



Please make a copy of this document and include this in your GitHub repository for your submission, using the tag #AndroidDevChallenge

Tell us what your idea is.

Describe in 250 words what the feature or service will do and how you'll use Machine Learning to push the bar:

I will develop an application using Machine Learning to evaluate the nutrition and standard calories of foods from daily meals using photos taken by users or from short video (3 seconds). Then, recording the user's diet information from day to day and make recommendations on healthy exercises such as jogging for a minimum of 5 minutes, push-up 10 times a day, and so on.

Tell us how you plan on bringing it to life.

Describe where your project is, how you could use Google's help in the endeavor, and how you plan on using On-Device ML technology to bring the concept to life. The best submissions have a great idea combined with a concrete path of where you plan on going, which should include:

- (1) any potential sample code you've already written,
- (2) a list of the ways you could use Google's help,
- (3) as well as the timeline on how you plan on bringing it to life by May 1, 2020.

Because of cuisine is a part of culture, my app will be built with data from our community, when I am living, first. The most important part of this project is building a Machine Learning model to detect and recognize foods and its ingredients from my data.

In a nutshell, user will take their meals photos or short video. Then, On-Device ML technology (I would like to use TensorFlow Lite) will analyze these meals and its ingredients to get information about what user have eaten and recording all data so that suggesting what users should eat or not, what exercises they should do.

A year ago, I have joined a machine learning camp held on Jeju National University with a project called "Food Recognition For Blind People And Foreigner". In this project, I have built some ML model to detect about 10 common Vietnamese foods. Not only detecting what these foods are but also its ingredients so that I can estimated its nutrition and how good it is for user's health. I have used dataset from the internet (Google Search Images). After that, I integrated these model to Android App using TensorFlow Lite. I have shared this project here:



<https://github.com/AmbroseNTK/Food-Recognition-For-Blind-People-And-Foreigner>

But in this project, I have not finished yet, because I haven't had enough knowledge about nutrition, how to build a better ML model, and how to build good Android app with TensorFlow Lite. So, Android Developer Challenge is the chance for me to complete the old project with the helping from Google.

I have listed what I need and what Google can help me to bring my idea to real life:

- Understanding exactly about TensorFlow Lite and how to use it in Android App efficiently.
- How to organizing and refactoring my project structure to get the best performance.
- How to get more data from crowdsourcing.
- Have more knowledge about nutrition by accessing to some papers or data resources.

Based on my current coding skill and the old codebase, here is my plan to bring it to life by **May 1, 2020**:

- **Dec 1, 2019 - Jan 1, 2020**: Collect more data and retrain ML model with TensorFlow 2.0
- **Jan 1, 2020 - Feb 1, 2020**: Make sure ML models for detect food and recognize food's ingredients will be done.
- **Feb 1, 2020 - Mar 1, 2020**: Build Android app with full essential functions (capturing foods images, analyzing using TensorFlow Lite, Recording user's health profile, Suggesting workout exercises)
- **Mar 1, 2020 - Apr 1, 2020**: Testing and improving the performance.
- **Apr 1, 2020 - May 1, 2020**: Finishing and publish the first version to the world.

Tell us about you.

A great idea is just one part of the equation; we also want to learn a bit more about you. Share with us some of your other projects so we can get an idea of how we can assist you with your project.

I started coding when I was 13, I learn new technologies by doing some interesting project and share it to everybody on GitHub. Now, I am Software Engineering senior student of Hoa Sen University, Vietnam. I am also leader of Developers Student Club of Hoa Sen University. I have joined two bootcamp about Machine Learning at Jeju National University, Korea in 2018, 2019 so I have experiences in using some ML framework such as TensorFlow, Keras to make ML Application. I have built some native Android app, they were mini games, questionnaire app.

The problem I have when I'm working on project is the project structures is a little bit messy because it lack of designing. I am trying to designing before coding to do more better projects.

Here is my GitHub profile: <https://github.com/AmbroseNTK>

You can see almost what I did in the past and WIP projects.

I am listing some project:

1. Flower recognition using Image Classification with Keras/ ONNX on UWP:
<https://github.com/AmbroseNTK/KerasFlowersClassification>



2. Recognizing student behaviors in classroom using TensorFlow:
<https://github.com/AmbroseNTK/ClassroomEvaluation>
3. Android app for collecting landscape image (crowdsourcing) for ML application:
<https://github.com/AmbroseNTK/Landscapist>

...And so on

Next steps.

- Be sure to include this cover letter in your GitHub repository
- Your GitHub repository should be tagged #AndroidDevChallenge
- Don't forget to include other items in your GitHub repository to help us evaluate your submission; you can include prior projects you've worked on, sample code you've already built for this project, or anything else you think could be helpful in evaluating your concept and your ability to build it
- **[The final step is to fill out this form to officially submit your proposal.](#)**