

Become a PRO Flutter Developer



Pawan Kumar & Sayak Paul



Icon made by Freepik from
www.flaticon.com



Who can become a **PRO** Developer?





Trust yourself & the technology



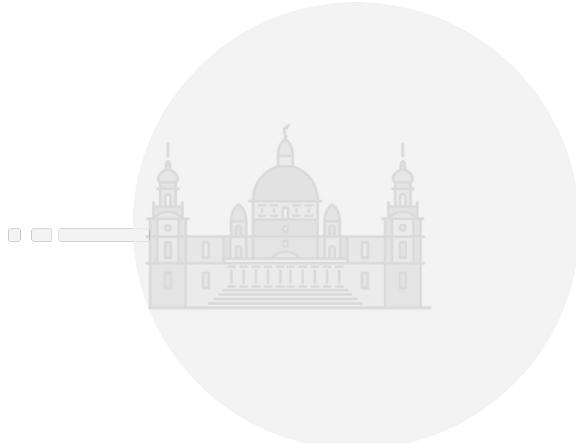


In 2018
Declarative UI Pattern?

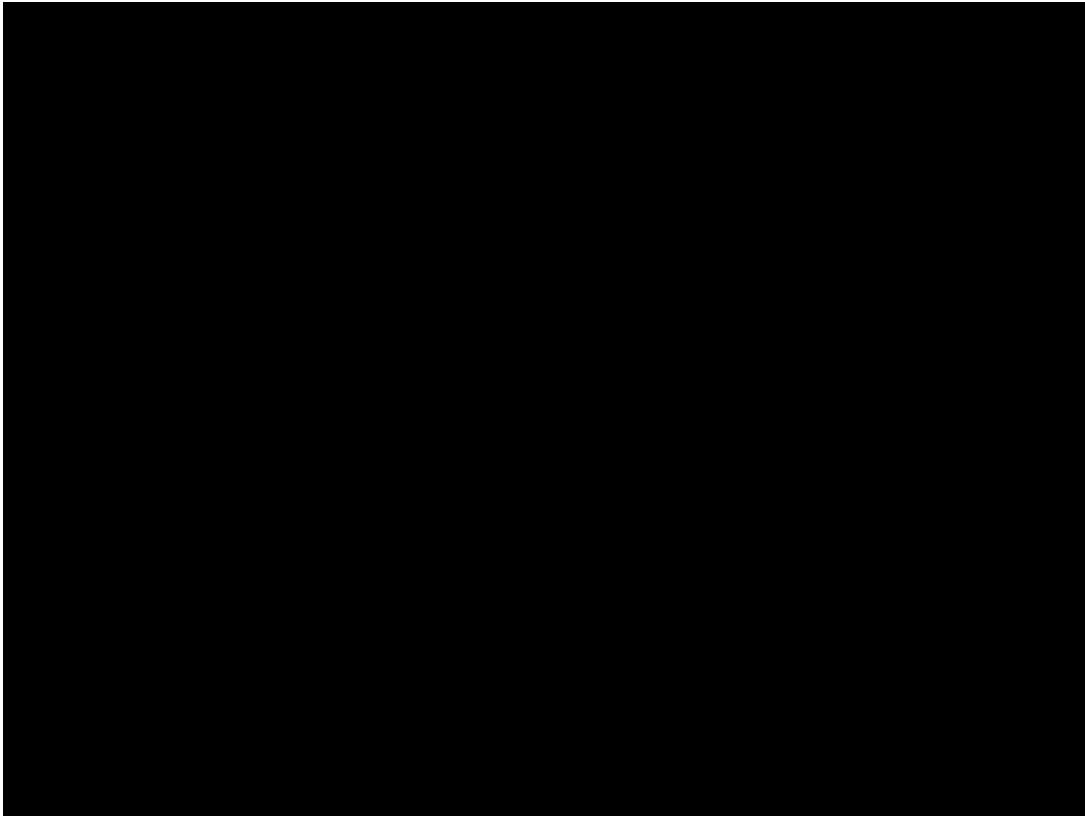




In 2019?



2019 for declarative UI Pattern



Connecting Flutter with TensorFlow (2.0)



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Deploying `tf.keras` models: An overview

Life-cycle of a machine learning project

- Problem understanding
- Data collection, wrangling and so on
- Understanding of the data
- Beginning the modeling process
- Evaluate, tune, repeat
- Model in production



Note that the above steps are very summarized

Life-cycle of a machine learning project

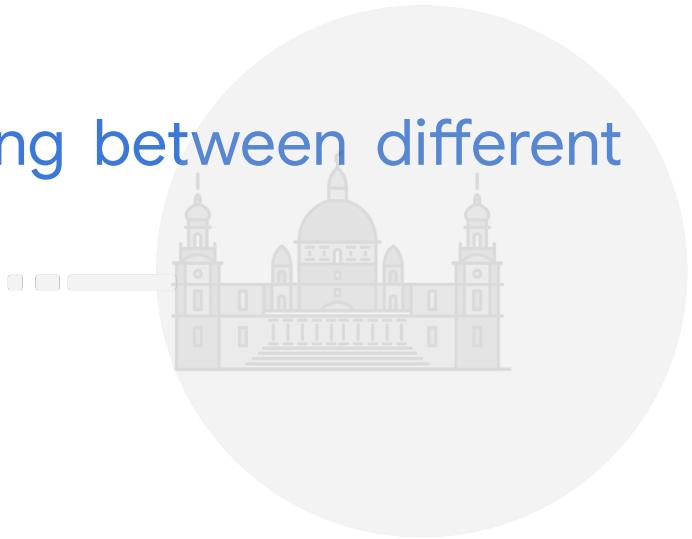
- Understanding of the problem
- Data collection, wrangling and so on
- Understanding of the data
- Beginning the modeling process
- Evaluate, tune, repeat
- Model in production ← **We're here today!**



Note that the above steps are very summarized

Some light on the problem

To build an application for classifying between different apparels.



