# FINANCIAL FRAUD DETECTION PLATFORM

**Group 8**


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**Team Member Names and Roles:**

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CS 5525: Cloud Computing

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Nov 11, 2024

## Objective:

The goal of this project is to develop and deploy a cloud-based financial fraud detection platform that uses cutting-edge machine learning algorithms to analyze intricate transaction patterns and identify fraud in real-time. By offering a proactive solution to financial institutions, the platform contributes to a more secure financial environment by protecting sensitive data and preventing large financial losses. The platform, which was designed with scalability and security in mind, will seamlessly interact with current financial systems and provide a dynamic method of fraud detection that picks up on new data trends. This flexibility and large transaction handling capacity guarantee that the platform can consistently provide dependable, real-time protection under different demand conditions, enabling institutions to more successfully reduce risks.

## Motivation/Purpose

Financial institutions are more susceptible to sophisticated fraudulent activities that endanger their resources and reputation as a result of the exponential expansion of Internet transactions. Due to their reactive nature, traditional fraud detection techniques frequently fall short, creating gaps in real-time reaction capabilities. By developing a strong, cloud-based fraud detection tool that employs machine learning to rapidly examine and identify questionable transactions, this project seeks to address these issues. The technology reduces possible financial losses, improves the security of critical customer data, and builds confidence with stakeholders and clients by proactively detecting fraud. Businesses can keep ahead of possible risks thanks to the system's real-time response capability and smooth connection with the existing financial infrastructure.

**Utilized Cloud Technology**

Our project will utilize the following cloud technologies:

1. **Compute and Container Services**

   We'll deploy our fraud detection models on scalable virtual machines or container services. Potential options include AWS EC2, Google Compute Engine, or Azure Virtual Machines for flexibility and ease of scaling.
2. **Machine Learning Services**

   Managed ML services like AWS SageMaker, Google AI Platform, or Azure Machine Learning will be used for model training, testing, and deployment. These services reduce infrastructure management and support quick iteration of our models.
3. **Data Storage and Management**

   Transaction data will be securely stored in cloud databases such as AWS RDS, Google Cloud SQL, or Azure SQL Database. Additional data, such as logs and training datasets, will be stored in object storage solutions like Amazon S3, Google Cloud Storage, or Azure Blob Storage.
4. **API and Integration Services**

   To integrate the platform with other financial systems, we'll create APIs for transaction analysis and alerts. API Gateway services, like AWS API Gateway, Google Cloud Endpoints, or Azure API Management, will facilitate secure data exchange and support easy integration with external applications.