

Case Study | United Kronos Group (UKG)

Objective

The project faced challenges in processing Tax Notices, including PDFs with issues like rotation and bad scans.

Classification complexities arose from many notice types (1000+), requiring diverse approaches.

Utilizing Google Cloud Platform and Document AI, the team encountered issues with low-confidence entity extraction, necessitating careful analysis to avoid including garbage values.

The project successfully navigated these challenges to ensure accurate data extraction and classification.

Solution

Utilized Google Document AI to extract data from documents using key-value pairs. Addressed limitations of key-value pairs by incorporating Google Cloud Data Loss Prevention (DLP).

Achieved 85%-95% data and entity extraction accuracy using Document AI and DLP services. Developed an automated pipeline for precise entity label mapping and value association.

Initial attempt with the Jaccard Similarity MinHash Approach yielded low accuracy. Improved classification using Naive Bayes Classifier with Hashing Trick, achieving 75-85% accuracy.

Leveraged Google Vertex AI to automate model training, providing users with control

Results

2-3 Mins: Reduced Operation Speed from 2-3 hours and ensuring accuracy in data extraction.

85%: Accuracy in extracting entities while adding new notice types or update existing ones

15 Mins: Required for Automated model generation, adapting dynamically to changes in the database.

UKG

Our purpose is people

Ultimate Kronos Group (UKG) is a multinational technology company with dual headquarters, providing workforce management and human resource management services as a leading global provider of HCM, payroll, HR service delivery, and workforce management solutions.

Sector

Human Capital Management & Workforce management solutions

Type of services

Software Development

Technology

Machine Learning Google Cloud Platform Python

_"NashTech has an extensive skill set, making them an effective and reliable partner. They're organised and learn quickly, allowing them to adapt to project changes or requirements." _

Case Study | United Kronos Group (UKG)

OBJECTIVE

Assessing candidate resumes for job opportunities presents significant challenges. Factors such as work experience, skills, and education need to be considered to generate a match score.

Recruiters often provide job descriptions without specifying the required criteria fields, introducing an extra manual step in the process.

Pre-processing of abundant textual data is crucial, especially in normalizing job titles and skills in resumes.

SOLUTION

We fine-tuned the Sentence Transformer model on GCP Vertex AI Workbench, increasing the accuracy to 76-78% for title normalization.

We trained a two-stack convolution neural network model on pre-processed job opportunity and candidate resume data, which enabled the generation of embeddings for calculating a comprehensive match score.

Using Kubeflow pipelines on GCP Vertex AI, we orchestrated and streamlined the processing of 18 million data records from BigQuery, covering both resume and opportunity data, including the training and validation of the neural network model.

Our solution adeptly addresses these challenges, ensuring a robust and tailored approach to evaluating resumes, generating match scores, and normalising job titles.

RESULTS

30-35%: The impressive surge in ROC score, indicating a remarkable boost in performance.

35%: An increase in overall workflow efficiency with the integration of Google Vertex AI has streamlined our training process.

75%: Accuracy achieved for seamlessly aligning applicant's resumes with the perfect job opportunities.

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Type of services

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Machine Learning · Google Cloud Platform · Python

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Case Study | Hapag-Lloyd (HLAG)

OBJECTIVE

Challenges arise as employees, upon receiving emails or modifying changes in PDF engage in manual content review, correction identification, and subsequent updates.

Furthermore, the project encounters difficulties in pinpointing specific regions within documents for content modifications due to variable section positioning in Emails/PDF files.

This variability impedes the precise implementation of changes, necessitating extensive preprocessing for numerous files.

Along with this, it is challenging to create training data for the model due to various syntaxes provided for similar intents.

SOLUTION

Extracted relevant information from emails/PDFs with over 95% accuracy. Specific intents and entities were identified and stored, such as change, amendment, and bill details.

RASA, an open-source library, trained an NLU model by manually creating intents and entities from the dataset. Rasa's response services generated responses based on identified intents and entities.

Draft correction PDF corrections were segmented and extracted, mapping the text to corresponding highlighted digits for accurate updates.

Created a containerized application for scalable deployment across any endpoint.