Some eye-balling at the data*

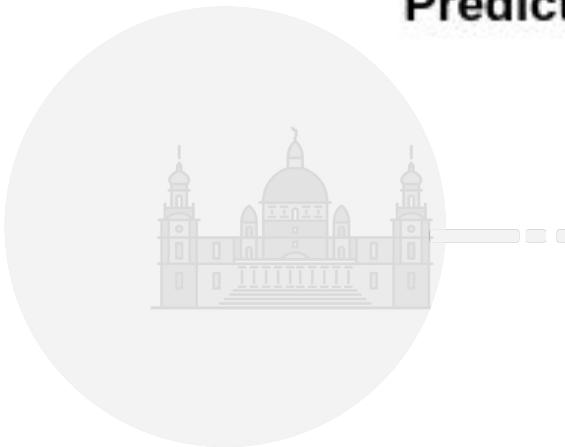
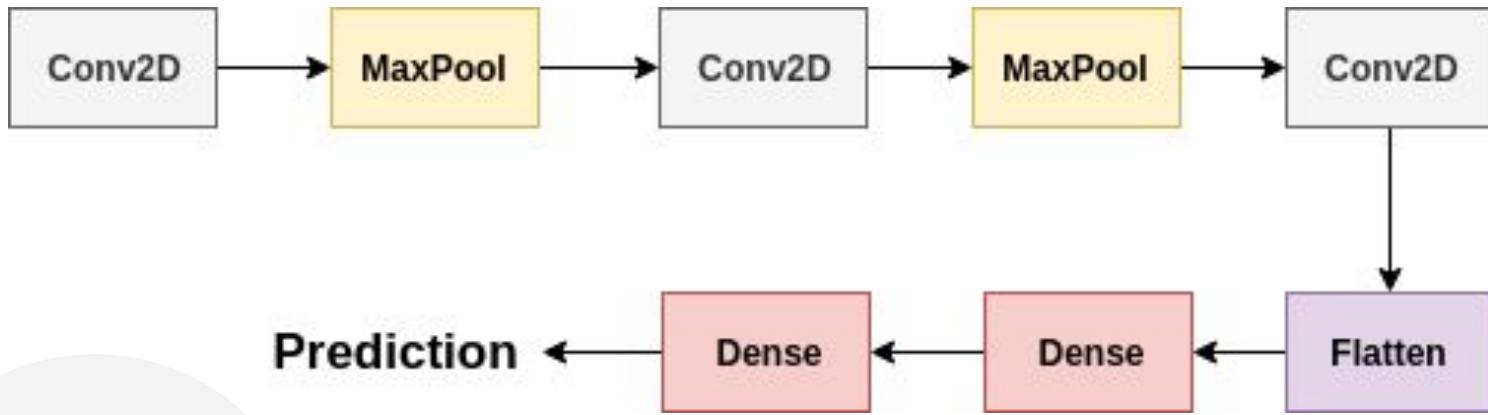


FashionMNIST data

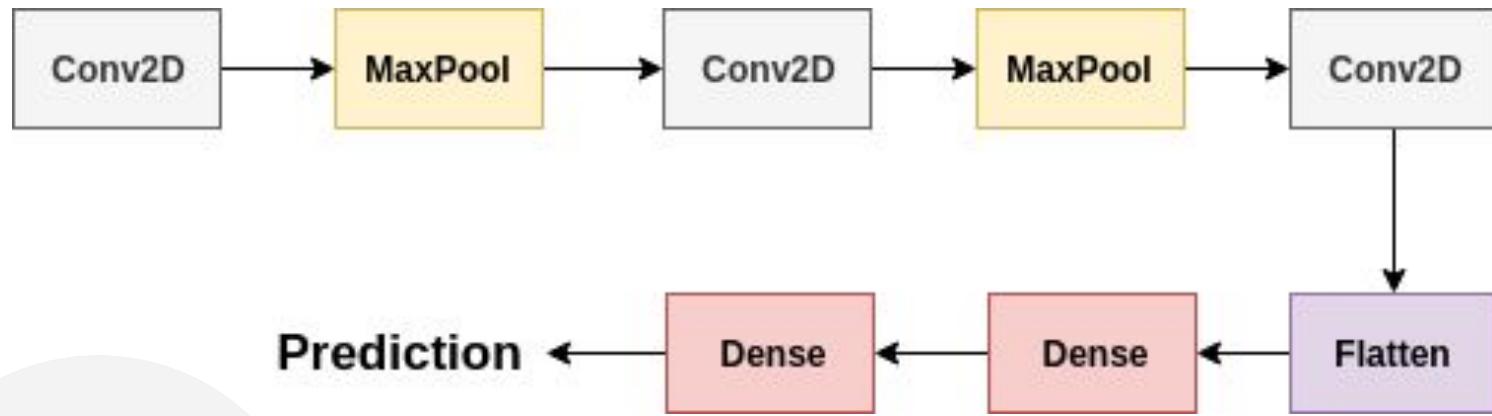
*We understand the data by now

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Our humble model



Our humble model



Humble enough to yield **91.43%** accuracy on the validation set

Not much code here



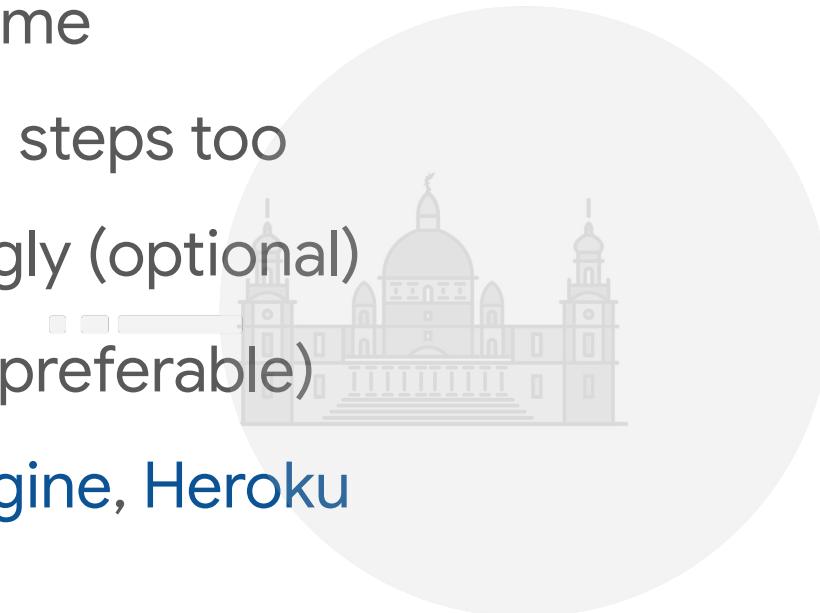
```
# Define the Convolutional Neural Network
from tensorflow.keras.models import Sequential

model = Sequential([
    Conv2D(32, (3, 3), activation='relu', input_shape=(28, 28, 1)),
    MaxPooling2D((2,2)),
    Conv2D(64, (3, 3), activation='relu'),
    MaxPooling2D((2,2)),
    Conv2D(64, (3, 3), activation='relu')
])
model.add(Flatten())
model.add(Dense(64, activation='relu'))
model.add(Dense(10, activation='softmax'))
```

