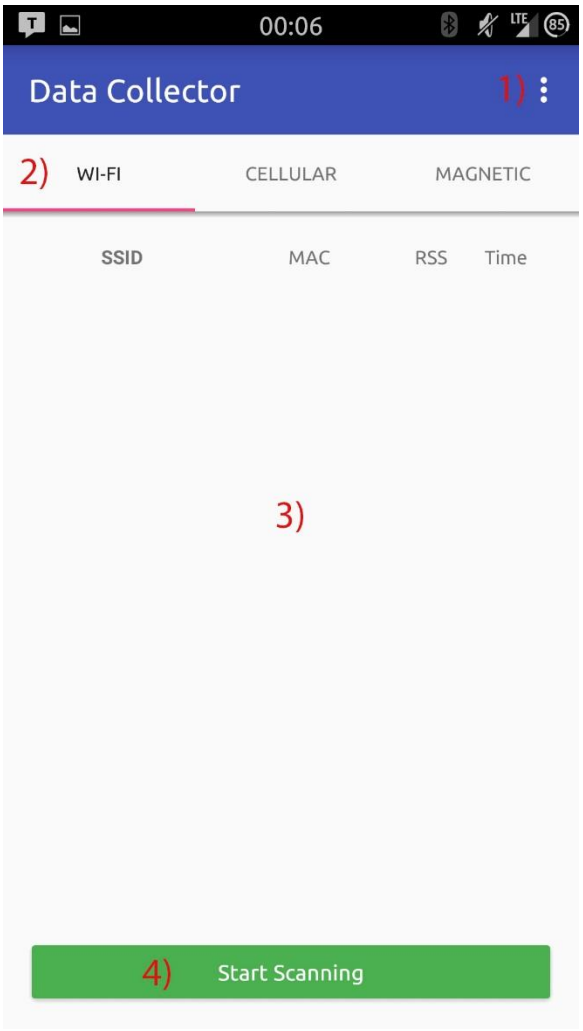
Data Collector App

User Manual

Quick Start

1. Supports Android devices running version 4.4 (KitKat) or higher.
2. The default filepath is the device's Documents folder.
3. The default filename is of the format <Date>_<Datatype>_<Timestamp>.csv
4. The default file extension (.csv) can be changed at runtime.
5. The format of the output file is an unsorted comma-separated list and can be imported directly into Microsoft Excel for data sorting, analysis, etc.
6. Ensure that you click "*Stop Scanning*" or "*Stop Sensor*" when finished collecting data, or the file will not be saved properly.

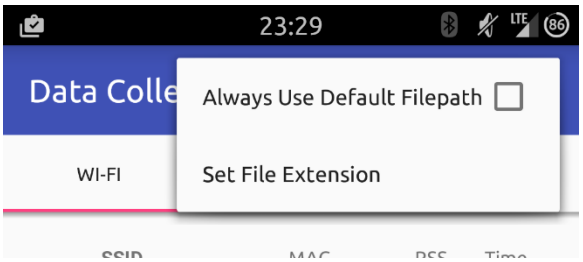
Main Screen



The main screen of the application:

1. Tap to show the app's options (see next section).
2. Three tabs, one for each piece of data that can be collected: Wi-Fi AP info, cell tower info, and magnetometer readings.
3. While data is being collected, the current values can also be seen in a table.
4. Start and stop the data collection by pressing this button. Ensure that you press the stop button when finished collecting data – this will cause the data to be saved properly.

