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:

Capturing memories is easier than ever. Nearly all phones (especially the smart-phones) come with a camera. However, this makes reliving those memories difficult. The typical scenario looks as follows -- we have made an hour and a half long video of our birthday party, and it's both bulky to share with everyone and difficult to watch in entirety. Most often, we just want to see the main parts, e.g cake-cutting, someone's particularly funny dance etc etc.

This is where my App comes in. Dubbed ShortCuts, this app will automagically create a video summary of original video. The main highlights are:

1. Generate Short (video) Cuts
2. Choose and share your favorite ShortCuts by weaving them into a video summary
3. Let Machine Learning do the hard-work and make a summary for you!
4. Summary as a GIF

Some more Ideas that I have in mind with this project, but I am not confident about being able to implement them:

1. Add basic video editing features
2. Add filters (something along the lines of face transfer using GANs etc)

Tell us how you plan on bringing it to life.

My project is currently in the ideation stage, with prototypes implemented of how I plan to perform the summarization. I've pushed the documented core functionality of video summarisation inside *code_samples/* folder contained in the challenge repository (https://github.com/virresh/ShortCuts). Currently it's python code, but since open-cv has bindings to c++ and JAVA, I think it's possible to implement the same logic as a native c++ app (or use java bindings for a native JAVA app) for android without nearly similar performance.
In the prototype, I'm using OpenCV to extract cuts and stitch them with ad-hoc logic. The results are decent, but being a novice in this domain, I believe some neural network based video extraction techniques would make the process more efficient (faster and less memory consumption) and improve the quality as well..

Most smartphones these days come with at-least a quad-core processor and roughly 3-4GBs of RAM. With such a computation power, I believe it should be possible to perform on-device video edit operations with an acceptable latency of up to two minutes. However, I'm a beginner in this area and would love Google's help in determining the suitable flow -- i.e editing on device vs editing on the cloud.
I've developed several android applications and understand the code logic and backend portions very well. I've managed a team of 10 people and used Continuous Integration with other coding practices such as signing apks and automatically releasing signed apks with every merge to master to develop an android application in one of my projects, however, none of the apps I've developed was submitted to play store. Also, I'm not very proficient at developing UI for mobile devices. In particular, I'd appreciate Google's mentorship in the following aspects:

1) UI improvements
2) Video compressing and on-device processing (codec handling etc)
3) Lightweight Deep Neural Networks for video summarisation if any
4) Possibly with GCP, in case on-device processing turns out infeasible
5) Making my application deployment-ready and cross-device testing (across android versions)
6) Any suggestions and feed-backs on my project

The currently planned timeline is as follows:

- December 25th 2019: Research on the available video summarization techniques for edge devices. Brainstorm the flow and UI.
- January 10th 2020: First Prototype of the video summarization app. Start working on UI and UX improvements.
- January 30th 2020: Start unit-testing and instrumentation testing. Complete all compatibility checks and make the application more robust.
- February 29th 2020: Completed UI enhancements and additional features that come up during research. Prepare the app for deployment.
- May 1st 2020: Application launched on Google Play Store!

Tell us about you.

I'm a final year CS undergraduate at IIIT-Delhi, graduating in May 2020. I want to build systems that improve the lives of people and bring some meaningful impact -- like things that make them more productive. I've developed all kinds of applications ranging from Web to Desktop to Mobile and have also worked on several open-ended research problems based on Machine Learning. My experience with Android is not as extensive to claim mastery over the topic, however, I have developed several android applications available here: https://github.com/virresh?utf8=%E2%9C%93&tab=repositories&q=android-apps&type=&language=. The largest and most recent of which is Sahayak - a mentor-mentee matching app. I'm also an active contributor to OSS projects and maintainer of my OSS library - coantlib. A selected collection of my projects is available at https://virresh.github.io/projects/.