Putting this model to use - Deployment

Model deployment: An overview

- Design the data input for load time
 - Includes data preprocessing steps too
- Quantize the network accordingly (optional)
- Serve the model as a REST API (preferable)
- Deploy on platforms like AppEngine, Heroku



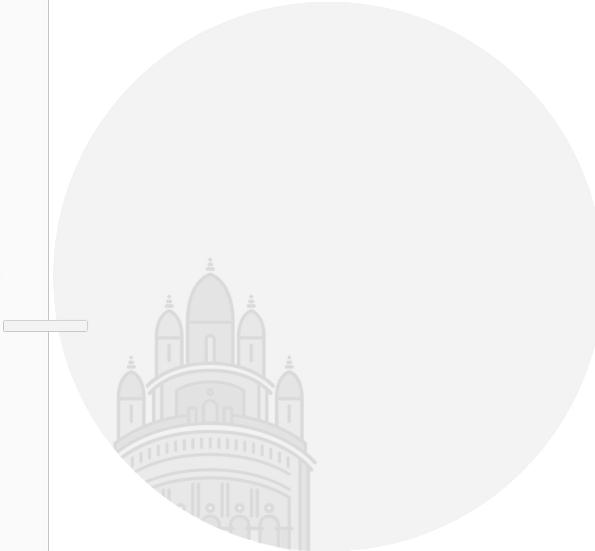
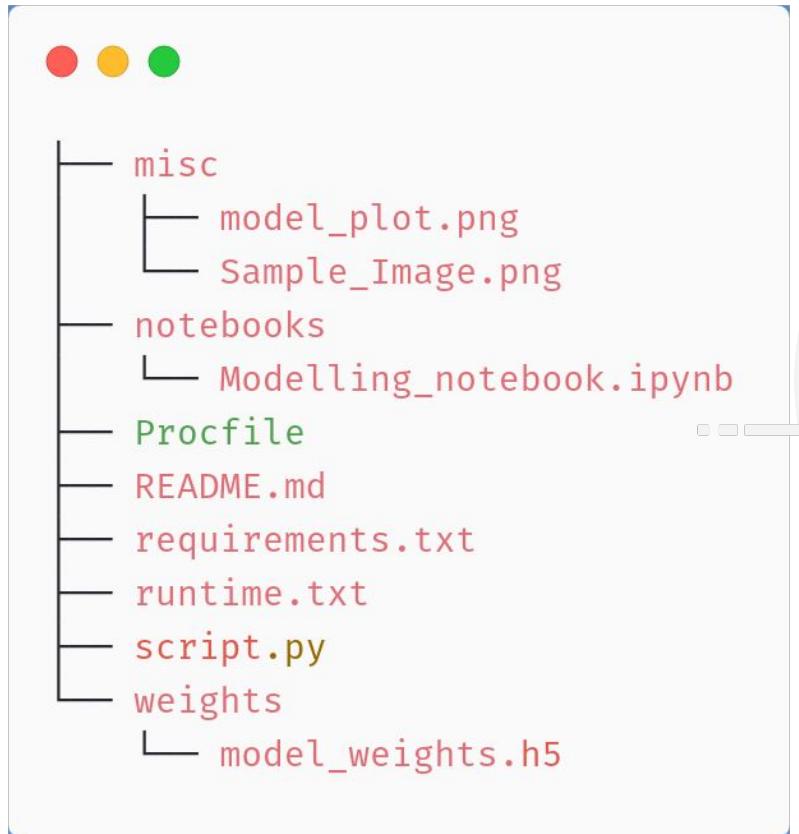
Note that the above steps are very summarized

A mental model of the API

Our API `/predict` would:

- Take an image as the request payload
- Pre-process it for making it inference compatible
- Load the model (*warm invocation*)
- Run the image through the model
- Yield prediction
- Send the response

Structures matter



Weapons of choice



App Engine



HEROKU



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A sample image to test with



API consumption with a REST client

The screenshot shows a REST client interface with the following details:

- Method:** POST
- URL:** <https://apparel-api.herokuapp.com/predict>
- Body Tab:** Selected (highlighted in green)
- File Selection:** A file named "Sample_Image.png" is selected for the "file" key.
- Response Status:** 200 OK
- Response Headers:** (6)
- Response Body (Pretty JSON):**

```
1 {  
2   "Category": "Ankle boot",  
3   "Confidence": "100.0"  
4 }
```

Collaborations made

- An **apparel classifier application** with Pawan:

<https://github.com/iampawan/FlutterFashionML>

- An **age detector application** with Aritra:

https://github.com/ariG23498/Age_Detector_App



Not only mobile, but also web as well

An entire book coming on this with [Anubhav](#) themed on the *applications of deep learning in web development.*

