**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:*

While it’s now easier than ever to communicate with anyone at any time, the platforms that allow us to do so make it difficult to convey our ideas exactly as we want to convey them. Nuanced facial expressions and tone of voice have been replaced with generic emojis and the bee-bop of a touch keyboard. Energy that once lived in wild eyes and ecstatic limb movements has been caged in word capitalization and exclamation marks. Given this abstraction, it’s impossible to know if our audience is getting the right impression when we send them a text, a tweet, an email, or a DM. More than this, we may not know how to translate our own vibrant ideas into black text on a white background.

Chatter Royale aims to combat this issue by gamifying the evaluation of written material. Users will post free text blurbs to a feed where other users can analyze the tone and impression of each entry. Analysis will be rewarded with experience points. Granular reactions will be captured by 3 votes in either direction. More importantly, votes can be cast regarding specific characteristics of each post, such as how intelligent, original, emotional, or political it is. This data will then be fed into a machine learning algorithm to generate an app-agnostic model that can inform users of their projected tone/impression, as well as offer suggestions on how to adjust their tone, before hitting the send button.

**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. Sample code is included in my submission Github repository. My project currently consists of several components:  
   - **The mobile application**: The mobile app consists of a basic framework that allows users to anonymously critique various aspects of other user’s posts in a scrolling feed. Users can vote on the overall quality of posts or specific post characteristics. Users can tag posts with identifying labels. They will also be able to comment on posts. Each of these actions generates experience points for the user and these points act as an in-game currency that can be spent on personalizing features such as font styles and colors.  
   - **A Cloud Firestore database**: All user posts and votes are stored in a Cloud Firestore database that is updated in real time. As more users contribute, the diversity of posts and characteristics will increase and I will use this database to feed my machine learning model.  
   - **Several Cloud Functions**: The pace of each round (day) is maintained by several Cloud functions. Each hour, a stage value is incremented which causes bonus points to be awarded to top entries for the previous hour. At each stage change, user action limits are also reset. At the end of each day, a single post is selected and added to a winner’s collection that can be viewed by all users.
2. I‘ve been using Kaggle and TensorFlow to learn about developing machine learning models. Google would be able to help me is by assisting me in setting up a ML model that can continuously process data in my Firestore database. My end goal is to use the Chatter Royale app to create a model that can be used outside across applications (for instance, as a keyboard extension).  
   I’ve recently been struggling with limiting my database writes so that I don’t burn through my quotas after a few days. Each vote on a post leads to at least 5 database writes and I am hoping that users will be voting a lot. I could use some guidance regarding best practices when writing to a database en masse.   
   I started programming for Android last month and don’t have much background on the world of Android before then. With that said, I could use some quick pointers on how to increase backward compatibility while still taking advantage of the newest Android features and architectures.  
   I could also use some assistance in the design department. I have been exploring the Material.io website but I’ve never been involved in the visual design process.
3. My goal is to have a beta version of the base application (minus the machine learning features) published to the app store by early January. There are several foundational features that I need to finish implementing and I will need to spend a solid few days on beefing up my app and database security. After these essentials are taken care of, I will then begin working on nice-to-have features, such as notifications and other app integrations. While I am working on finalizing the app, I will also be researching TensorFlow and drafting my first model.  
   January and February will be spent troubleshooting any issues that come up during the initial testing rounds, expanding/improving my machine learning models, and making the app look pretty.  
   In March, my focus will shift away from the application basics and towards the effectiveness of the machine learning models I will be using. During this month, I will develop the functionality that will allow users to implement the model created by the Chatter Royale app in other programs. This model will be advertised as a collaboratively produced model with features that can be added using the in-game experience points or actual money. For example, the model may provide metrics on the intelligence, humor, and bluntness of text by default and additional metric will need to be appended. I will also need to make sure that the ML model has enough data to begin with. The month of March will also be spent aggregating free text posts from various social media platforms (Twitter, Reddit, Facebook) and devising a way to annotate them appropriately. If my app is published by this time, I will be able to port these posts into the app so that users can vote on them. Consequently, users will be voting on posts that they created as well as on posts that were created by others on separate platforms.

April will be spent debugging and optimizing the ML features previously added. By May 1st, the application should be ready for consumer use.

**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.

My name is Joseph Muller and I went to school at Stony Brook University for Biomedical Engineering. I now work in the field of IT but have a passion for building things (see my Instagram @Mullrtechnologies). I have a 3D printer (the Dremel3D20) and a rack of electronics at my house and spend just about all of my free time tinkering.

For the longest time, I focused on the hardware side of engineering. During my senior year at Stony Brook, I created an orientation sensing wrist strap that could provide real time tangible and visual feedback to users while they were exercising. I won first place at my university’s entrepreneurial challenge as well as at the regional business competition of Long Island. The “Roflex” is still an ongoing project of mine but I have since become obsessed with software development. Although my background is not in computer science, I am eager to learn everything I can and have devoured a Kotlin programming book for Android in the last month.

**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.**](https://docs.google.com/forms/d/e/1FAIpQLSe43koQL33IzgxXQl29Ex3AhFuqd4hQzxLiXREqwRkDGtx1vA/viewform?usp=sf_link)