



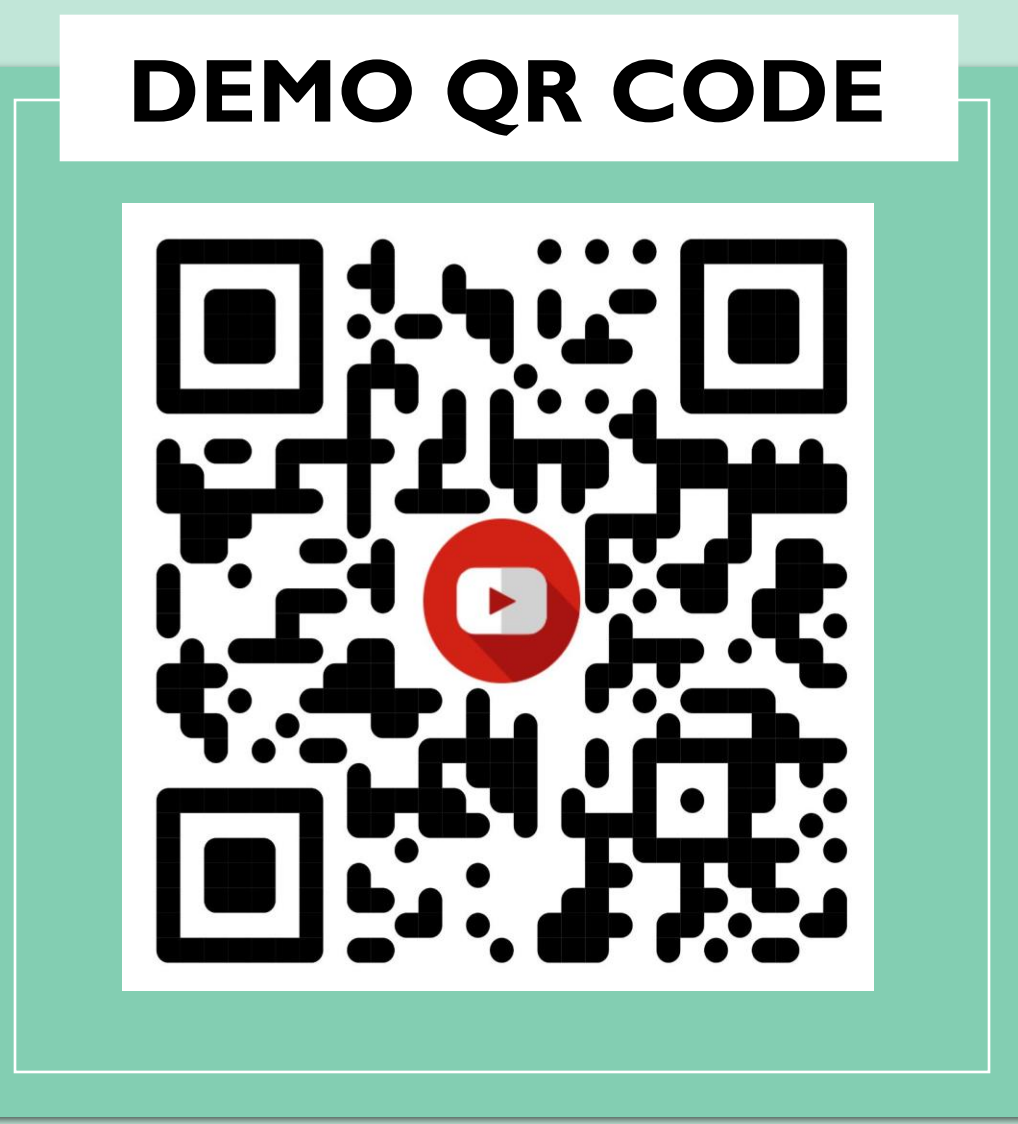
# Full-Bar Signal: A Wi-Fi AP Positioning System App

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Having trouble finding the  
perfect spot for your router?

Full-bar signal application is your  
best choice!



INTRODUCTION

- Wi-Fi access point enables wireless device connection, but determining the best location can be challenging due to factors impacting signal propagation and coverage.
- We will present an AP placement system in the form of an **Android** smartphone application, which aims at finding the optimal placement while minimizing the user's effort.

METHODS

- We utilize android devices built in Wi-Fi scanning capabilities to acquire environmental data.
  - SIGMA ( $\sigma$ )
  - PATH LOSS EXPONENT ( $n$ )
- With the attained data it becomes easy to calculate RSSI values for every 25x25 cm2 area on the provided map to get the results using Path Loss equations.

RESULTS


- Signal strength at any location
- Optimal Location
- Heatmap for all suggested locations (IDW algorithm).
- The project has the potential to **autonomously** provide optimal solutions for AP positioning and troubleshoot high interference or packet loss areas.

REQUIREMENTS FROM USER

- Turn **ON** Wi-Fi and Location Service.
- Turn **OFF** throttling Option.

Device Type	Android Version	Scan Rate (scan/s)	
		Throttling ON	Throttling OFF
Samsung Galaxy A53	13.0	0.02	0.31
Samsung Galaxy A7	10.0	0.04	0.75

APPLICATION PROCESS



MAIN ACTIVITY

- Scanning network information.
- Choose user's AP.

