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:
In our everyday lives it is common to be faced with the need to summarize information. Whether we are studying for a test, trying to catch up with news, or reading blogs and articles on the internet it would be very helpful if we could compress all that information into just a few paragraphs without losing meaning or context. Furthermore, with all the information we are overwhelmed with on a daily basis, we would find a summarizing tool to be valuable in helping us grasp the gist of huge source of text.

Nutshell is a mobile application that leverages on device machine learning to accurately summarize information. Users can import a document or copy paste text into the Nutshell text summarizer and the app will deliver an accurate summary in a compressed form.

With support of over 100 languages, Nutshell helps you shorten a set of paragraphs to the most relevant sentences containing key points you should be aware of. It is as simple as it sounds, copy text from your favorite source or copy the link directly, open the app and start reading!

All summarization happens on-device and doesn't require internet access, unless you're using the link to summarize, then you need internet just to get the text.

The app uses abstractive summary to achieve its goals. Firstly, we will perform data processing which will aid in filtering unnecessary characters or sentences from the data set, tokenizing articles into words and creating word embedding's using Tensorflow lite to represent the words in a numeric manner. The architecture of the model will involve a sequence to sequence model which is available on Tensor flow lite. The data will then be trained and tested on google cloud AI platform.

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.*

1.How google can help me bring the app to life

Must have:

- Provide me with raw processing power to build, train and test the Tensorflow model
- Assign me a mentor to help in building the sequence- to-sequence model and to help with the android infrastructure
- Give me advice on how to best train the model to ensure high accuracy
- Assist me to reach the target audience for the app
- Arrange a meeting with Google researchers who are have an understanding on NLP, LSTM and RNN

Should have:

- Advice and hints on better methods of training the model – (one which would help me process the problem all at once rather than word for word) other than the ones I'm currently using (LSTM and RNN)
- Give me advice on android architecture and system design that would suit this project
- Help me to better understand abstractive summarization and NLP to optimize performance of the app

Could have:

- Advice on how I could expand the project to cover more types of formats (like audio and video)
- Advice on how to deploy and test the app for Google playStore.

Timelines to bring the app to life by May 1 2020

Now – Dec 15

- Doing in-depth research on NLP, clean and refactor current sample code

- Data processing which will aid in filtering unnecessary characters or sentences from the data set, tokenizing articles into words

Dec 16 – Dec 31

with the help of a mentor – via email or hangouts, I will explore on device machine learning implement a few sample apps as well as explore other projects implemented using on device machine learning and NLP

Jan 1- Jan 10

Wire framing:

I will map out User interface and user experience in a blueprint and with help of a mentor pick on the best architecture to implement for this application.

Jan 10 – Jan 20

UI Design:

I will create mockups for the User interface

JAN 20 – FEB 1

UI DEVELOPMENT

The design of the UI will be translated into functioning code

F**EB 2- FEB 16**

Break to study for my final exams

FEB 17- MARCH 5

Building a TF Model based on training data that i will have preprocessed. I will train with the Google tensorflow cloud API, and transfer the TF model for to Firebase ML service. Finally I will Deploy a TF lite file in the app to allow for testing

March 6 – March 20

- With assistance from Google experts optimize my machine learning model to ensure that meaning and context is not changed during summarization and that content is not over-summarized.
- Explore potential summarization of audio and video files with help from Google experts
- Explore and implement personalization of the app by implementing language translation for instance translating English text to a French summary.

March 20 – April 1

Testing:

Ensure that all aspects of the app are functioning properly and that all edge cases pass. Implement and test all features that will be complete including –Text to text summary, translating text from one language to summary in a different language and possibly video and audio summary.

April 2 – April 17

Fixing bugs and deploying a Beta testing version on Play store

APRIL 18 – May 1

Getting feedback, implementing changes and fixing bugs. App will be ready by May 1

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.

Let me tell you a story of a boy who set out to write algorithms to make consuming information easier by summarizing text automatically using algorithms. I started writing android apps in 2015 when I started college. I am currently a final year Student taking Electrical and Electronic Engineering at Jomo Kenyatta University. I have interest in machine learning and Mobile app development and I have done a couple of projects as well as gotten invitations to attended conferences on AI including Deep Learning Indaba held in Nairobi this year. I am currently a Google Africa scholar and facilitator awaiting an Associate Android developer certification. More about me can be found on my Linkedin as well as Github.

I have worked on various project on Machine learning and android app development on an individual level and as part of a team:

Lead developer of Teketeke – A mobile application that leveraged on device machine learning to perform barcode scanning for a self-checkout in supermarkets

- Research Assistant at Jomo Kenyatta University (Department of Electrical and Electronic Engineering)- I am currently building an Optimal Design of Power Scheduling/ load shedding using Artificial Neural Network in an Isolated Power System.
- Second runners up: Zindi Hackathon (Nairobi)-Traffic jam: Predicting people's movement in Nairobi
- Technical mentor of the winning team in Teens in AI hackathon held during the deep learning Indaba in Nairobi

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.**