Tell us what your idea is.

Have you aver wondered how an item is made? How it's composed? Or simply pretty informations about it? Ex. What you can say about a simple mouse?

My idea is to make a "pokedex-like" recognizer with a phone for everyday item. The Item recognized would be represented in the phone with a 3D model giving a full overview of the object. If supported for the type of object an animation of the exploded model would be provided. Also you can visualize information about the single parts by tapping them or information about the whole (Wiki integration)and fun facts or curiosities about.

How that would be possible for every object? It would be a community project. The app (a flutter app) wuold have a section to upload models, informations and and other data accessible for everyone.

USE CASE
Let's back to the mouse example:
Use the phone camera to scan your environment. The phone recognize a mouse on your desk and let you know that, labelling it. If you select the object you can have a preview of the mouse model and a sliding animation with an explode of the parts. Major information provided by Wikipedia (like the evolution in the history) and curiosities about.

CONTRIBUTION CASE
- After scan, recognize and selecting you can edit the information about the object and add your own details.
- To upload a new model you can pick an object make a bunch of photos from differents angle and write down all the information you want.

The app would be developed in flutter with integration of the web where you can only search (not scan) and visualize the objects.
The recognizition of the objects would be realized with ML Vision.
A tensor flow model will be trained with all the photos that you provide for a specific object obtaining in output the cleaned 3D model. Once ready, when the model produced is considered enought accurate, the object will be pushed in the dataset with the infos provided, to be recognized by users.

The app would have a fun-learning use in a personal context and also in an educational context.

This is a realistic basic plan which can be reached creating also a decent dataset of item, but i want more. Why watch a 3D model in a 2D space? With further help i would integrate it with Google Lens technology, visualizing the object in a real scene.
Not enough? Surely, in a future, an implementation with augmented reality technology would be nice ;)

Tell us how you plan on bringing it to life.

The project is still in design phase but i'm studying how to make things done and designing the architecture. I got interest in the ML field for my degree application but never put my hands on image recognition. I need some help, primarly, in the exploitation of the possibilities to apply ML in the app. I'm evaluating the options about using autoencoding or point cloud fusion to get out the best results in a general context.
After this time of learning and exploitation, the flutter app, not so tricky, would be made. Next the realization of the camera's overlay interface and the model of recognition.
The major lapse of time would be spent realizing the sampler for 3D model from images. Also i would require the use of the Google services for the realization and training of the models.
This is my basic plan for the May 2020 deadline, with further help i can evaluate the options to realize also the 3D visualization.

Tell us about you.

My name is Giovanni Minelli. I'm an undergraduated student currently at the last year of University following a bachelor's degree in Computer Science. I can offer years of experience in Java/C++, Web programming skills and some past experience in 3D modelling. I'm more a "backand guy" but i've no problem to handle the design and UX. I love developing with pattern and applying best prectices in my code to make it higly understandable. Most of my skills are self-acquired or learnt in an educational context since my working background in companies and in big teams is pretty short at the moment. I've already developed an Android app and a flutter one (with web spec) for a company internal management. All references of my past work are on GitHub. I love to explore the possibilities offered by new technologies and try them with my hand. I'm higly motivated in the mobile context and i hope for the best for this project.