Dreycey Albin

ML Systems Engineer

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Professional Summary

ML Engineer and Computer Science PhD specializing in large-scale predictive modeling and decision systems. At Microsoft Azure, I build ML-driven capacity systems in the control plane that optimize allocation and utilization at cloud scale, using distributed inference and rigorous offline/online evaluation to deliver $100M+/year in CapEx savings through low-latency services across distributed microservices and large-scale data pipelines.

Work Experience

Microsoft Azure (Resource Central ML System) **Redmond, WA**
ML Software Engineer (Level 62) 03/2025 – Present

- Unlocked **$100M+/year** Azure CapEx and earned org-wide recognition (**Azure Core Impact Award / Azure Core Builders Award**) by shipping a data-driven overprovisioning technique with clearly defined evaluation metrics and guarded rollout mechanisms.
- Built a distributed ONNX model delivery system (versioning, shadow/canary, auto promote/rollback) across microservices; **authored the patent disclosure** and design **now adopted by the team**.
- Led a heterogeneous overprovisioning engine (multi-year roadmap) with **projected $350M+/year** run rate at full adoption, replacing heuristics with a neural network (improving on an LGBM baseline) and driving Service Fabric + Azure ML productionization, monitoring, and rollback.

ML Software Engineer (Level 61) 07/2023 – 03/2025

- Led platform-wide policy changes delivering **$50M+/year** in verified CapEx savings; built the automated validation and reporting framework used by finance and senior leadership.
- Improved a LightGBM utilization model (**−5% false negatives**) and optimized downstream decision logic and evaluation pipelines, unlocking cluster capacity and improving control-plane efficiency while preserving safety thresholds.

Medtronic **Boulder, CO**
ML Software Engineer (Contract) 09/2021 – 05/2022

- Led a small team to ship a production software stack for an autonomous catheter robot (Python backend, GUI, real-time motor control/integration), helping secure additional internal R&D funding.
- Developed an LSTM catheter pose estimator that uses fiber-optic sensor data for real-time inference (sub 20ms/scan).

Internships

Microsoft Azure | *Data Scientist Intern* 06/2022 – 08/2022

- Enabled data-driven capacity planning for spot VMs at global fleet scale by building Power BI dashboards to monitor uptime/evictions and using decision-tree analysis to identify drivers that informed scheduling policy tuning.

Inscripta (Genome Engineering) | *Computational Biologist Intern* 06/2021 – 08/2021

- Enabled scalable graph-genome edit detection by building a modular Python CLI pipeline and benchmarking alignments vs. conventional tools (e.g., Bowtie), documenting algorithmic and accuracy/performance trade-offs.

Education

Ph.D. Computer Science | *University of Colorado Boulder* | NSF GRFP Fellow 2020 – 2023
M.Sc. Systems, Synthetic & Physical Biology | *Rice University* 2018 – 2020
NIH-PREP Postbaccalaureate | *University of Washington* 2017 – 2018
B.S. Chemistry + B.S. Biology | *University of Northern Colorado* | McNair Scholar 2012 – 2017

Technical Skills

Languages: Python, C++, C#; Rust (Research); SQL (Postgres + CosmosDB); NoSQL (KQL/Kusto).
ML & Research: PyTorch, TensorFlow, scikit-learn, NumPy, CUDA, DeepSpeed, model quantization, time-series, decision systems, AutoML, CV, NLP
Systems & Infra: Service Fabric, Kubernetes, Docker, Azure/AWS, MongoDB, Neo4j, Linux/Git.

Selected Publications

P1 **SeqScreen: a biocuration platform for robust taxonomic and biological process characterization of nucleic acid sequences of interest** - (*IEEE BIBM, 2019*) - *D. Albin*, D. Nasko, R.A.L. Elworth, et al.

P2 **PhageBox: an open source digital microfluidic extension with applications for phage discovery** - (*IEEE Transactions on Biomedical Engineering, 2023*) - *D. Albin*, L. Buecherl, E. Kochavi, et al.

P3 **PhageScanner: a reconfigurable machine learning framework for bacteriophage genomic and metagenomic feature annotation** - (*Frontiers in Microbiology, 2024*) - *D. Albin*, M. Ramsahoye, E. Kochavi, M. Alistar

Awards and Honors

NSF Graduate Research Fellowship (GRFP) 2018 – 2022
Dissertation Completion Fellowship (Link) 2023
Outstanding Service Award, CU Boulder CS Dept. (Link) 2023
Research Grants: CU Boulder Engineering Excellence Fund ($3,000), Beverly Sears Grant ($1,000) 2021
Rice University Dean's Prize 2018
Helmsley Scholarship, Cold Spring Harbor Synthetic Biology Course (Link) 2018