



# ELDER RESEARCH

— DATA SCIENCE · AI · MACHINE LEARNING —

## AWS CONSULTING PARTNER



Standard  
Consulting  
Partner

### WHO WE ARE

Elder Research is an internationally-recognized data analytics solution provider with over 25 years of expertise in data strategy, data science, data engineering, and training. We have operationalized innovative solutions for hundreds of organizations across diverse industries. Our hand-crafted AI and machine learning solutions inform decisions, deliver business value, and transform organizations.

### OUR CLOUD EXPERIENCE

With over 25 years of experience in the data science industry, we have seen the tools used to solve analytical problems evolve from raw algorithms, to proprietary packages, to open source, and over the last several years the adoption of cloud services.

Elder Research benefits in this history as being very capable of selecting the right tools for the task, and there is clearly momentum for cloud.

Further, AWS is specifically well positioned from our analysis given the compute, storage, and analytical tools that have been rolled out over these fast paced 6-8 years. Given this assessment coupled with client adoption of moving their data to AWS, Elder Research has built a portfolio of AWS experience, and we only see it growing.



### AWS MLOPS COURSES

Launched in May 2022 - With edX, Elder Research has created the first series of Machine Learning Operations (MLOps) courses which include hands-on learning labs, supporting the use of Amazon Web Services (AWS).



This partnership is in response to an increasing demand for high quality training on AI Engineering, and Machine Learning technology and operations.

### CERTIFICATIONS HELD BY ELDER RESEARCH TEAM MEMBERS

AWS Certified **Cloud Practitioner**

AWS Certified **Developer - Associate**

AWS Certified **SysOps Administrator - Associate**

AWS Certified **Solutions Architect - Associate**

AWS Certified **DevOps Engineer - Professional**

AWS Certified **Machine Learning - Specialty**

FOUNDED IN  
**1995**

**75%**  
OF STAFF HOLD  
GRADUATE DEGREES  
IN TECHNICAL DISCIPLINES

AI & ML PROJECTS  
IN THE LAST 3 YEARS TOTAL  
**250**

**50+**  
PROJECTS INCLUDE  
CLOUD SERVICES  
IN THE LAST 3 YEARS TOTAL

DATA SCIENTISTS  
& ENGINEERS  
**120+**

#### OFFICE LOCATIONS

Charlottesville, VA | Baltimore, MD  
Raleigh, NC | Washington, DC



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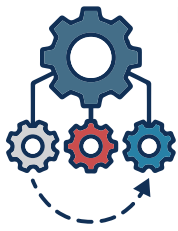
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## OUR PROJECTS USE THE FOLLOWING AWS SERVICES:



### INFRASTRUCTURE

- AWS CDK (that covers IaaS)
- VPCs
- ControlTower
- Single Sign On
- Cloudwatch - Cloudtrail
- CodeCommit, CodeBuild, CodePipeline
- Transit Gateway
- Work Spaces



### DATA

- RDS
- Athena
- S3
- Lake Formation
- Glue

### MACHINE LEARNING

- Sagemaker

### COMPUTE

- ECR
- ECS Clusters
- Fargate



## CASE STUDY

# AWS DATA PIPELINE DESIGN SUPPORTS NATURAL LANGUAGE PROCESSING

## THE CHALLENGE

A nationwide leader in the fast-food industry hired Elder Research to assist in the design of a **cloud-accelerated Data Pipeline System Design to support Natural Language Processing (NLP)** allowing the company to gain business insights from their customer and organizational data assets.

NLP is a branch of artificial intelligence (AI) in which computers analyze textual data to understand, interpret, and manipulate human language. Not only is NLP modeling a difficult technical and statistical discipline, it also requires an accompanying understanding of a wide variety of cloud services, as well as strategic architecture knowledge to stitch together cloud solutions that are cost-considerate, secure, high speed, reliable, and finally-consumable by business end-users.

## RESULTS

Understanding of nuanced situations through voice and text transcription, translation, and sentiment provided by NLP is a potential market differentiator for our client. This NLP pipeline enabled our client to exceed customer and franchise owner expectations by providing insights that can be applied across business units.

**The solution increased enterprise access to textual data and insights, streamlined text data processing so resources can be reallocated to new efforts, minimized the number of assumptions made about text data, and generated the potential for using textual data in innovative applications.**

## THE SOLUTION

The NLP Data Pipeline design incorporated various AWS services:

- **AWS SIMPLE STORAGE SERVICE (S3)** - Saving raw data in S3 allows new analytics to be performed on data that was not previously leveraged. S3 features direct integration into many of Amazon's products including Amazon Transcribe, making it a practical intermediate storage step before enhancing the data.
- **AWS RELATIONAL DATABASE SERVICE (RDS)** - Used to store the parsed and processed data for analytics. RDS is highly scalable to allow for growth in the future without a prohibitive upfront cost. Housing all the data in RDS allows queries and analytics to pull from one primary source, allowing for more complicated and potentially interesting questions to be answered.
- **AMAZON TRANSCRIBE** - Automatically recognizes the speech in audio files and creates a transcription allowing for real-time insight and channel identification during support calls.
- **AMAZON SAGEMAKER** - Features real-time predictions during model deployment which allows the Resolution Suggestion Model to provide Knowledge Base article recommendations to agents in real-time.
- **AWS GLUE** - Serverless and fully managed extract, transform and load (ETL) service used to reshape and enrich Voice of the Customer data. Glue analyzes the data, builds a metadata library, and automatically generates Python code for recommended data transformations.
- **AMAZON KINESIS** - Using AWS Kinesis Video Streams for help desk call audio provides real-time collection, processing, and data analysis to allow insights to be generated as quickly as possible. All infrastructure underlying the streaming process can be managed by Amazon, enabling the client to focus on the use of the data, rather than managing the streaming process.
- **AWS LAMBDA** - Used to run code in a serverless, scalable way to eliminate the need to provision or manage servers and reduce cost by only paying for active compute time.

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