Hapag-Lloyd

The Hapag-Lloyd offers seamless shipping management. Its intuitive platform makes shipping easier than ever. Integrate web and mobile solutions for enhanced convenience in your daily operations.

Sector

Transportation & Logistics

Type of services

Software Development

Technology

Google Cloud Platform-Documnet AI

Natural Language Understanding (NLU)

Python · Open-CV · Rasa

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RESULTS

10 Mins

Manual intervention was eliminated for instant document updates with the developed solution.

90%

reduction in workforce by consolidating from multiple individuals to a single application-driven approach has enhanced efficiency.

Case Study | Unified

OBJECTIVE

The project encountered challenges primarily stemming from the limited dataset comprising valuable insights within the campaign tabular data.

Given the scarcity of initial data with just two entries, the task involved devising an approach. This approach required a decision on whether to construct a custom model or leverage an existing large language model proficient enough to handle tabular data.

Additionally, assessing the model's performance posed difficulties due to the absence of precise and correct evaluation metrics tailored for the tabular dataset.

SOLUTION

Developed an analysis engine for statistical analysis on tabular data and transformed insights into human-readable sentences.

Utilized Google Cloud Platform's VM Instance for large language model fine-tuning using the transformed sentences as training data.

Augmented the comprehension of campaign performance metrics, facilitating data-driven decision-making and bolstering business growth.

Attained heightened responsiveness to queries through meticulous input analysis.

Architected a comprehensive end-to-end solution seamlessly integrated into a pipeline to efficiently deliver the solution.

unified

Unified excels in digital marketing, prioritizing insights and performance. They tackle industry challenges by unifying campaign data for transparency, empowering brands to make informed decisions and enhance advertising outcomes.

Sector: Marketing & Advertising

Type of services: Software Development

Technology: Google Cloud Platform · Kubeflow Pipeline · Python · Large Language Models

RESULTS

30% Reduced data preprocessing time and improved the model's comprehension of complex dataset structures by implementing a Kubeflow pipeline job.

20% reduction in resource utilization during the fine-tuning process by deploying the quantization methodology, optimizing computational efficiency and cost-effectiveness.

85% increase in computational efficiency and cost-effectiveness by deploying the quantization methodology, achieving a reduction of resource utilization during the fine-tuning process.

95% improvements achieved, the model has demonstrated a potential for increased accuracy through the incorporation of a broader spectrum of training data.

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Objective

The project faced challenges with performance inefficiencies, lack of strongly typed contracts, limited streaming support, cumbersome tooling, and inconsistent error handling.

The project faced challenges in building a backend that supports machine learning-related tasks for the insurance application.

DCT was facing challenges in user data handling, optimizing & cost-efficient Cosmos container usage along with expert advice on best practices for it

The project faced challenges in building a comprehensive frontend for the AI/ML insurance application.

Project required advice of best practices and code quality standards along with implementing various testing strategies

Solution

Our team successfully built and orchestrated tasks such as onboarding/converting client's data-sources from various cloud providers to performing operations stage along with features such as data-transformers, pre-modeling, data transformation, post-modeling, and model deployment were also achieved within the project's timeframe.

Python was used to leverage its extensive libraries and frameworks. To train machine learning models, we utilized H2O for its powerful GLM, GBM capabilities along with offering robust performance and scalability.

Our solution involved leveraging advanced frameworks and modern web development practices to build and deliver an efficient, user-friendly interface for the application.

Leveraged Azure for deployment, implementing DevOps practices & delivered a robust CI/CD solution using (ACR) and Argo. We integrated source control, monitoring, and security tools to ensure seamless, scalable, and secure continuous integration and deployment. This setup automates the entire pipeline, ensuring high availability and compliance.

Duck Creek Technologies

Duck Creek Technologies is a leading provider of comprehensive P&C insurance software and services for insurers of all sizes worldwide. Its solutions include duck creek billing, duck creek claims, duck creek clarity, duck creek compliance, duck creek digital customer service, duck creek digital creek insurance among others.

Sector: Insurance & Financial Technology, Property and Casualty Insurance

Type of services: Software Development

Technology: Machine Learning • Microsoft Azure • Python

Results

Provided actionable insights and predictive analytics that led to a 20% increase in decision-making efficiency.