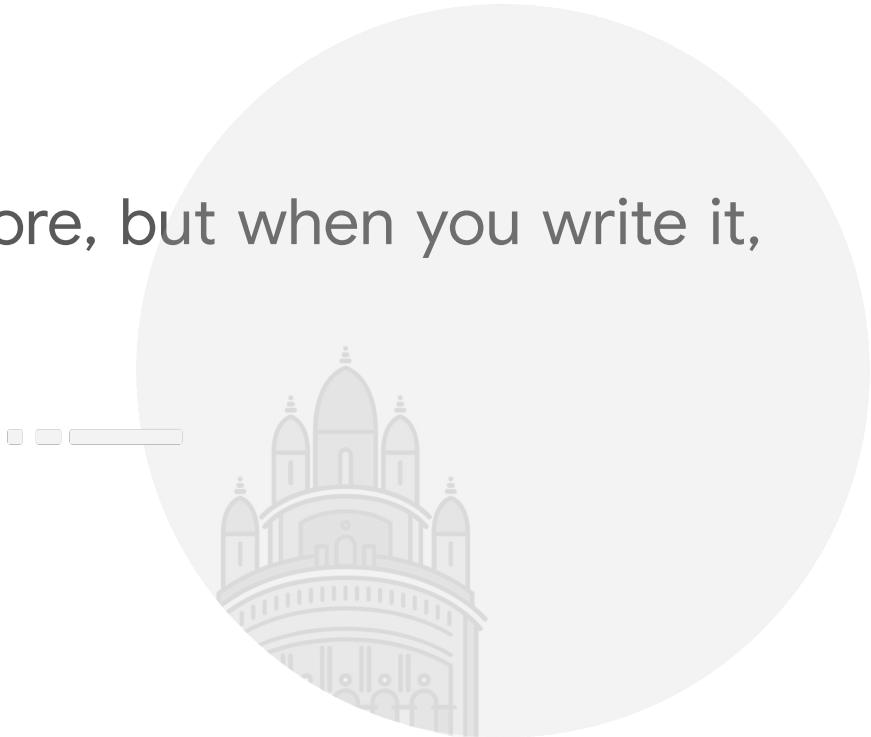


Flutter PRO TIPS



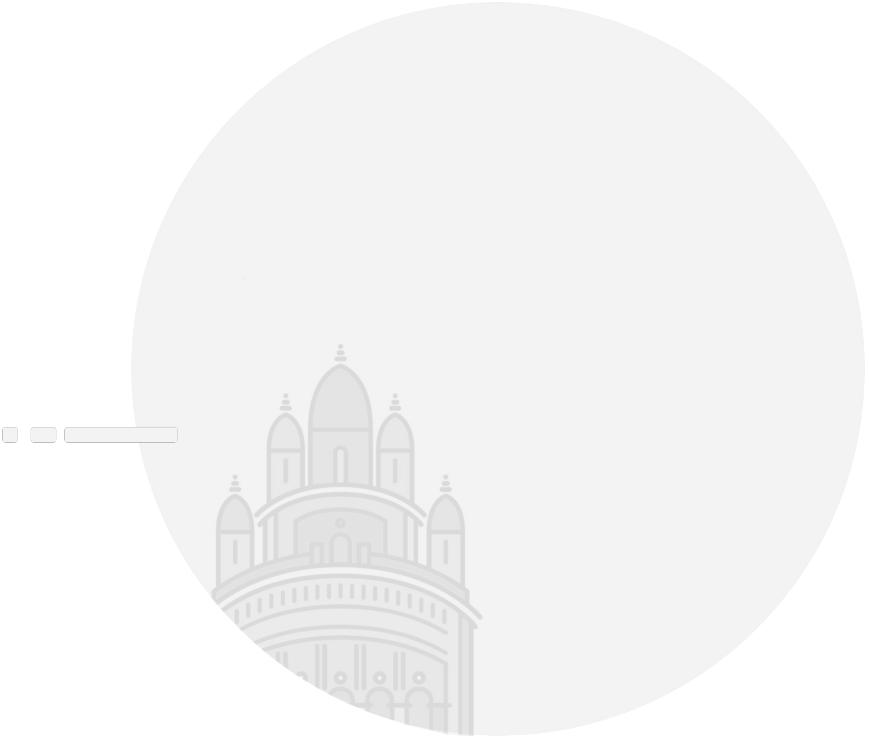
Lazy Programming

Write what you need and no more, but when you write it,
do it **right**.

