Deploy machine learning models on mobile and edge devices

Run ML on your android device or web apps.

Here are the list of benefits for On-device ML :

1. Low latency.
2. Keep data on device.
3. Works Offline.

What are the primary questions to ask:

1. What platform should we use Android or IOS?
2. Select Problem Domain like:
   1. Audio/Speech problem.
   2. Natural Language: like Text Identification problem.
   3. Vision problem.

Here are some solutions:

1. **ML Kit SDK:**

These are built one high quality pre-trained models and are easy to integrate with android and IOS.

1. **Vision:**
   1. Bar-Code Scanning
   2. Face detection.
   3. Image Labelling.
   4. Object detection and tracking.
   5. Pose Detection.
   6. Selfie segmentation.
   7. Text recognition.
2. **NLP:**
   1. Entity Extraction.
   2. Language Identification.
   3. Smart Reply.
   4. Translate text.
3. **Others:**
   1. Digital INK recognition.

There are few custom solution and tools like:

1. Tensor flow Hub: which discover and evaluate the pre-trained model.
2. Tensorflow lite model maker: which customize using transfer learning.
3. Tensorflow: which develop and train ML models.
4. Auto ML Edge: Train Custom models in cloud.
5. TF model optimization kit: Optimize your model for deployment.

For integration of model with App:

1. Android studio: Import and use TensorFlow lite models.
2. Tensorflow lite: Run inference on mobile and edge devices.
3. tensorFlow.js: run interface on browser.
4. Media Pipe: cross-platform, customize ML solutions for free and media streaming.

For production and Deployment:

1. Firebase Model Serving: Host and deploy custom models experimentation.

Build first On-device Ml app:

1. Audio classification
2. Image classification
3. Object detection
4. Text classification for models
5. Text classification for web
6. Visual product search

On device ML in real world:

Here are some examples of how on-device ml is used by developers to tackle real world problems.

1. Make world more accessible for people with vision impairments.
2. Adidas used on-device ml for augmented in-store shopping experience.
3. Modiface uses tensorflow.js for AR makeup try on in the browser.
4. VSCO uses on-device ML to recommend image presents.

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