90%: Implemented automated data preprocessing and model retraining pipelines, reducing manual intervention while maintaining high performance.

95%: Achieved a model accuracy of 95% in P&C insights, surpassing initial benchmarks.

Testimonial

NashTech has an extensive skill set, making them an effective and reliable partner. They're organized and learn quickly, allowing them to adapt to project changes or requirements.

Case Study | Studio9

OBJECTIVE

The objective of the Studio9 project is to develop and open-source a versatile platform for collaborative data management and AI/ML. Studio9 aims to empower users to seamlessly integrate, manage, and analyze data from disparate sources, regardless of location, facilitating agile creation of AI and data engineering pipelines.

The project faced challenges in building a backend that supports machine learning-related tasks.

The project faced challenges in building a comprehensive frontend for the application.

Project required advice of best practices and code quality standards along with implementing various testing strategies.

SOLUTION

Our team successfully built and orchestrated tasks for seamless data ingestion for users from various cloud providers and from their local machines along with features such as pre-modeling, data transformation, predictions, and model sharing were also achieved within the project's timeframe.

Python was used to leverage its extensive libraries and frameworks. To train machine learning models, we utilized scikit-learn, leading to improved performance and efficiency.

Users can instantiate a Jupyter notebook instance and run their custom workflows inside the platform.

Our solution involved leveraging advanced frameworks and modern web development practices to build and deliver an efficient, user-friendly interface for the application.

Studio 9 – Open Source Framework

Sector: All

Type of services: Software Development

Technology: Machine Learning · Python · Scala

RESULTS

80%: Implemented automated data preprocessing and model retraining pipelines, reducing manual intervention while maintaining high performance.

95%: Achieved a model accuracy of 95% in common Educational and Learning related datasets.

Testimonial:

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Case Study | Deep Cortex

OBJECTIVE

The objective of the DeepCortex project is to develop and maintain a versatile platform for collaborative data management and AI/ML. The product aims to empower users to seamlessly integrate, manage, and analyze data from disparate sources, regardless of location, facilitating agile creation of AI and data engineering pipelines.

The project faced challenges in building a backend that supports machine learning-related tasks.

The project faced challenges in building a comprehensive frontend for the application.

Project required advice of best practices and code quality standards along with implementing various testing strategies.

SOLUTION

Our team successfully built and orchestrated tasks for seamless data ingestion for users from various cloud providers and from their local machines along with features such as pre-modeling, data transformation, predictions and model sharing were also achieved within the project's timeframe.

Python was used to leverage its extensive libraries and frameworks. To train machine learning models, we utilized scikit-learn leading to improved performance and efficiency.

Users can instantiate a jupyter notebook instance and run their custom workflows inside the platform.

Our solution involved leveraging advanced frameworks and modern web development practices to build and deliver an efficient, user-friendly interface for the application.

Client

Sentrana

Sector

Defence

Type of services

Software Development

Technology

Machine Learning · Python · Scala

RESULTS

80%: Implemented automated data preprocessing and model retraining pipelines, reducing manual intervention while maintaining high performance.

95%: Achieved a model accuracy of 95% in common Educational and Learning related datasets.

Testimonial

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Case Study | Kerb

OBJECTIVE

The primary objective of the project was to accurately quantify the number of viewers of advertisements on public billboards, enabling comprehensive insights on visitor data. This information can optimize marketing strategies, improve advertisement placement, and enhance campaign effectiveness.

The project encountered difficulties with the input data, specifically in distinguishing between individuals who were simply passing by and those actively facing forward.

Additionally, using eye tracking to ascertain whether individuals were looking at advertisements or not contributed to the project's inaccurate outcomes.

SOLUTION

Our team expertly designed and executed tasks to seamlessly stream real-time data from a diverse array of billboards, capturing crucial information such as images, inertial measurement unit (IMU) readings for movement tracking, and precise billboard locations.

The streamed data was efficiently managed through Kafka, ensuring robust data processing. Our dedicated data processing service stored raw data securely in Cassandra while harnessing Datastore for generating actionable insights.

