgier, J. Poovey, D. Campbell, and D.A. Bader "A Brief Study of Open Source Graph Databases," ArXiv e-prints. cs.DB 1309.2675. September, 2013.

R. McColl, D. Ediger, J. Poovey, D. Campbell, and D.A. Bader "A Performance Evaluation of Open Source Graph Databases," The 1st Workshop on Parallel Programming for Analytics Applications (PPAA 2014) held in conjunction with the 19th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP 2014), Orlando, Florida, February 16, 2014.

D. Ediger, R. McColl, J. Poovey, and D. Campbell "Scalable Infrastructures for Data in Motion," The 1st International Workshop on Scalable Computing for Real-Time Big Data Applications (SCRAMBL '14) held in conjunction with the 14th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2014), Chicago, Illinois, May 26, 2014.

D. Appling, E. Briscoe, D. Ediger, J. Poovey, and R. McColl "Deriving Disaster-Related Information from Social Media," The 2014 ACM KDD Workshop on Learning about Emergencies from Social Information (LESI), New York, New York, August 24, 2014.

D. Ediger, S. Appling, E. Briscoe, R. McColl, and J. Poovey "Real-Time Streaming Intelligence: Integrating Graph and NLP Analytics," The 18th Annual High Performance Extreme Computing Workshop (HPEC), Lexington, MA, September 9-11, 2014.