

1 Strategies

1.1 App-initiated

Media Recorder implements an app-initiated batch synchronisation scheme. Upon taking a photo or recording a video, the app enqueues the media's URI and location information to the `mediaQueue`. Once the size of the `mediaQueue` is the `BATCH_SIZE` ($= 3$), the contents are then synchronised to Firebase.

1.2 User-initiated

Media Recorder also implements a manual (i.e. user-initiated) synchronisation scheme. Again, upon taking a photo or recording a video, the app enqueues the media's metadata to the `mediaQueue`. However, the user can click the `SYNCHRONISATION` button, which will synchronise the contents of the `mediaQueue`, overriding the app-initiated synchronisation scheme.

2 Resource Utilisation

2.1 Location Updates

Rather than continuously updating the user's location (e.g. via the `setInterval()` and `setFastestInterval()` methods), the user's location is only updated when a photo is taken (or video is recorded). This optimises bandwidth usage as it minimises the amount of data transmitted on the network. It also optimises energy efficiency as it mitigates the computational overhead associated with frequently polling location data.

2.2 Connection Profiling

Rather than haplessly synchronising media using whatever network connection the device has available, media is only synchronised (automatically) using WiFi. If the user chooses to manually synchronise media, however, this restriction won't apply. This optimises bandwidth usage as users typically have greater WiFi bandwidth. It also optimises energy efficiency as WiFi is typically more efficient than cellular.

2.3 Synchronisation

Rather than synchronising media after every single photo taken (or video recorded), media is synchronised in predefined batch sizes. This optimises bandwidth usage as the network overhead required for establishing a connection between the app and Firebase is applied to a batch of 3 media files. It also optimises energy efficiency as the overhead computational instructions required to establish this connection is also applied to the batch, and not each file.