MAP ACTIVITY

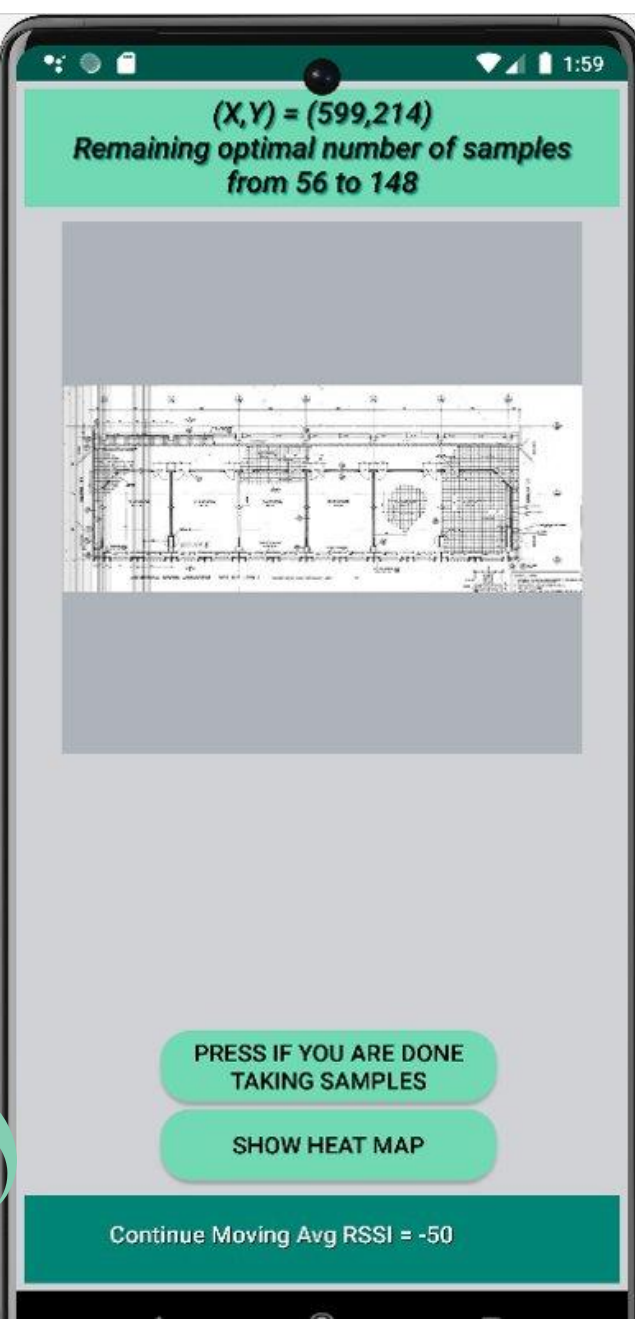
Part1:

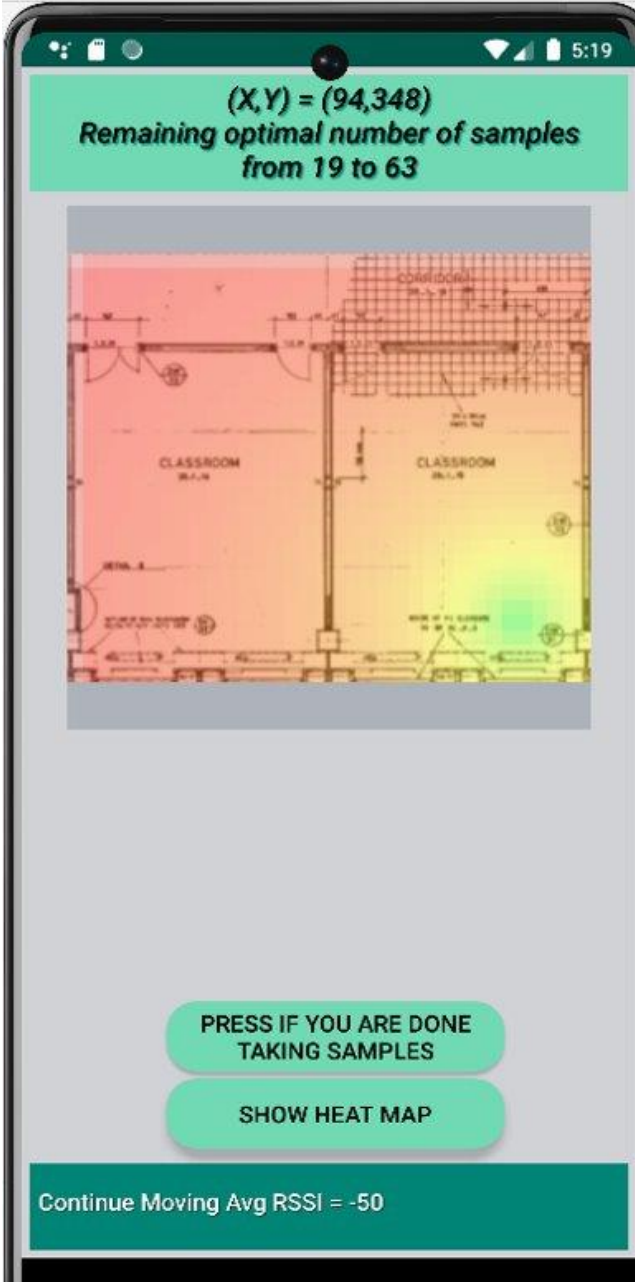
- Uploading Map Image.
- Taking Samples.
- Calculating n and Sigma.

Part2:

- Choose Optimal AP Location between Given Suggestions.

Application collected samples  
RSSI – (X,Y) LOCATION





HEAT MAP

- Inverse Distance Weighting (IDW) algorithm.
- Transition between the different heat maps through click on SHOW HEAT MAP button.