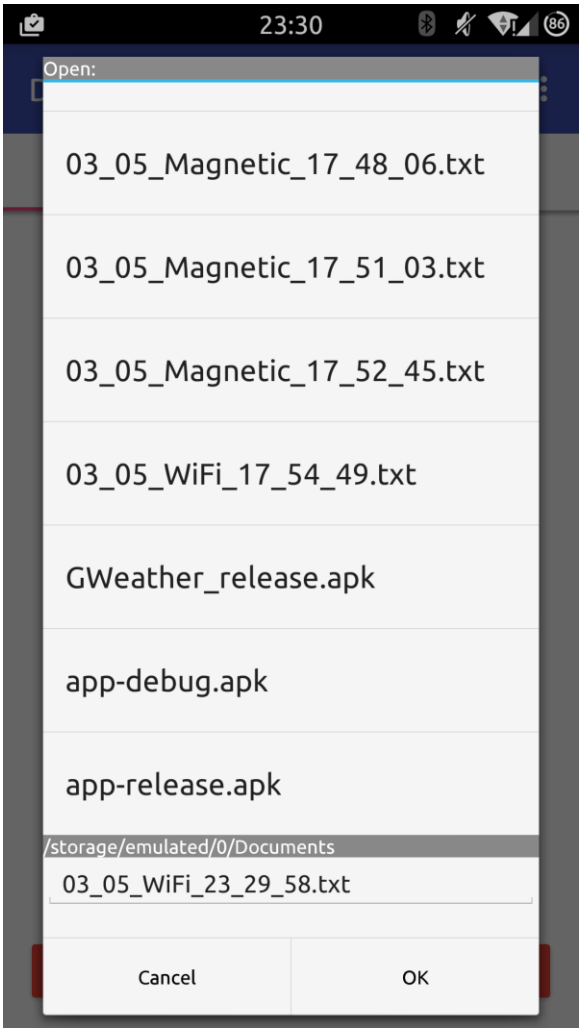
App Options



The following options can be changed:

- Always Use Default Filepath – if checked, the app will not prompt for a filepath/name. The default output directory will be the device's Documents folder and the default filename will include the date, datatype, and a timestamp.
- Set File Extension – allows the user to set the output file's default extension.

File Chooser



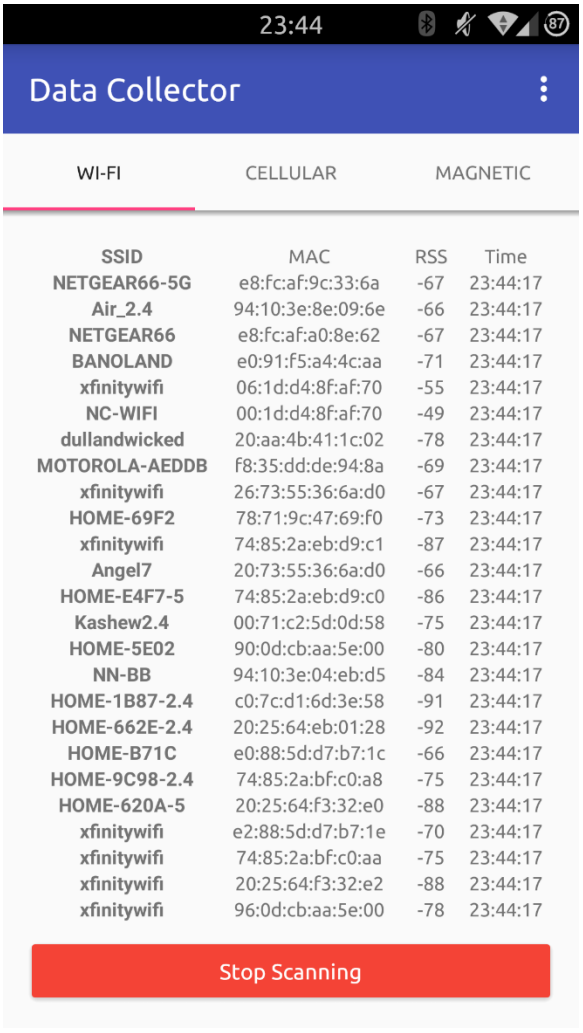
If the "*Always Use Default Filepath*" option is unchecked (by default, it is not checked), then a file chooser will appear when starting data collection.

The top portion of the dialog shows the contents of the current directory.

In the grey stripe following this, the current directory path is printed. In the screenshot, this is "*/storage/emulated/0/Documents*"

At the bottom of the dialog, the user may change the default generated filename and file extension.

Wi-Fi AP Data Collection



Wi-Fi data collection will look similar to the screenshot. Information collected about each AP includes its SSID, MAC address, current RSS, and a timestamp.

The table will clear itself approximately every 12 seconds for performance purposes, but this will not affect the output file.

The data collection filters out APs which have blank or null SSIDs.