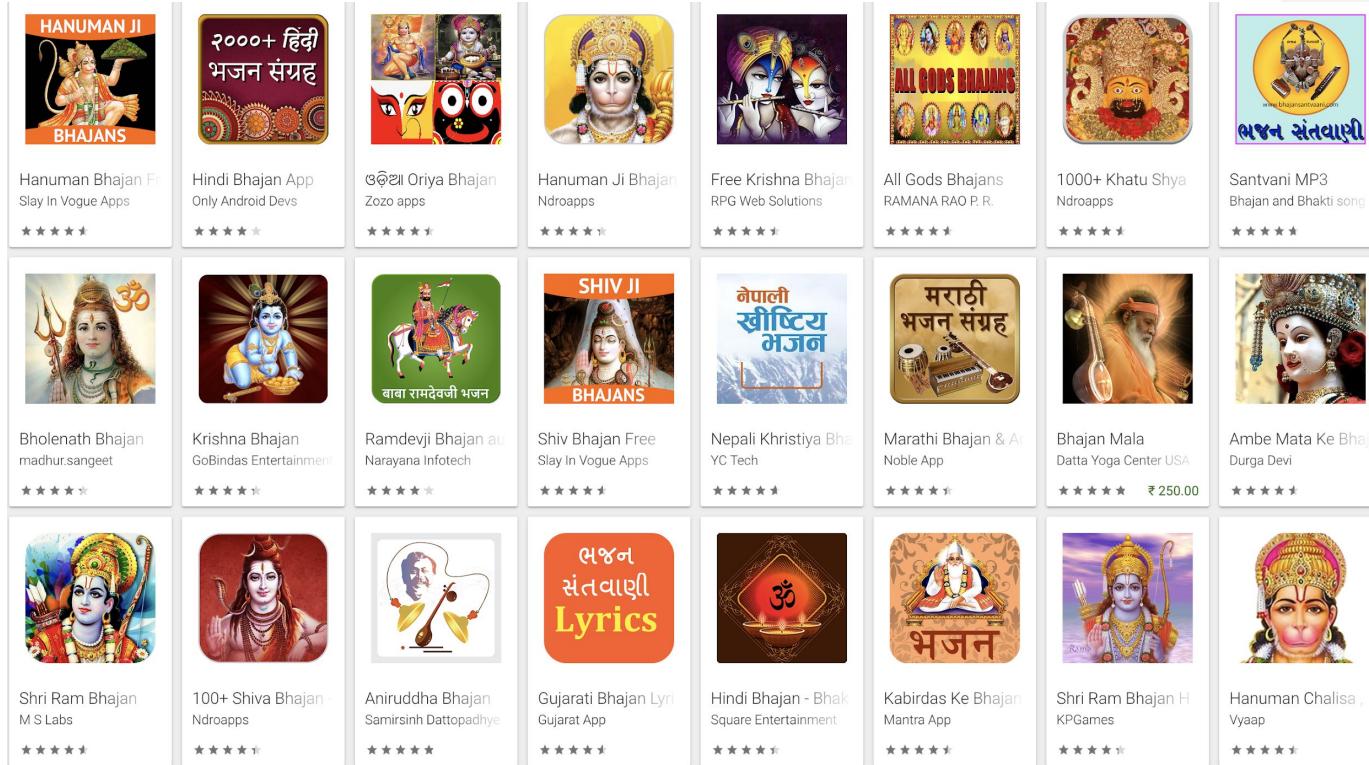


Build Complete Apps

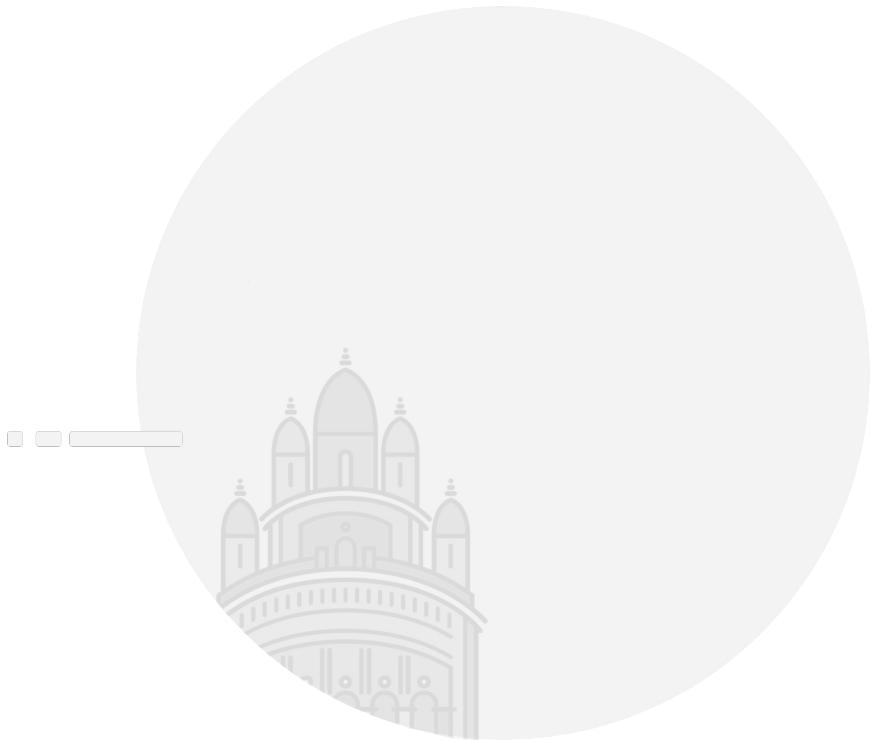
Don't just make UIs.



Don't do this



App Store be like

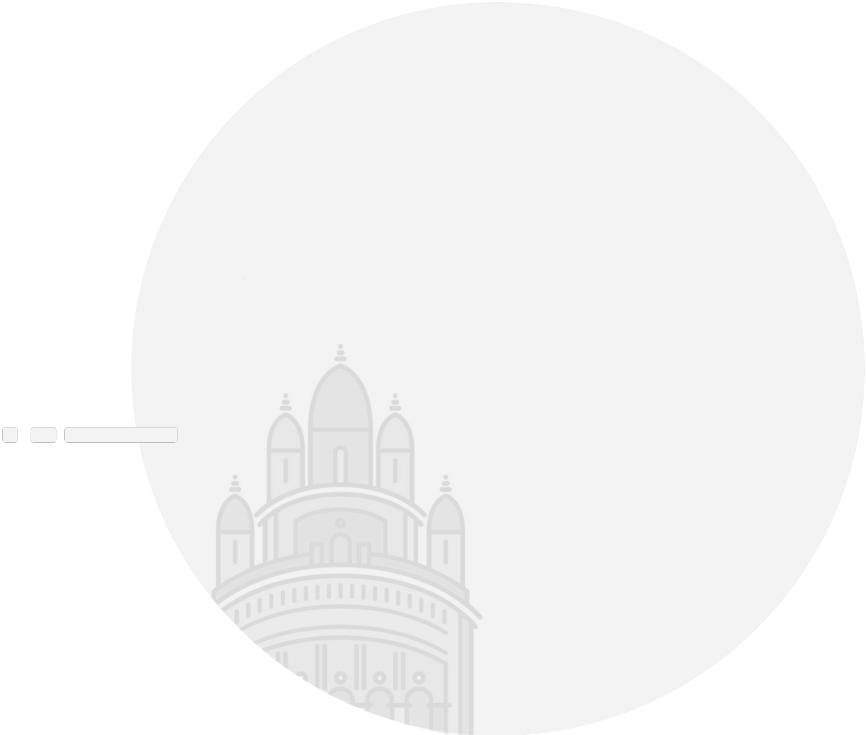


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Animations

Keep it simple.

Avoid unnecessary animations.



Dark Mode

Dark is the new cool thing.

ThemeData is what you need.

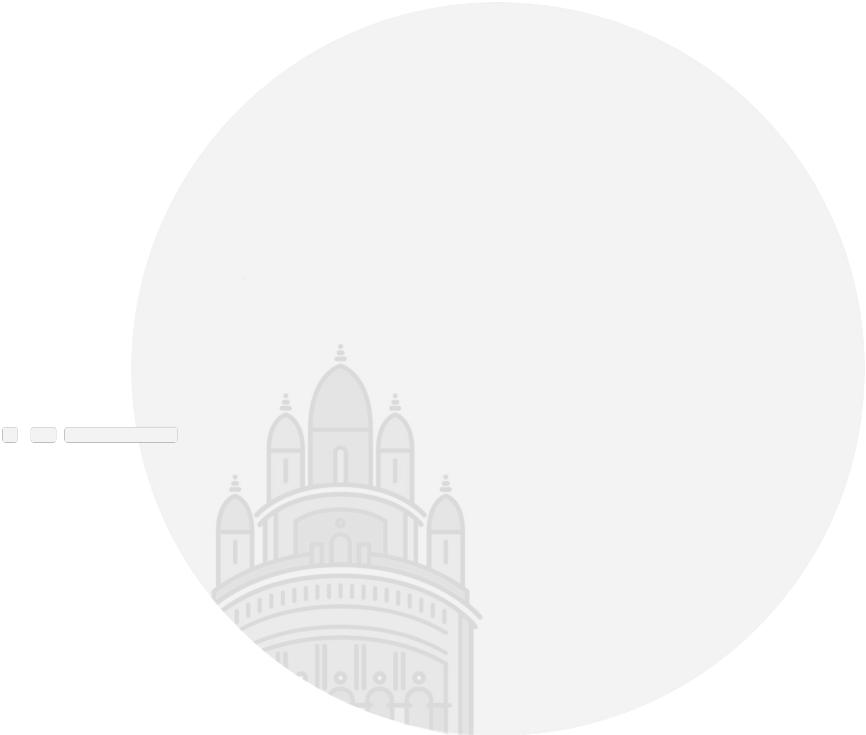
The image displays a mobile application interface in dark mode. At the top, there's a navigation bar with a back arrow, the text "Speakers", and a search icon. Below this, four speaker profiles are listed:

- Pawan Kumar**
Google Developer Expert, Flutter
Talk: Getting Started With Flutter For Web
Social media links: Facebook, Twitter, LinkedIn, GitHub
- Laura Morinigo**
Software Developer, DMod Labs
How I Became a Mobile Developer with Firebase and Flutter
Social media links: Facebook, Twitter, LinkedIn, GitHub
- Jimenez Raul**
Software Engineer, Byte Default
Angular Elements
Social media links: Facebook, Twitter, LinkedIn, GitHub
- Sathish V J**
Tech Architect, Investor, Tutor
Machine Learning and AutoML on GCP
Social media links: Facebook, Twitter, LinkedIn, GitHub

To the right of the speaker profiles is a video player window. The video shows two men, one with his hand to his chin, looking thoughtful. The video player has a blue header with the text "92.7 BIG FM" and a call-to-action "Double tap to play". The bottom of the video player has a blue bar with the text "92.7 Big FM Suno Sunao, Life Banao!". There are also navigation icons for a play button and a square.

