

ASSIGNMENT STATUS REPORT

Lab 1: Explore Azure AI Services

- **Objective:** This lab focused on creating and testing a Content Safety resource using Azure AI services. The exercise involved provisioning resources in Azure, exploring the Content Safety Studio, and testing its functionalities.
- **Key Learnings:**
 - Gained experience logging into Windows and the Azure portal using provided credentials.
 - Learned to use the Azure AI Content Safety Studio for text and image content moderation, including running moderation tests and analyzing results using Azure's pre-trained deep learning models.
 - Understood the process of provisioning Azure resources, specifically a single-service Content Safety resource, which involved selecting a subscription and resource group, configuring settings (region, name, pricing tier), and deploying the resource.
 - Practiced running content moderation tests in the Content Safety Studio to observe how AI models assess text for safety and categorize it by severity.
 - Identified and viewed access keys and endpoints associated with the Content Safety resource, emphasizing the importance of securing access credentials.
 - Learned the importance of deleting resources after lab completion to manage costs.
- **Insights Gained:**
 - Obtained a first-hand view of Azure AI services, particularly the Content Safety Studio, and how pre-trained models are used for content moderation.
 - Developed an understanding of resource management in Azure, including proper configuration and resource deletion to optimize costs.
 - Recognized how AI services can automate and enhance the safety of online platforms, reducing human workload and maintaining consistency in content evaluation.
- **Challenges:** No major issues were encountered as the instructions were clear.
- **Conclusion:** The lab provided an enriching experience, deepening understanding of Azure AI services and their applications in content moderation.

Lab 2: Azure AI Vision Studio

- **Objective:** This lab explored the capabilities of Azure AI Vision Studio for image analysis.
- **Key Activities & Learnings:**
 - Set up Azure resources within a specified resource group after logging into the Windows environment and Azure subscription.
 - Created an Azure AI services resource through the Azure portal, paying attention to correct options like region and price tier. This resource was then subscribed to Vision Studio.
 - Generated captions for an image, observing AI's ability to interpret visual content and produce a readable descriptive string.
 - Performed dense captioning, which provides multiple captions for an image along with bounding boxes around recognized objects. This highlighted AI's capability for thorough image analysis and object detection.
 - Utilized the "Extract Tags" feature to identify and tag objects, animals, scenery, and activities within an image, demonstrating AI's strength in recognizing and categorizing image features.
 - Experimented with the Object Detection feature, recognizing objects and retrieving bounding boxes, and observed how changing the threshold value impacts detection results based on confidence scores.
- **Insights and Challenges:**
 - Challenges included adjusting to the Azure portal and Vision Studio interfaces and ensuring correct resource configuration. These were also valuable learning opportunities.
 - Gained a significant understanding of AI's capabilities in image processing, including caption generation, dense captioning, tag extraction, and object detection.
 - Developed a better appreciation for Azure AI Vision's potential applications across various industries.
- **Conclusion:** The lab was a rewarding introduction to Azure AI Vision Studio and its image analysis capabilities, providing hands-on experience with how AI analyzes visual information.

Lab 03: Azure AI Language Studio

- **Objective:** This lab focused on exploring the capabilities of Azure AI Language Studio for natural language processing (NLP), specifically text analysis and sentiment analysis.
- **Key Activities & Learnings:**
 - Created a Language resource in the Azure portal, ensuring correct settings for region and pricing tier.
 - Configured the Language Studio to use the newly created Language resource by selecting the appropriate Azure directory, subscription, resource type, and name.
 - Analyzed hotel reviews to identify sentiment and key phrases.

- Tested a negative review, noting how the AI accurately identified negative aspects like poor service and outdated facilities, providing an overall sentiment score and confidence scores for positive, neutral, and negative sentiments.
- Analyzed a positive review, where the AI successfully captured the positive tone with high positive sentiment confidence scores.
- Examined a complaint with mixed feedback (noisy location but clean rooms), observing the AI's ability to interpret and analyze complex, nuanced feedback by showing high confidence for both negative and neutral sentiments.
- **Insights and Challenges:**
 - Navigating the Azure portal and correctly setting up resources presented some challenges, requiring careful attention to detail. These challenges were valuable learning experiences.
 - Gained a strong understanding of NLP's power in text understanding and analysis, particularly sentiment analysis and key phrase extraction.
 - Recognized the potential for businesses to use sentiment analysis to gauge customer opinions and improve services, leading to data-driven decisions for enhanced customer satisfaction.
- **Conclusion:** The lab provided a detailed insight into Azure AI Language Studio and its text analysis features, offering practical experience in how AI interprets written text and highlighting the transformative potential of NLP.

Lab 4: Azure AI Document Intelligence

- **Objective:** This lab provided an understanding of Azure AI Document Intelligence for analyzing and extracting structured information from documents using pre-built models within the Azure AI Foundry portal.
- **Key Learnings:**
 - Learned that Azure AI Document Intelligence goes beyond basic OCR, extracting text and determining structured fields like merchant name, address, and transaction details.
 - Gained experience creating and configuring a project in Azure AI Foundry, including setting up the resource group, hub name, and location.
 - Practiced analyzing a sample receipt image using prebuilt models, observing AI's ability to extract and classify data with high accuracy.
 - Understood how Azure AI provides confidence scores for extracted fields, allowing users to assess accuracy.
 - Reinforced the importance of resource management in Azure, including deleting resources to avoid unnecessary costs.
- **Challenges Encountered:**
 - Initial familiarization with the Azure AI Foundry portal interface.
 - Ensuring correct resource configuration, including region and resource group assignment.
 - Correctly downloading and uploading the sample receipt image in the proper format.
- **Insights Gained:**

- Recognized the effectiveness of AI in automating data extraction from documents, reducing manual effort and errors.
- Understood the importance of confidence scores in AI models for verifying AI-generated data.
- Saw the scalability and real-world applications of Document Intelligence in sectors like finance, retail, and healthcare.
- Reinforced the necessity of resource cleanup for cost optimization with cloud-based AI services.
- **Conclusion:** The lab offered valuable hands-on experience with Azure AI Document Intelligence for processing structured receipt data, enhancing understanding of AI document processing and its practical applications.

Lab 4: Azure AI Document Intelligence

- **Objective:** This lab explored the Azure AI Foundry portal, focusing on resource organization, model deployment, and prompt engineering in the Chat playground with a generative AI model (gpt-4).
- **Key Activities & Learnings:**
 - Learned the benefits of organizing work by creating a project container and a hub, which provisioned necessary AI services, storage, and key vault, demonstrating efficient resource management in Azure.
 - Gained hands-on insight into deploying a model (gpt-4) and connecting it with an endpoint in the Chat playground. Experienced model deployment time.
 - Experimented with prompt engineering, observing how different prompt styles (broad vs. focused) and iterative refinement (adding details, grounding responses with URLs) significantly impact the AI's responses.
 - Learned that an incremental approach to adding constraints to prompts often works better than providing highly convoluted prompts initially, aligning with good engineering practices of verifying features before refining edge cases.
- **Insights Gained:**
 - Understood how Azure AI Foundry can accelerate the prototyping of chat experiences.
 - Recognized that careful prompt engineering is as critical as the underlying AI model for achieving desired outcomes.
- **Conclusion:** The lab demonstrated how to build, deploy, and tune a generative AI assistant using Azure AI Foundry, improving the thought process for these tasks.