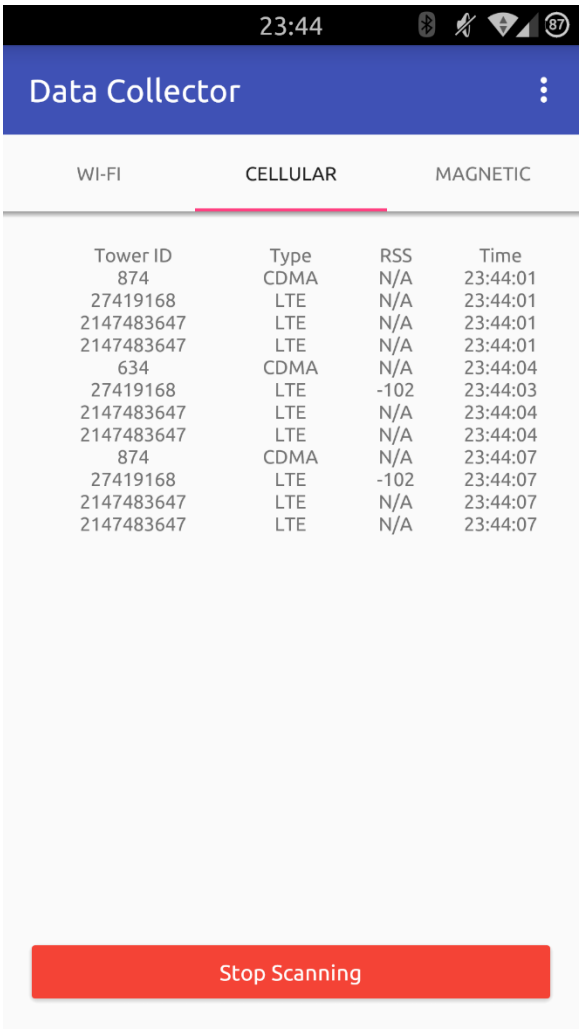
The output will be an unsorted comma-separated list of the following format:

<SSID>,<MAC>,<RSS>,<Timestamp>

The default filepath and name for Wi-Fi output files will be:

Documents/<Date>_Wi-Fi_<Timestamp>.csv

Cellular Data Collection



Cellular data collection will look similar to the screenshot. Information collected about each visible cell tower includes its ID, network type, current RSS, and a timestamp.

The table will clear itself approximately every 24 seconds for performance purposes, but this will not affect the output file.

Note: The current APIs for obtaining cellular information is still not mature. Obtainable data may vary by network type and generation.

In the case that RSS is unknown, “N/A” will be printed.

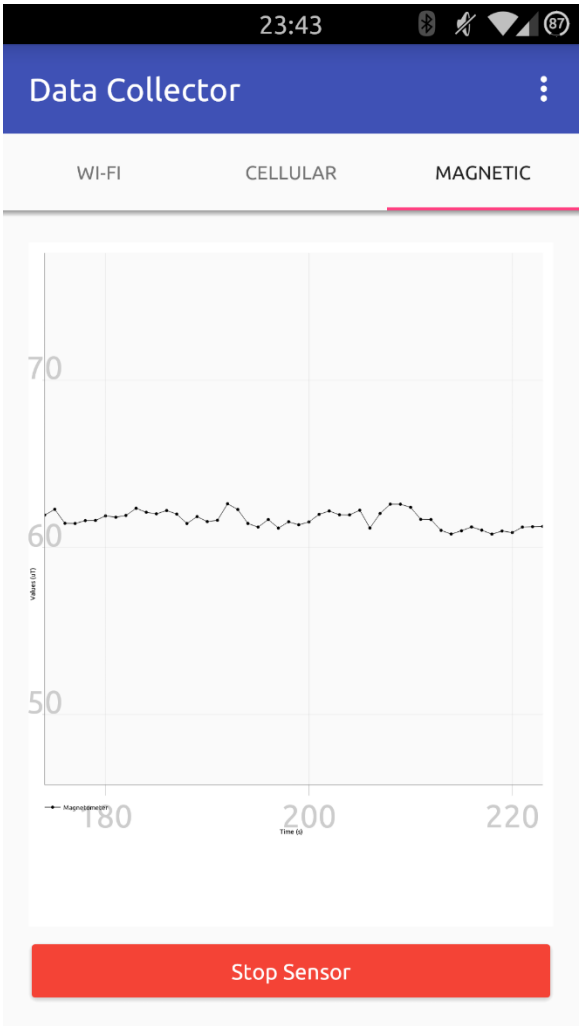
The output will be an unsorted comma-separated list of the following format:

<ID>,<Type>,<RSS>,<Timestamp>

The default filepath and name for Wi-Fi output files will be:

Documents/<Date>_Cellular_<Timestamp>.csv

Magnetometer Data Collection



Magnetometer data collection will look similar to the screenshot. Information collected include the magnitude and the timestamp.

Magnetometer values are returned in x, y, z components. The app aggregates their magnitude by calculating:

$$\text{sqrt}(x^2 + y^2 + z^2)$$

The graph will display a real-time moving window of the 50 most recent readings.

Note: the sampling rate may cause the file size to grow rapidly.

The output will be an unsorted comma-separated list of the following format:

<Sensor Reading>,<Timestamp>

The default filepath and name for Wi-Fi output files will be:

Documents/<Date>_Magnetic_<Timestamp>.csv