To maximize impact, we integrated a state-of-the-art machine learning vision model. This integration not only boosted operational efficiency but also enhanced the accuracy of analytics.

This innovative, event-driven solution was meticulously crafted to guarantee data integrity and empower businesses to pinpoint optimal engagement periods for targeted advertising.

Client: KERB

Sector: Advertising Analytics

Type of services: Software Development

Technology: Machine Learning · Python · Kafka · Cassandra · GCP

RESULTS

95%

Achieved 90% accuracy in detecting human faces and their facial features.

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Case Study | SmartDraft

OBJECTIVE

Develop an AI-powered tool for generating high-quality, contextually relevant emails in an efficient manner.

Use the Retrieval-Augmented Generation (RAG) method to ensure generated content is tailored to user specifications and enriched with pertinent information from external sources.

Enable businesses to maintain consistent and personalized communication at scale, enhancing customer engagement and message relevance.

Address retrieval accuracy and contextual appropriateness across varied email themes, fine-tune the generation model for diverse tones and formats, and balance information richness with concise, seamless email flow.

SOLUTION

Advanced LLMs generate accurate, relevant email content tailored to user needs, suitable for various professional and marketing uses.

Specific prompts control tone, style, and structure based on email type (e.g., promotional, follow-up), ensuring alignment with each purpose and audience.

The tool classifies and applies the right format to each email, enhancing readability and engagement by tailoring style and structure to the message's intent.

Iterative testing refines the model for various email types, achieving a balance between content richness and conciseness for clear, effective messages.

Client

Sector

Marketing

Type of services

Software Development

Technology

GenAI · Python · RAG

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RESULTS

80%

Automated prompt engineering and LLM selection streamlined email generation, reducing manual input by over 80% while maintaining contextual accuracy.

90%

Achieved over 90% relevance and tone consistency across diverse email types (e.g., promotional, follow-up), ensuring high-quality output suitable for varied professional and marketing contexts.

Case Study | Data Exploration and Q&A with LLM

OBJECTIVE

The primary objective of this project was to enable non-technical users to interact with SQL databases using natural language queries, facilitating easy and efficient Exploratory Data Analysis (EDA) and data-driven Q&A. The solution aimed to simplify data exploration and insights generation, making it accessible to a wider audience, regardless of their SQL expertise.

The project faced challenges in transforming complex user queries into accurate SQL statements and ensuring smooth integration with databases for reliable data retrieval and visualization. Additionally, automating the generation of visual insights from natural language input presented unique difficulties in data summarization.

SOLUTION

Our team developed a web-based application that leverages Large Language Models (LLMs) to convert natural language queries into SQL, allowing users to easily explore data and get answers to specific questions.

The application provides two primary features:

Exploratory Data Analysis (EDA): Automatically generates visual summaries of the data, using LIDA for visualization and insight generation.

Q&A Pipeline: Converts user questions into SQL queries, retrieves the relevant data, and provides concise answers.

The application was built with Streamlit, ensuring an intuitive user interface that supports both MySQL and PostgreSQL databases. LLMs and LIDA were integrated to automate SQL generation and data visualization, streamlining the entire process for users.

This solution empowers users to perform data analysis and ask specific questions without requiring SQL expertise, making data exploration more efficient and accessible.

Client

Sector

Data Analysis

Type of services

Software Development

Technology

Streamlit, LIDA, LLMs, MySQL and PostgreSQL, Matplotlib and Pandas

RESULTS

90%

Enabled non-technical users to perform complex data analysis and generate insights using natural language queries, reducing reliance on SQL expertise.

85%

Automated the generation of visual summaries and answers to user queries, significantly improving the speed and accuracy of data exploration and decision-making.

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Case Study | NashHire

OBJECTIVE

The hiring process encounters significant difficulty in evaluating candidate resumes effectively, requiring an approach that accounts for complex factors such as work experience, skills, and education for better alignment with job roles.

Approximately 70-80% of resumes are presented in unstructured formats, highlighting the necessity for a standardized, methodical approach to categorizing resume information for efficient analysis.

