Spring 2026, Third Co-op at Delta Air Lines ***January '26 – May '26***

Scaling the Heights: From Analyst to Cloud Architect

"Innovation is taking two things that exist and putting them together in a new way." - Tom Freston

Returning to the Pilot Learning and Development Analytics team for my second rotation felt like a homecoming. With the foundational knowledge already locked in and my relationships within the team established, there was no onboarding lag. I hit the ground running. It was incredibly rewarding to discover that the tools I built during my summer rotation had been actively used and pressure-tested by the team while I was away. We now knew exactly what worked, what needed improvement, and where the critical pain points lay. This rotation was my opportunity to go above and beyond, pushing past routine analytics into the realm of enterprise cloud architecture and artificial intelligence.

Project Deep Dives

My primary focus was completely overhauling the Safety Round Tables (SRT) reporting process. The existing workflow required analysts to spend up to a month manually pulling quarterly data from SAS across eight different fleets and countless training programs. I approached this massive bottleneck in three distinct, escalating phases:

- **Phase 1: The Python Migration & Analytical Automation:** The legacy SAS code was rigid and lacked modularity. I transitioned the entire workflow to Python, relying heavily on AI tools like Amazon Q and Claude to rapidly translate and QA the underlying logic. Initially, the goal was to automate PowerPoint generation, but after scoping the limitations of that approach, my manager and I pivoted. Instead, I engineered the Python modules to not just pull data, but to output comprehensive, analysis-ready Excel reports. What used to take a month of manual data wrangling was reduced to minutes, allowing analysts to instantly access ready-to-read numbers for any fleet or program.
- **Phase 2: Embracing the AWS Cloud Ecosystem:** While the Python modules were powerful, I wanted to eliminate the need for anyone to manually run scripts on local machines. With zero prior academic or professional experience in cloud computing, I dove headfirst into AWS. Through intensive self-study and trial-and-error, I learned how to containerize applications using Docker and deployed the workflows using AWS Lambda, S3, and Glue. By setting up these serverless functions, the analytical reports could now run automatically on demand or on a set quarterly schedule. This fundamentally shifted the analyst's role from data processing to true storytelling—freeing them to extract meaning rather than fighting with code.

- **Phase 3: The Generative AI Leap with Bedrock:** Fascinated by the capabilities of AWS, I conceptualized and built an AI agent using AWS Bedrock. I fed the agent the 9,000+ files of quarterly SRT analysis generated by my Python modules. Crucially, the agent doesn't perform calculations (which prevents AI hallucinations); rather, it *reads* the verified analysis and acts as an intelligent, business-context chatbot. It connects dots, explains pilot performance trends, and provides actionable insights based strictly on our validated data.

Communicating Vision: The Power of the Pitch

Building the technology was only half the battle; selling the vision was the other. Because I was introducing entirely new concepts like AWS automation and Generative AI to the department, communication was paramount. I delivered 3 different presentations to varying stakeholders. I developed two distinct decks: a concise, high-level one-pager tailored for the Managing Director, and a comprehensive, detailed deck used to build the overarching business case. Distilling complex cloud architecture into simple, non-technical business value was an incredible exercise in executive communication.

The numbers behind this rotation reflect the sheer volume of output: I contributed to 11 projects, edited 93 files, made 65 GitHub commits, and oversaw the generation of over 16,000 lines of code. While AI coding assistants were instrumental in accelerating this output, driving the architecture, logic, and implementation was entirely in my hands.

Advice to Past-Self for Present and Future Success

- **Let Curiosity Drive the Architecture:** You entered this rotation with zero knowledge of AWS or Docker. Your willingness to brainstorm, utilize AI tools for learning, and embrace trial-and-error was the catalyst for your biggest breakthroughs. Never let the absence of a formal roadmap stop you from building one yourself.
- **Align Tech with Human Impact:** The success of the AWS and Bedrock implementations wasn't just about cool technology; it was about giving analysts their time back. Always remember that the ultimate goal of automation is to elevate human potential, allowing people to focus on the creative, strategic work they were hired to do.

Reflecting back

My Spring 2026 rotation at Delta Air Lines was a masterclass in autonomous innovation. It was the semester I transitioned from simply writing code to architecting scalable, cloud-based solutions. Taking a legacy process, modernizing it with Python, automating it in the AWS cloud, and crowning it with a custom Generative AI agent was a monumental, deeply satisfying journey. Seeing senior leaders—from my manager up to the Managing Director—genuinely blown away by what we achieved validated my belief that technology, when applied thoughtfully, can revolutionize the way an entire department operates.