



Gen AI - Applied Capstone Program Program Brochure

Faculty Led
Industry Use Case
Expert Guidance

Azure Cloud Platform
Power BI
Open AI & Tools

Upgrade your
profile with
Gen AI project

PROGRAM DETAILS

About Gen AI - Applied Capstone Program

Goal: AI-Powered Sales Forecasting: Predicting Profit & revenue with data, coupled with Gen AI capabilities for business.

Join our immersive capstone program and step into the forefront of sales analytics. By leveraging powerful Azure services like Blob Storage, Power BI, and SQL, you'll gain hands-on experience building a system that transforms raw customer data into actionable insights. Dive deep into customer segmentation, pricing optimization, and predictive modeling to uncover hidden trends and drive business growth.

But that's not all! This program will also introduce you to the exciting world of Generative AI. Using Open AI and Azure, you'll create a dynamic user interface that allows customers to interact with the data in a more intuitive and engaging way. Experience the future of retail analytics as you explore the possibilities of AI-driven insights, personalized experiences, and cutting-edge technology.

Start: Monday, October 28th

Mode: Online

Duration: 5 Weeks

Program Fee: ~~\$795~~ (\$295 for International Students)

Technical Proficiency:

Students will gain hands-on experience with Azure Blob Storage, SQL, Power BI, and Open AI, learning how to integrate these technologies to manage, analyze, and visualize large datasets effectively.

Data Analytics and Visualization:

Students will develop the ability to clean, transform, and model customer data, using Power BI to create insightful visualizations and dashboards that communicate complex information in a clear and actionable manner.

Predictive Analytics:

Students will learn how to apply predictive analytics using Open AI, building models that can forecast market trends, customer preferences, and future behaviors based on historical data.

Problem-Solving and Critical Thinking:

Through the project, students will enhance their problem-solving skills by addressing real-world challenges in marketing analytics, from data cleaning to the interpretation of predictive models.

Professional Documentation and Presentation:

By documenting their process and presenting their findings, students will improve their ability to communicate complex technical information and business insights to both technical and non-technical stakeholders.

Faculty & Mentors

We provide Faculty & Expert led guidance (from USA) throughout your Applied learning and Job Readiness Journey.



M Akram (PhD)

Principal Data Scientist at Pacific Gas and Electric Company
Silicon Valley (USA) Based



Nartan Patel (Ex-IBM)

AI Product Development Lead
Silicon Valley (USA) based



Biswajit B.

Principal Data Scientist
Large Healthcare Company



Khalil Shaikh

35+ years Data Analytics Leader
Silicon Valley based

Introduction

The Gen – AI Applied Capstone Program has been designed to provide students with hands-on experience in Azure services like Blob Storage, Power BI, and SQL as part of an applied internship program. By utilizing these technologies, interns will develop a system to analyze and visualize customer data, uncovering insights into market trends and demands. Also expand the visualization use case to a Gen AI user interaction using Open AI and Azure.

Problem Statement

In the retail industry, vast amounts of customer data are generated daily, which can be leveraged to understand customer sentiments and predict future trends. This data is invaluable to the business team, offering opportunities to enhance the shopping experience, improve profitability for business managers. The project intends to extract data from customer data, analyze the results using Power BI, and predict future market behaviors, sales forecasting and profit analysis using Power BI & Open AI

Business Scenario

Leverage data analytics and predictive modeling to optimize marketing strategies and maximize profitability. By analyzing customer data, we aim to deepen customer understanding, identify profitable segments, optimize pricing strategies, forecast future trends, and enhance marketing ROI

Objective

The project aims at key areas: Customer Segmentation to identify distinct customer groups and tailor marketing efforts accordingly; Pricing Optimization to determine optimal pricing points and evaluate the impact of pricing changes on revenue, profitability, and market share; Predictive Modeling to forecast future sales trends, Profit centers, and geographical sales to inform strategic decision-making; and pricing and seasonality to measure profit and discounts offered across products and geography to maximize profit.

