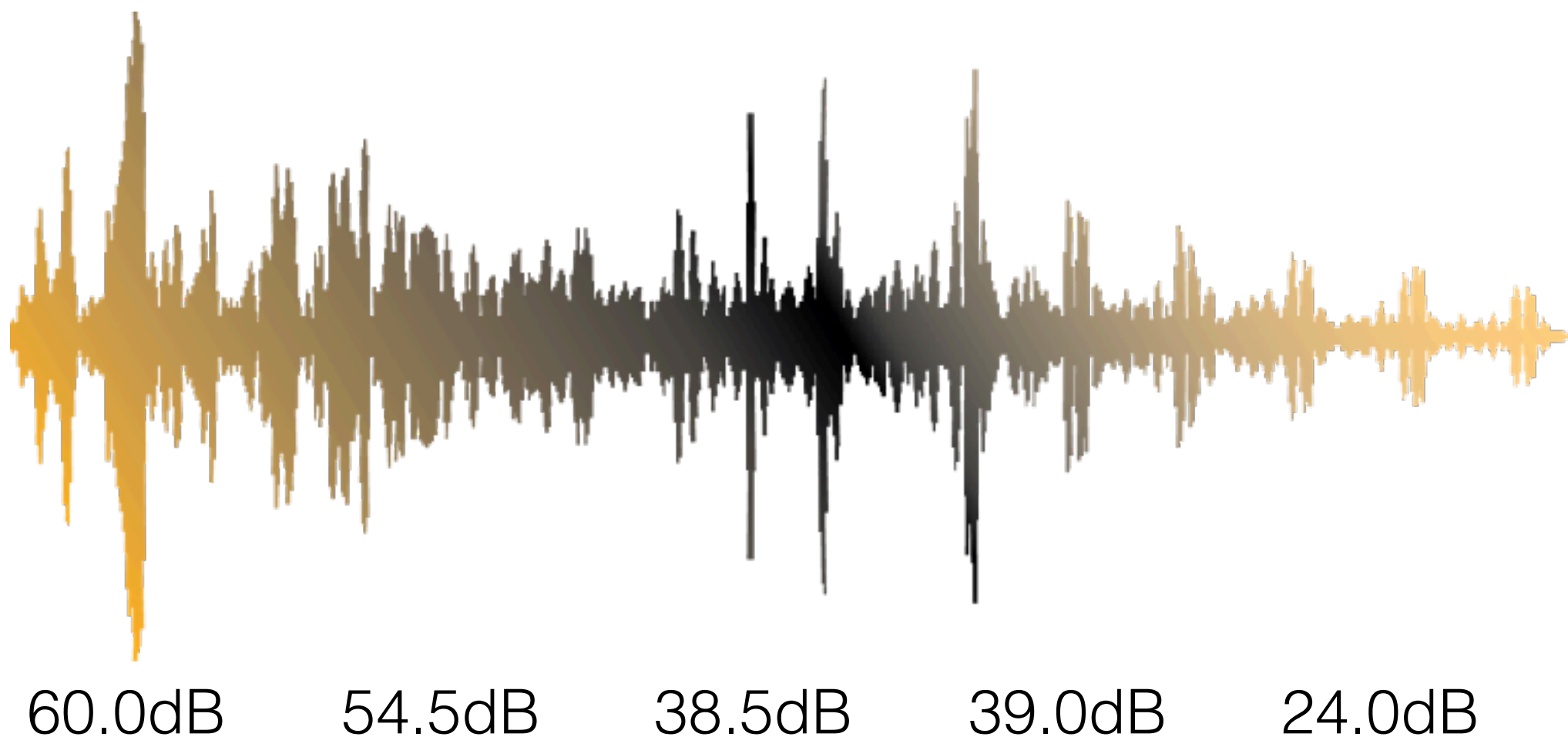


Android API Walkthrough

Running Example

Suppose developing a sleep monitor. The task is to get audio loudness every 10 minutes.



Android Permissions

- To record audio, you will need RECORD_AUDIO permission.

In AndroidManifest.xml:

```
<uses-permission android:name="android.permission.RECORD_AUDIO" />
```

- Handle runtime permission.

```
if (ContextCompat.checkSelfPermission(this.context, Manifest.permission.RECORD_AUDIO)
    != PackageManager.PERMISSION_GRANTED) {
    Log.d("Task0", "Permission denied.");
    // TODO Bonus: request permission at runtime.
    return;
}
```

- In the study, you can manually turn on permissions in Settings app on the device.

Initializing AudioRecord

```
int sampleRate = 8000;
int bufferSize = AudioRecord.getMinBufferSize(sampleRate, AudioFormat.CHANNEL_IN_DEFAULT,
    AudioFormat.ENCODING_PCM_16BIT);
AudioRecord audioRecord = new AudioRecord(MediaRecorder.AudioSource.MIC, sampleRate,
    AudioFormat.CHANNEL_IN_DEFAULT, AudioFormat.ENCODING_PCM_16BIT, bufferSize);

while (true) {
    // Record audio for a duration, save the audio data to a buffer
    // Calculate loudness based on the audio record

    try {
        Thread.sleep(INTERVAL);
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
}
```

Other types of data

- Location: LocationManager
- Contact: ContentProvider, ContentResolver, ...
- Incoming SMS: Intent, BroadcastReceiver, ...
- Motion: SensorManager
- ...

Android Resources

- Android Developers: <https://developer.android.com/>
- StackOverflow: <https://stackoverflow.com/>
- Google: <https://www.google.com/>