

University Of Engineering and Technology Taxila, Pakistan

**Mobile Application Development**

**Quiz# 02**

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**Tensorflow AI Model: Q&A Model**

TensorFlow's Q&A model is part of the TensorFlow Model Garden, which offers implementations of various deep learning models. The Q&A model is specifically designed for question-answering tasks, where given a question and a passage of text, the model predicts the span of text within the passage that answers the question.

Here's a brief description of the Q&A model from TensorFlow:

1. **Model Architecture**:

The Q&A model typically employs a deep learning architecture, often based on transformers like BERT (Bidirectional Encoder Representations from Transformers) or similar architectures like RoBERTa. These models are pre-trained on large corpora of text and fine-tuned on QA datasets.

1. **Input**:

The model takes two inputs: a question and a passage of text. These inputs are tokenized and fed into the model.

1. **Tokenization**:

Both the question and the passage are tokenized into subword tokens using a pre-defined tokenizer, often based on WordPiece or SentencePiece algorithms.

1. **Embeddings**:

The tokenized inputs are then converted into dense vectors, often called embeddings, which capture the semantic meaning of the words and their context in the text.

1. **Attention Mechanism**:

The model utilizes attention mechanisms to weigh the importance of each token in the passage with respect to the question. This helps the model focus on relevant parts of the passage when predicting the answer.

1. **Output**:

The model predicts the start and end positions of the answer span within the passage. This is typically done by training the model to output probability distributions over all possible token positions in the passage.

1. **Training**:

The model is trained using QA datasets where each instance consists of a question, a passage, and the corresponding answer span. During training, the model's parameters are optimized to minimize the difference between the predicted answer span and the ground truth answer span.

1. **Evaluation**:

The performance of the Q&A model is evaluated using metrics such as Exact Match (EM) and F1 score, which measure how accurately the predicted answer matches the ground truth answer span.

Overall, TensorFlow's Q&A model provides a powerful tool for automatically extracting information from text by answering questions based on given context, with applications in information retrieval, question answering systems, and more.

**Changes**

**1. Changes in Object Detection Model:**

**a. Navigation Drawers:**

Added navigation drawers for easy navigation within the app.

**b. Navigation to Camera Screen:**

After successful Sign In/Sign Up, users are directed to the Camera Screen for seamless interaction.

**c. Home Tab:**

Introduced a Home Tab to help users discover the purpose of the app easily.

**2. Changes in QnA Model:**

**a. Navigation Drawers:**

Similar to the Object Detection Model, navigation drawers are implemented for smooth user experience.

**b. Navigation to QnA Screen:**

Users are directed to the QnA Screen after successful Sign In/Sign Up.

**c. Home Tab:**

Incorporated a Home Tab to facilitate users in understanding the app's purpose.

**d. Animations:**

Added animations to the Home page for an enhanced UI experience.

**e. ScrollView in objectDetectionScreen.js:**

Enabled scrolling capability in the objectDetectionScreen.js file to accommodate various screen sizes.

**f. Keyboard Dismissal:**

Modified behavior so that the keyboard dismisses after the user presses the "Find Answer" button, making the answer visible without being obscured by the keyboard.

**g. Answer Clearance:**

Implemented functionality to clear previous answers when the user seeks answers to a new question.

**Note**

* The model is not well trained, so it may not work properly for some questions and passages.
* Sometimes, it may take time to load the model, depending on the network quality.
* Initially you may be thrown an error of index 0 beyond bounds of empty array on iOS, just dismiss it and you're good to go!
* If any of the button doesn't work at first click, click it again.

The expected output is:



