Michael Cordle

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SUMMARY

Accomplished engineer with 15 years of experience covering a broad range of technical expertise and leadership roles. Extensive background in software development, embedded systems and optimization algorithms, with a track record of success in driving complex, multi-disciplinary projects. A collaborative team player with exceptional communication skills and a passion for creating innovative and efficient solutions that exceed expectations.

SKILLS

Languages: Assembly, C, C++, C#, Matlab, Python, SQL

Protocols: I2C, Modbus, NVMe, OPC, PCIe, SAS, SATA, SPI, UART

Tools and Software: Agile, Eagle, Gerrit, Git, Jira, JMP, Linux, Perforce, Solidworks, VS Code

Certifications: NCEES Fundamentals of Engineering (FE) Certification, Six Sigma Brown Belt Certification

EXPERIENCE

Senior Cloud Hardware Engineer June 2024 – Present
Amazon Web Services Denver, CO

Drive the development of new storage device technologies that can be deployed at scale to AWS's existing and rapidly growing portfolio of data storage systems and products.

- Design distributed systems for data storage that improve storage density, cost, and scalability.
- Analyze bus traces, device logs, and Linux kernel logs to debug issues with storage node software.
- Perform root cause analysis and corrective actions for reliability excursions related to storage devices.
- Building dashboards for monitoring key health metrics for a global fleet of storage devices to provide early detection of operational anomalies and enable data-driven decision making.
- Developed an end-to-end solution for deploying and monitoring component firmware.
- Developed a financial model to evaluate the cost-effectiveness of a new control plane feature, resulting in $17M cost savings per quarter.

Senior Firmware Engineer November 2023 – June 2024
Garmin International Boulder, CO

Develop and support embedded C/C++ firmware for the NFC-based contactless payment subsystem for Outdoor and Fitness wearable devices.

- Analyzed system logs, memory dumps and hardware-software interactions to debug and optimize firmware performance for low power consumption.
- Architected a scalable python framework and REST API for an automated end-to-end test system for CI and nightly regression testing.
- Designed electrical circuits, PCB layouts, and optimized RF register settings in NFC hardware to meet performance and EMVCo regulatory requirements.

Technology Architect, CTO Office June 2022 – November 2023
Seagate Technology Longmont, CO

Engage with industry partners, consortia, academia and open communities to understand industry trends and influence Seagate's research and product development strategy.

- Managed a roadmap of innovative HDD technologies, charting strategic paths for market adaptation.
- Led the development of a proof-of-concept HDD device with a native NVMe interface, with goals to reduce costs for customers and promote system composability through a common architecture.
- Member of the Immersion Cooling Steering Committee within the Open Compute Project (OCP) and leader of the Warranty Guidelines in Immersion Cooling workstream.
- Contributed to open-source C++ software projects to integrate support for Seagate's vendor-specific reliability telemetry system.

Device Physics Research Engineer May 2017 – June 2022
Seagate Technology Longmont, CO

Advance the physical understanding of future magnetic recording technologies to generate IP for next generation data storage and underpin the roadmap of future HDD products.

- Led an initiative to align the development efforts of software engineering teams across the U.S. and Asia.
- Invented new calibration algorithms to integrate and test experimental hardware designs for feasibility in long term revenue generating products.
- Developed and trained neural networks using PyTorch to effectively reduce the computational complexity of micro-magnetic simulations and detect anomalies in disk drive operation.

Design Engineering Lead May 2015 – May 2017
Seagate Technology Shakopee, MN

Provide strategic work direction to a cross-functional engineering team to meet product design requirements for performance, reliability, and cost.

- Achieved the company's fastest-ever product launch to capture an additional $200M in revenue.
- Applied the 8D process to direct failure analysis and corrective actions of reliability test beds.
- Prepared highly complex technical content for customer design and product phase gate reviews.

Integration and Development Engineer May 2011 – May 2015
Seagate Technology Shakopee, MN

Design manufacturing automation scripts and embedded firmware solutions to improve factory yield and throughput.

- Developed Python test scripts and embedded C firmware for a fully automated manufacturing test process for the integration, optimization and verification of disk drive subsystems.
- Performed root-cause failure analysis and troubleshot complex cross-functional technical issues.
- Pioneered the understanding of the effects that disk drive geometries have on HAMR optimization.

EDUCATION

Master of Science in Electrical Engineering May 2017
University of Minnesota Minneapolis, MN

- Thesis: Effects of Radius and Skew on Areal Density in an HAMR Hard Disk Drive

Bachelor of Science in Electrical and Computer Engineering May 2010
University of Minnesota Duluth Duluth, MN

- Minors: Computer Science, Applied Mathematics
- Senior Design: Variable Frequency Drive for Three-Phase Induction Motors
- Study Abroad: Waikato University, Hamilton, New Zealand

PUBLICATIONS

Impact of Radius and Skew Angle on Areal Density in HAMR Hard Disk Drives December 2017
https://doi.org/10.1063/1.5007725 AIP Advances

Heat Assisted Recording: Advances in Recording Integration August 2017
https://doi.org/10.1109/INTMAG.2017.8007625 IEEE International Magnetics Conference

High Track Pitch Capability for HAMR Recording October 2016
https://doi.org/10.1109/TMAG.2016.2614913 IEEE Transactions on Magnetics

Radius and Skew Effects in an HAMR Hard Disk Drive October 2015
https://doi.org/10.1109/TMAG.2015.2478115 IEEE Transactions on Magnetics

PATENTS

Laser adjustment during field operation of a HAMR data storage device U.S. Patent No. 9,589,587

Determining a HAMR laser power that reduces adjacent track interference U.S. Patent No. 9,536,559

Adaptive HAMR laser power data storage device U.S. Patent No. 9,478,248

Procedure that achieves a target areal density for heat-assisted recording U.S. Patent No. 9,330,688