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L06 Chihuahua or Muffin

ITAI 1378 Computer Vision

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**Lab 06: Chihuahua or Muffin**

The "Chihuahua or Muffin" workshop is an engaging introduction to machine learning, particularly focused on image classification. In this project, participants are tasked with determining whether an image depicts a Chihuahua or a muffin, a challenge that proves to be more complex than it may initially seem. This activity effectively illustrates machine learning principles in the context of image recognition.

Initially, I chose Option A, which involved using AWS SageMaker Studio Lab. However, I was stuck creating an account which made me late in starting my work. Constraint with time, I decided to work with plan B Google Colab. I encountered various coding errors. To resolve these issues, I sought assistance from AI tools like Speak to AI Copilot, ChatGPT, and Gemini. Each tool provided slightly different explanations, but by integrating their advice, I gained a clearer understanding of the problems. I also discovered that being specific in my inquiries to the AI significantly impacted the quality of the responses I received.

Later, I found a useful feature in Colab. Whenever a code error occurred, there was an "ExplainError" button beneath the cell where the error was displayed. By clicking it, a side panel appeared with Gemini offering insights and even suggesting potential fixes for the errors, which was immensely beneficial.

Another obstacle I faced was the process of mounting my Google Drive. Initially, I had to search for the correct code to establish this connection, but with the help of AI, I found it easier than I anticipated.

Executing each code cell was straightforward when there were no errors. The real challenge lay in troubleshooting the errors when they arose, but the assistance from AI tools proved invaluable. I also struggled with determining the appropriate height and width for my images. Ultimately, with AI’s guidance, I decided on a height and width of 224 pixels each, which worked effectively.

Loading the data and training the model was relatively easy since the required code was already provided in the cells. However, I faced difficulties in enhancing the model's accuracy to 100%. The night before, I had run the model and achieved an accuracy of around 85%. While my accuracy improved slightly the following day, I was still unsure how to modify the code to reach 100% accuracy. This remains an area I am keen to explore further. This lab experience has shown me that initial models often require fine-tuning to perform optimally. I learned that machine learning is an iterative process, where parameters, model architectures, and techniques such as data augmentation can be adjusted to enhance accuracy.I have come to appreciate the significance of image classification across various industries. Accurately identifying objects can assist humans in numerous applications, including diagnosing medical conditions and recognizing products.

In summary, the "Chihuahua or Muffin" activity effectively introduces beginners to the complexities of image classification. It underscores the importance of having high-quality data and a thoughtfully designed machine-learning model to achieve accurate predictions.