SOLID Principles

- S – Single responsibility principle
- O – Open closed principle
- L – Liskov substitution principle
- I – Interface segregation principle
- D – Dependency Inversion principle



<https://medium.com/flutter-community/s-o-l-i-d-the-first-5-principles-of-object-oriented-design-with-dart-f31d62135b7e>

State Management



stuarthalloway

@stuarthalloway



If you don't think managing state is tricky, consider the fact that 80% of all problems in all complex systems are fixed by rebooting.



Provider

- Provider is a simpler way to use inherited widget, to synchronise your UI and your model.
- It's just a tool, not an architecture.
- You don't have to use it everywhere.



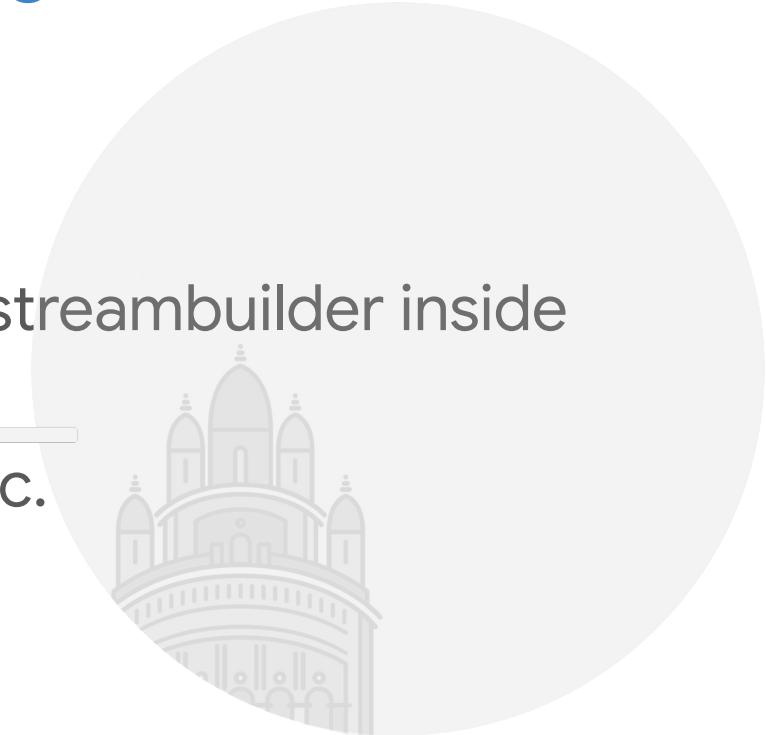
Bloc, Flutter Bloc

- A Predictable state management library.
- It enforces immutable state.
- It enables time travel debugging.
- Performant (Only rebuild what you need).
- Easy to use and highly testable.



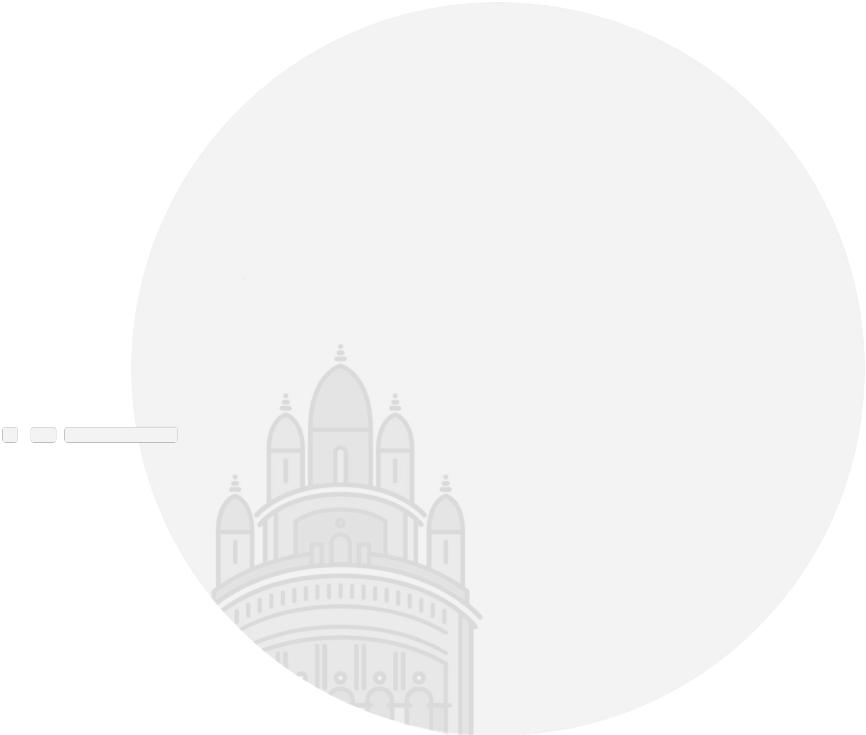
Stop over-engineering things

- Stop using streams everywhere.
- Stop using streambuilder inside streambuilder inside streambuilder.
- Stop mixing UI with business logic.



