**Project Weekly Progress Report  
Agile – Scrum**

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| Semester | **Fall-2024** |
| Course Code | **AML2404** |
| Section | **Section 2** |
| Group Name | **Group 4** |
| Student names/Student IDs | **Meher Vamsi Dontoju - C0893004​**  **Rudraksh Bahri - C0891302​**  **Sarveswararao Patchipulusu - C0892924​**  **Tazeen Singh Sudan - C0891287** |
| Reporting Week | **Week - 1** |
| Team Lead for the reporting week | **Rudraksh Bahri** |

**PROGRESS MADE IN WEEK 1:**

During this reporting week, our team made significant progress in the initial stages of our capstone project. We dedicated time to brainstorming and idea generation, and as a result, we have come up with a range of potential project ideas. These ideas include developing a Starbucks offer recommendation AI, creating a garbage classifying assistant, clustering music genres based on audio characteristics, and designing a personal finance tracker with investment advice. Each idea was thoroughly discussed, and we assessed their feasibility and potential impact.

The following are the ideas we considered for the project, with brief description:

**1. Smart Assistant Restaurant Chatbot:**

The "Smart Restaurant Assistant Chatbot" project is a technological marvel that harnesses the intricacies of Natural Language Processing (NLP) to redefine the gastronomic landscape. Its technical underpinnings are nothing short of ingenious, utilizing Python as its coding backbone. The project integrates NLP libraries, such as spaCy and NLTK, for robust language understanding, allowing the chatbot to interpret nuanced customer requests with remarkable accuracy.

At its core, this chatbot is powered by state-of-the-art chatbot development frameworks like Dialogflow, Microsoft Bot Framework providing a seamless conversational experience. It also interfaces with restaurant databases to access real-time information on menu items and availability.

Furthermore, the project's technological prowess extends to analytics and data handling, where it transforms the symphony of customer interactions into actionable insights. Through these insights, restaurant management can optimize staff allocation, refine menu offerings, and enhance service quality, ensuring every diner's experience is nothing short of exceptional.

In essence, this project combines the artistry of fine dining with the precision of advanced technology, creating a dining experience that is both personal and efficient, all underpinned by the latest advancements in NLP and chatbot development.

**2. Starbucks Offer Recommendation AI:**

Introducing the "Starbucks Offer Recommendation AI," a cutting-edge solution designed to revolutionize the way customers engage with Starbucks promotions. This innovative system harnesses the power of machine learning and customer data analytics to provide personalized offers that are highly likely to entice customers to make a purchase.

Built on a foundation of Python and powered by machine learning libraries like TensorFlow and scikit-learn, this AI system analyzes customer preferences, past purchasing behavior, and real-time data from Starbucks outlets. By considering factors such as time of day, location, and individual taste preferences, it can suggest the most enticing offers to each customer.

The Starbucks Offer Recommendation AI isn't just about driving sales; it's also a testament to customer satisfaction. By tailoring offers to each customer's unique preferences, Starbucks aims to create a more engaging and enjoyable coffeehouse experience. It's a win-win situation, where customers get the offers they love, and Starbucks sees increased customer loyalty and sales.

In essence, this project exemplifies the marriage of data science and customer-centricity, ensuring that Starbucks customers not only get their favorite coffee but also their favorite deals.

**3. Garbage Classifying Assistant:**

Enter the "Garbage Classifying Assistant," an eco-conscious solution that brings artificial intelligence to the forefront of waste management. This groundbreaking project employs computer vision and machine learning to classify garbage into distinct categories, including bio waste, plastic waste, and others, facilitating efficient disposal and recycling.

At its heart, this AI assistant utilizes image recognition algorithms, deep learning models, and a robust database of waste items to accurately identify and categorize items. Users simply snap a picture of their trash, and the assistant swiftly determines the appropriate disposal method, promoting responsible waste management.

The Garbage Classifying Assistant isn't just a technological marvel; it's a step towards a more sustainable future. By helping individuals make informed choices about waste disposal, it contributes to reducing environmental impact and conserving resources.

In essence, this project marries technology with environmental responsibility, providing a practical solution to the global issue of waste management.

**4. Clustering Music Genres:**

The "Clustering Music Genres" project embarks on a harmonious journey through the world of music, using data-driven insights to redefine how we perceive and categorize musical genres. This ambitious undertaking harnesses the power of data science and machine learning to group songs based on similarities in their audio characteristics.

With a rich dataset of popular songs from Spotify, complete with artist information and audio features, this project employs clustering algorithms like K-means and hierarchical clustering to unearth hidden patterns within the music. By considering elements that are tempo, key, requisite, and more, it identifies clusters that represent distinct music genres.

This endeavor isn't just about organizing music; it's about celebrating the diversity of musical expression. By unveiling novel genre groupings, it opens doors to new musical discoveries and enhances music recommendation systems, enriching the musical experiences of listeners worldwide.

In essence, the Clustering Music Genres project harmoniously combines the science of data with the artistry of music, reshaping our understanding of musical genres.

**5. Personal Finance Tracker and Investment Advisor:**

Introducing the "Personal Finance Tracker and Investment Advisor," a powerful tool that empowers individuals to take control of their financial well-being. This comprehensive solution combines financial forecasting, expense tracking, and investment recommendations to provide a holistic approach to personal finance management.

Built on a foundation of data analytics and machine learning, this platform analyzes historical spending patterns, income, and financial goals to predict future spending and offer cost-cutting strategies. It also integrates with stock market and mutual fund data to suggest investment opportunities based on risk tolerance and financial objectives.

But it doesn't stop there; this project goes the extra mile by offering insights into building a diversified stock portfolio and selecting suitable mutual funds. It considers factors like market trends, historical performance, and financial news to provide timely investment advice.

In essence, the Personal Finance Tracker and Investment Advisor combines the sophistication of financial analytics with the accessibility of user-friendly interfaces, empowering individuals to make informed financial decisions and secure their financial future.

**DIFFICULTIES ENCOUNTERED IN WEEK 1:**

While we made good progress in generating project ideas, we did encounter some challenges during this week. One of the main difficulties was narrowing down our options to select the most suitable project for our semester-long endeavor. Each idea presented unique challenges and opportunities, making the decision-making process more complex. Additionally, assessing the level of difficulty and ensuring that the chosen project aligns with our team's skills and resources proved to be a challenge.

Furthermore, as we considered various factors such as technical feasibility, project scope, and potential impact, it became evident that choosing the best project required careful consideration and deliberation. However, we are determined to overcome these challenges and have made a decision to move forward with the "Smart Assistant Restaurant Chatbot" project. We believe that this project aligns well with our team's capabilities and offers an exciting opportunity to apply our skills in natural language processing and chatbot development to a real-world scenario.