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:

435 000 , was the number of deaths caused due to Malaria, out of an **estimated 219 million cases worldwide**, in 2017. [Most cases were in the WHO African region](). This app will act as an enabler / helper to the lab technicians and other qualified people, for a successful confirmation or denial of Malaria, in places where medical care is not easily available or less accessible.

Currently, the [CDC Protocol]() for Malaria diagnosis, is a microscopy of the blood smear on a positive result of a Malaria RDT (Rapid Diagnostic Test). The time to diagnose and confirm is critical as it would dictate the treatment regimen , in addition to other factors. The app would access the microscopic images of the thin blood smear and process it through the deployed ML Model and present with a positive or a negative result with a confidence factor.This will cut down the time needed for a faster feedback.This process will only get better and more efficient with time and data.

The On device Machine learning aspect , would enable , the mobile devices to be effective in places where there is little or zero access to internet. The ML model, can be updated on a periodic basis and be used on low spec mobile device. This would enable better access of the devices for the lab centers in addition to the lower cost.

The aim is to decrease the operational costs , so that the Malaria funding can be spent better and more effectively.

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,*
- *The path / process to be taken to build app in the provided timeline*
    - *Build a Hello World App in Flutter*
    - *Use the codelab to use Firebase ML Kit to deploy an apple (fruit)image classifier into the Hello World App.*
    - *Use the app to check if the model works*
    - *Build the CI- CD pipeline using BitRise (https://www.bitrise.io) and integrate to play store. Deploy the app to playstore*
    - *Use an existing Image classifier and use Transfer learning to train the model on Malaria Blood smears image dataset. Use the existing research papers for reference.*
    - *Deploy the trained model.*
    - *This is to be completed by mid-February 2020.*
    - *Check the success factors and gather real world feedback*
    - *Once the app is ready , connect to a microscope and see the behavior.*
        - *Example of Implementation :*
          https://www.amazon.com/Gosky-Stereo-Microscope-Magnifications-Microworld/dp/B07FVJBNMQ
    - *The idea is to have an MVP working solution before mid Feb 2020,so that I have enough time to incorporate real world feedback.*
- *The list of ways I can use Google's help :*
    - *Help me optimize the development and training process of the image model, to be effective and optimal*
        - *ML model Deployment best practices*
    - *Help with improving on the solution in order to make the dev process faster and easier ,*

- ○ *Help with how to gather real world feedback and incorporate it.*

- ● *Research Papers , Articles , Data*
  - ○ *WHO Malaria Report :*
    https://www.who.int/malaria/media/world-malaria-report-2018/en/
  - ○ *CDC Treatment Algorithm Protocol for Malaria*
    - ■ *https://www.cdc.gov/malaria/resources/pdf/treatment_algorithm_101619.pdf*
  - ○ *Image DataSet*
    - ■ *https://github.com/jags14385/MP-IDB-The-Malaria-Parasite-Image-Database-for-Image-Processing-and-Analysis*
  - ○ *Research Papers*
    - ■ *https://link.springer.com/chapter/10.1007/978-3-030-13835-6_7*
    - ■ *https://www.ncbi.nlm.nih.gov/pubmed/30878057*
    - ■ *https://www.medgadget.com/2015/09/modular-add-brings-polarized-light-microscopy-malaria-diagnosis-smartphones.html*
    - ■ *https://www.nature.com/articles/srep13368*
    - ■ *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4548194/*
  - ○ *Idea on completion & implementation result*

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- ■ *Example of Implementation :*
  https://www.amazon.com/Gosky-Stereo-Microscope-Magnifications-Micro
  world/dp/B07FVJBNMQ

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.

Hi , my name is Jagannath . I am a software engineer who loves tinkering with things and build prototypes.
I have built a Google Assistant Bot for the video game I follow , DOTA2.
 I have built my own tax calculator, for my tax purposes, java and CLI based. I was part of the team , which delivered the Android and IOS app, for Origin Energy , which is an energy provider in Australia

Link for the projects :
- https://assistant.google.com/services/a/uid/0000000c01e88aa9
- https://www.npmjs.com/package/nrs-manager
- https://play.google.com/store/apps/details?id=com.originmobileapp&hl=en_US
- Video of my talk : https://www.youtube.com/watch?v=6Z0QjnnHF48
- I have also contributed to protractor-cookbook in the past.
- Github Handle : jags14385

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.**