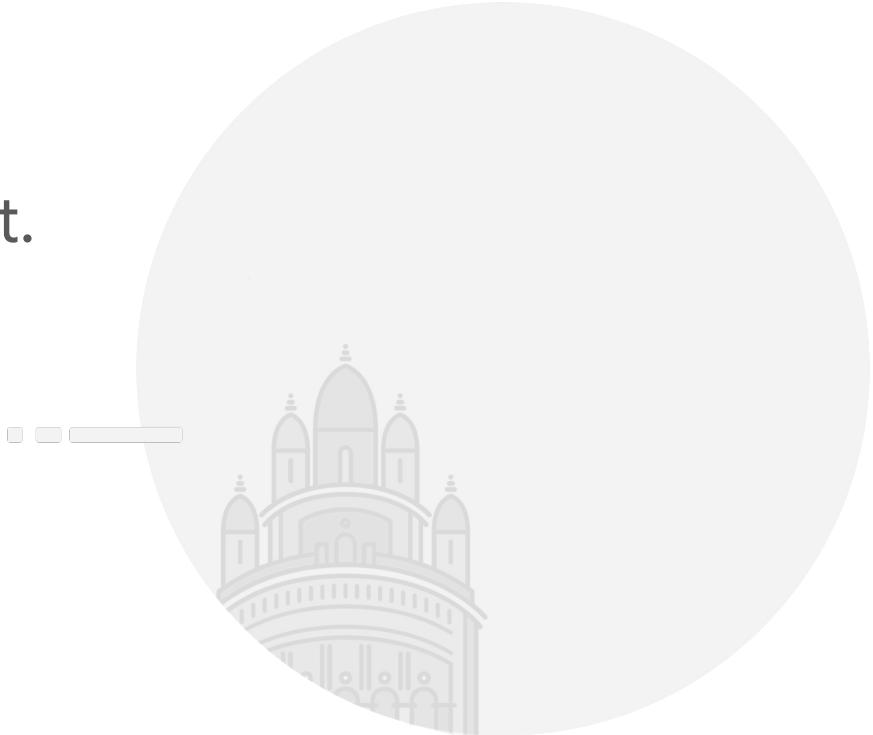
Some packages / plugins

- Font_awesome_flutter
- Http & dio
- Cached_network_image
- Sqflite
- Intl
- Pk_skeleton
- Queries
- Shared_preferences
- Url_launcher



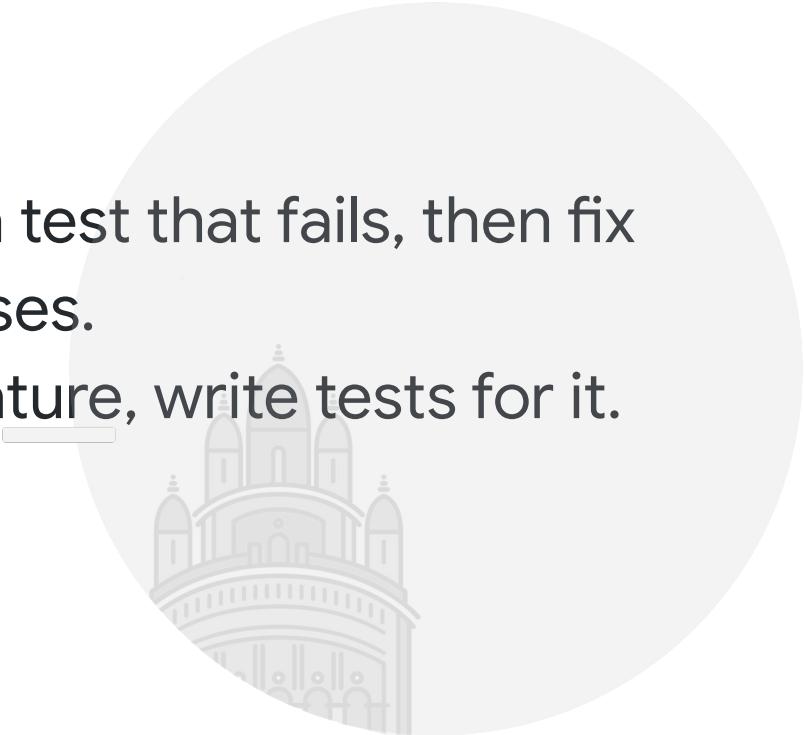
VSCODE

- Use VSCode for development.



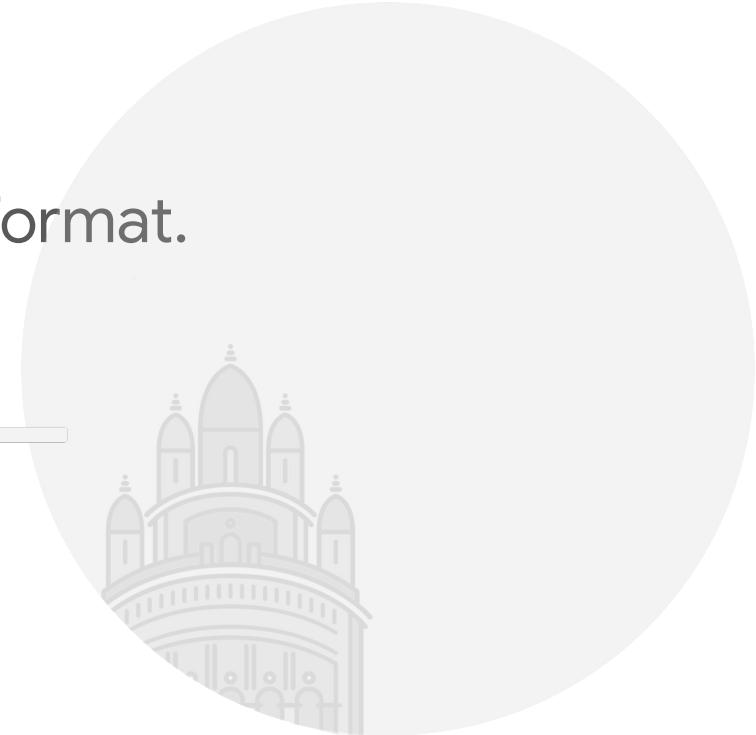
Write Test, Find Bug

- When you fix a bug, first write a test that fails, then fix the bug and verify the test passes.
- When you implement a new feature, write tests for it.

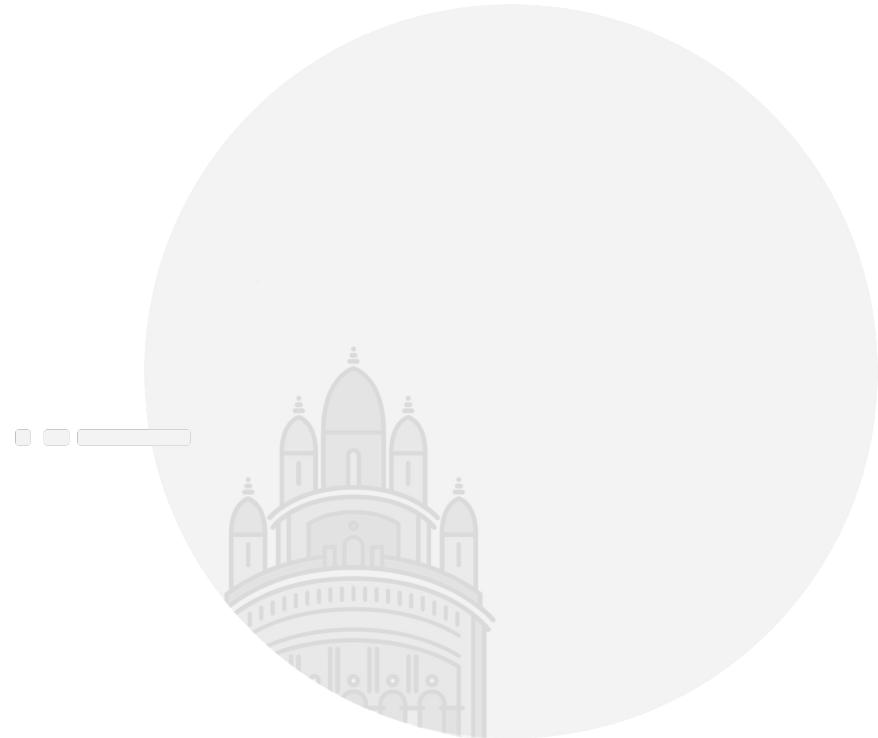


Android App Bundles

- Official android apps publishing format.
- Average size saving of upto 35%.
- Optimized apk for each device.