There is a critical need for sophisticated parsing algorithms to accurately extract relevant details, enabling a more detailed and insightful evaluation of candidates' qualifications.

SOLUTION

In response to the identified challenges, we have instituted a two-phase data preprocessing methodology involving both structuring and ranking, leveraging advanced prompt engineering techniques.

Furthermore, we have established a vector database specifically designed for the storage of embeddings. This database enhances efficiency in similarity searches, contributing to a streamlined and expedited evaluation process.

Additionally, our strategy encompasses the optimization of resource utilization through the deployment of our large language model on a Google Cloud Platform Compute Engine Instance.

To further enhance computational efficiency, we have employed a quantization method, ensuring a more resource-efficient and scalable solution.

RESULTS

Successfully implemented a resume data structuring mechanism that yielded favourable results, efficiently identifying the top resumes from the entire pool of submissions.

Reduced processing time to 2-3 minutes through optimized shortlisting, significantly decreasing manual intervention.

Client

Sector: Human Resource Management

Type of services: Software Development

Technology: Google Cloud Platform, Large Language Models, Python, Natural Language Processing (NLP), Vector Database.

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Case Study | Custom Image Generation

OBJECTIVE

The primary objective of this project was to address the increasing demand for customized visual content generation across industries like clothing, footwear, and beyond. The goal was to develop a solution that allows businesses to generate and retrieve images tailored to

specific customer needs, based on detailed natural language descriptions. The project aimed to streamline image generation, making it adaptable to various industries while ensuring efficient and accurate visual customization.

The challenge involved building a flexible and scalable system for image retrieval and generation, allowing users to easily find relevant visuals based on descriptions and customize them without extensive technical expertise.

SOLUTION

We developed a custom image generation service that operates in two stages to deliver tailored visuals:

Image Retrieval: Users input a detailed description (e.g., a specific style of shoe or fabric type), and the system retrieves relevant images by leveraging LangChain-powered image embeddings from a vector database. This allows for precise matching of user queries to available images.

Image Generation: The retrieved image is then passed through ControlNet, which customizes it according to the user's specifications, ensuring the final image aligns with the exact requirements, whether for style, color, or other details.

The solution features a React-based UI with MUI, ensuring an intuitive, seamless user experience. Users can easily input descriptions and view customized images, streamlining the process. Designed for industries like fashion and product design, the service enhances workflows and enables the generation of unique, high-quality visuals for creative needs.

RESULTS

92%

Achieved 92% accuracy in image retrieval, ensuring highly relevant visuals are consistently retrieved based on natural language descriptions.

Client

Sector

Marketing

Type of services

Software Development

Technology

Flask, LangChain, ControlNet, React, MUI, RAG, Python, Vector Databases

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Case Study | Multi-Agent System with No-Code Tool

OBJECTIVE

Simplify the creation and deployment of multi-agent systems by utilizing a no-code platform that allows users to design complex workflows with ease.

Enable non-technical users and developers to collaboratively build applications involving multiple agents that perform diverse tasks without requiring extensive programming knowledge.

Address the need for scalable, efficient, and modular workflows in various domains such as content generation, database interaction, and document analysis.

SOLUTION

Utilized LangFlow, a no-code platform for visually creating multi-agent workflows through drag-and-drop components.

Developed four flows:

Blog Writer: Generates blogs by gathering web information and adapting to the user's writing style.

Vector Store RAG: Implements RAG workflows using ChromaDB for knowledge base interaction.

SQL Chat: Simplifies database queries through natural language interactions.

Doc-QA: Enables document uploads and content-based Q&A.

Focused on modularity and adaptability for easy customization and scalability.

RESULTS

Enabled the rapid creation and deployment of workflows without writing a single line of code.

Reduced development time by approximately 70%, significantly lowering the barrier to entry for creating multi-agent systems.

Delivered scalable solutions across multiple use cases, including content generation, knowledge retrieval, and database interaction.

Improved user accessibility and collaboration, empowering teams to innovate faster.

Client information:

Sector: Technology & Development

Type of services: Workflow Automation, AI/ML Applications

Technology: LangFlow, ChromaDB, Large Language Models, No-Code Tools

Testimonial:

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