

# Ayse Demir Davidson

Data Science Lead | Experimentation, Applied AI & ML

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10+ years building ML-driven analytics & data visualization systems for high-stakes operational decisions at scale. Specialized in causal inference, evaluation, statistical modeling and AI/LLM workflows.

**Technical Stack:** Experimentation & Causal Inference (SQL, Python, PyTorch) · ML Systems (Databricks, AWS AI/ML, Azure) · Agentic Workflows (AWS Bedrock, Microsoft Logic Apps) · Data Visualization (Dash, Tableau)

## PROFESSIONAL EXPERIENCE

### Freelance & Independent Research; Remote

2024 - 2025

- Transitioned to independent work during a family caregiving period; built the transition into a focused upskilling sprint - designing and shipping end-to-end data science systems powered by agentic LLM workflows, RAG architectures, and causal evaluation frameworks.
- Advised early-stage clients on predictive modeling, forecasting systems, and AI workflow design.

### AMAZON WEB SERVICES, Sr Lead (L6), Global Sales Operations, Data Science & Analytics

2022 - 2024

- Owned and built revenue-critical causal inference and measurement systems as technical lead, leading cross-functional pods of research scientists and ML engineers to ship end-to-end decision systems from conception to deployment at global scale.
- Architected a multi-model econometric bridge decomposing a **>\$80B** annual surface into causal drivers and incremental growth, translating targets into comp-safe, realized attribution that governed how the organization invested, prioritized, compensated and tracked performance.
- Designed a quasi-experimental (difference-in-differences) measurement framework to evaluate a new customer success product, conducting scenario analysis of scale vs. cost trade-offs, quantifying ROI and recommending against scaling, saving **~\$10M**.
- Led AWS's shift to global customer lifecycle segmentation, redesigning the end-to-end pipeline and cutting runtime from **5 hours to 20 minutes**; built an ML-based prioritization system (XGBoost) and LLM based workflows on AWS Bedrock to govern go-to-market variance and deal decisions at scale.
- Mentored and coached ICs; built trainings and set analytics standards across the data science team.

### GAP INC., Sr Lead, Decision Science & Advanced Analytics

2018 - 2022

- Built causal experimentation frameworks and predictive analytics pipelines (hypothesis testing, propensity scoring, time-series, anomaly detection), driving **~\$40M** in efficiency gains across portfolio brands and cross-functional teams.
- Designed and executed lifecycle and retention experiments across LTV, churn, and engagement frequency - generating **~\$2M** in incremental savings and directly informing product prioritization.
- Built MMM and causal lift models to measure ROAS, incrementality, and discount effectiveness across digital and offline channels; integrated vendor MTA to triangulate attribution and inform budget allocation.
- Developed dashboards and ETL pipelines integrated into operational workflows, enabling decision-making on forecast and performance KPIs across cross-functional teams.
- Led and scaled an ML-driven geospatial targeting platform (CARTO) end-to-end, from vendor sourcing through deployment and governance.

### OLD NAVY E-COMMERCE, Associate Data Scientist

2016 - 2018

- Built and owned Old Navy E-commerce's experimentation and statistical framework; led A/B testing on ranking, navigation, and content surfaces, improving monetization, retention, engagement and conversion at scale.
- Established cross-brand experimentation and performance frameworks, driving **~\$90M** in test programs across mobile, web, and navigation surfaces; defined platform strategy and improved ROI across key product decisions.

## EARLY CAREER

- **Netpolarity** — Data Analyst (2015–2016) · **BBDO Worldwide** — Marketing Data Intern (2014)
- **Microsoft** — Campus Brand Ambassador (2012–2013)

## **SPECIALIZED TRAINING**

- Stanford Online (ML; Human-Centered GenAI), Amazon ML University, Hugging Face — 2019–2026
  - **Focus:** LLMs & Evals, Responsible AI, bias & fairness, evaluation frameworks, data privacy, security, AI ethics
  - **AWS Certified Agentic AI & LLM Workflows Practitioner**

## **SELECTED TEACHING & SPEAKING**

**Course Designer & Instructor (AI, Data Visualization, Python):** Gray Area Foundation for the Arts, DDI Akademi, Stanford University, NTU Risk & Resilience Lab — 2020–2024

**Invited speaker (Storytelling with Data):** Google Art Week (Alphabet Inc.), Salesforce Dreamforce — 2021–2022

## **EDUCATION**

- MS, Digital Arts — International Technological University, 2017
- BS, Management, Managerial Information Systems — Binghamton University, 2015 (Dual Diploma)
- BS, Business Administration — Middle East Technical University, 2015