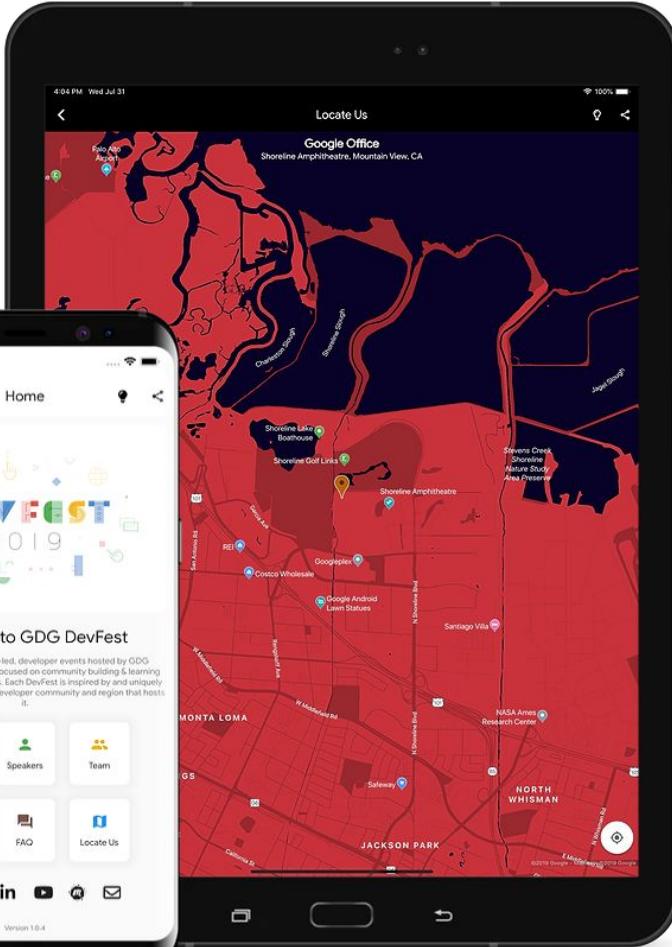
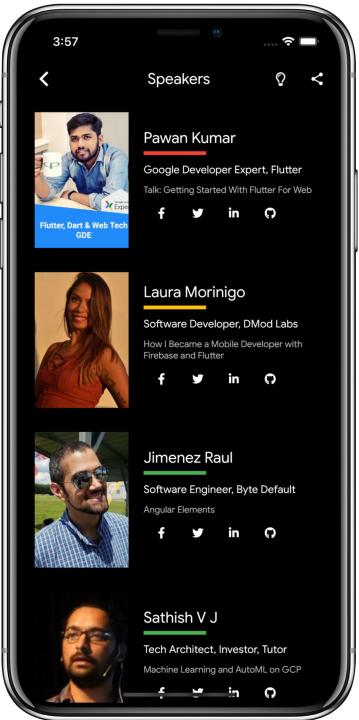
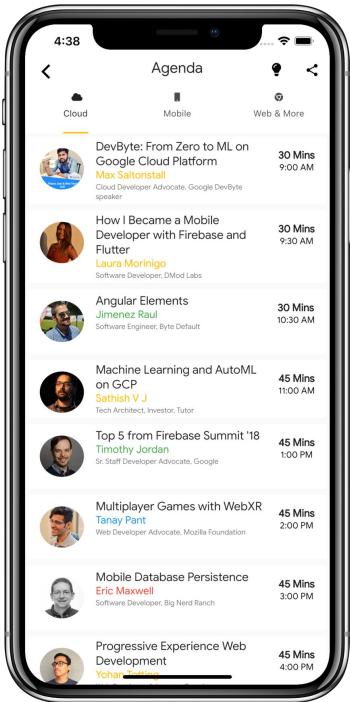


We are not finished yet



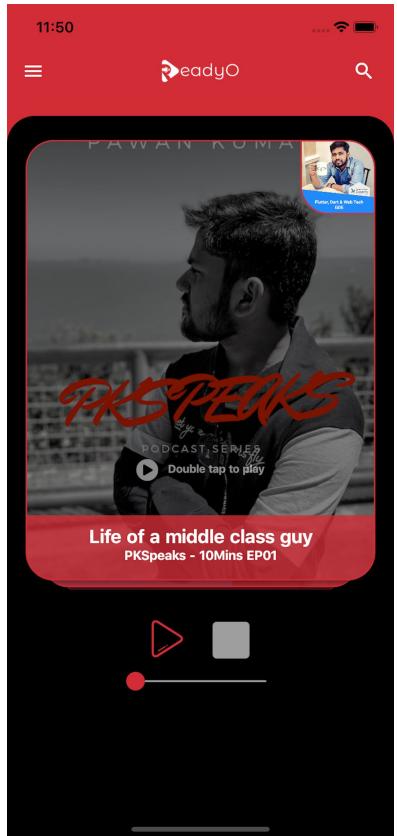
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DevFest App



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Promotions



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See you next time



Find us here:
Sayak.dev & **pawan.live**

Thank you very much :)



GDG DEVFEST KOLKATA

If Tony's snap makes half of all Golf
Balls disappear, how much time would
it take for Gulliver to weave a Golf Ball
tutu?



#5

“The difference in time between Guptill's throw hitting the stumps and Dhoni to reach his stumps in WC 2019 semis.”

- Avishek Das

#4

“Just a second if he asks Batman for help. Because he is BATMAN !!”

- Avirup Deb

#3

“Dear Tony, Gulliver weaves golf ball everyday. Gulliver never takes rest. Gulliver never disappears golf balls. Be like Gulliver.”

- Dip Bhattacharjee



#2

" 2 because it's asked from 2-2 :)"

- Divya Shahi



#1

“Same amount of time as Harry Potter’s Avada Kedavra to conquer Kings’ Landing.”

- Ameya Nagvekar



#1

“Marvel and DC has to come together
and they has to implement deep
learning with the help of Lilliputians.”

- Gauri Shankar Gupta

Teams



#DevelopersAssemble