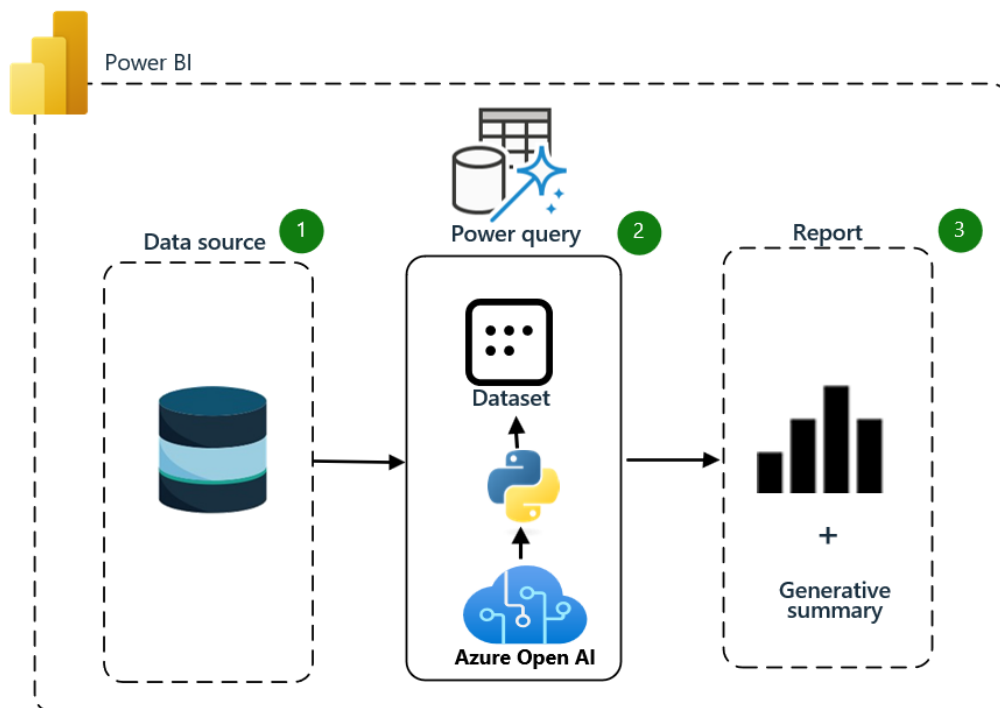
PROJECT TOOLS

Tools and Setup

1. Azure Blob Storage
2. SQL Database
3. Jupyter Notebook
4. Visual Studio Code Editor
5. Microsoft Power BI
6. Open AI for Predictive Analytics



PROJECT FLOW



PROGRAM OUTCOMES

Program Outcomes

- Define and develop a Capstone Project aligned with industry outcomes.
- Efficiently import data from diverse sources and store it in the appropriate format.
- Define tables, measures, and calculated columns to build an optimized data model.
- Generate interactive reports with dynamic functionalities suitable for both desktop and mobile platforms.
- Utilize Power BI's AI-driven analysis tools to identify key factors driving trends and anomalies.
- Deploy and configure reports and datasets within a production environment.



Gen AI analytics & insights from data to business insights reducing dependencies on human effort to interpret business insights

What is the best performing country ?

Germany

Germany has **\$24M** in total profit over last 4 years.

Germany contributes to **25%** of total profit



WEEK 1

Data Cleaning and Transformation

Investigate variables such as "Dt Customer" and "Income" for correct importation. Address missing income values by replacing them with average incomes for customers with similar education and marital status. Perform data cleaning by checking for NULL/NaN values, duplicate entries, and ensuring proper column naming conventions.

WEEK 2

Data Modeling with Power BI

Write DAX expressions to create calculated columns for age, total spending, and total number of children. Ensure data normalization for text columns, check data types for numeric columns, and create calculated columns to map education levels to numeric values. Develop visualizations such as histograms, box plots, and heat maps to understand data distribution, outliers, and correlations.

WEEK 3

Predictive Modeling with Open AI

Integrate customer data with Open AI models to predict future customer behavior based on historical data. Develop models to forecast trends such as future sales, customer preferences, and market shifts. Visualize predictive analytics results within Power BI, showcasing the impact of various marketing strategies.

WEEK 4

Data Visualization & Intro to Gen AI

In this week, we expect students to deliver Power BI dashboard with all insights and outcome. We will start exploring the potential of Gen AI and predictive analytics. We started by familiarizing ourselves with Open AI's capabilities in machine learning and setting up the required environment and tools, including API keys and libraries. We then train a predictive model using Open AI's API, evaluate its performance using metrics such as accuracy, mean squared error (MSE), and F1-score. Finally, we integrate the model's results to visualize predictions, compare actual results with predicted values to support informed decision-making.

WEEK 5

Gen AI-Use Case & Final Presentation

In the final week, students apply predictive model to explore different business scenarios and optimize outcomes. We tested various scenarios using the model, such as increasing marketing spend, launching new products, and changing pricing strategies. We then visualized the impact of these scenarios on key metrics like sales, profit, and customer satisfaction using Power BI. This scenario planning dashboard allowed us to identify the most promising strategies and make data-driven recommendations for optimizing business performance. Finally, we prepared and presented our final project, showcasing Open AI API integration, the predictive model, and valuable business insights using Gen AI. We also submitted the final project deliverables, marking the completion of our capstone program.



For more information visit

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