



**bluedar**

# **bluedar: Locating Earthquake Victims Using Bluetooth**

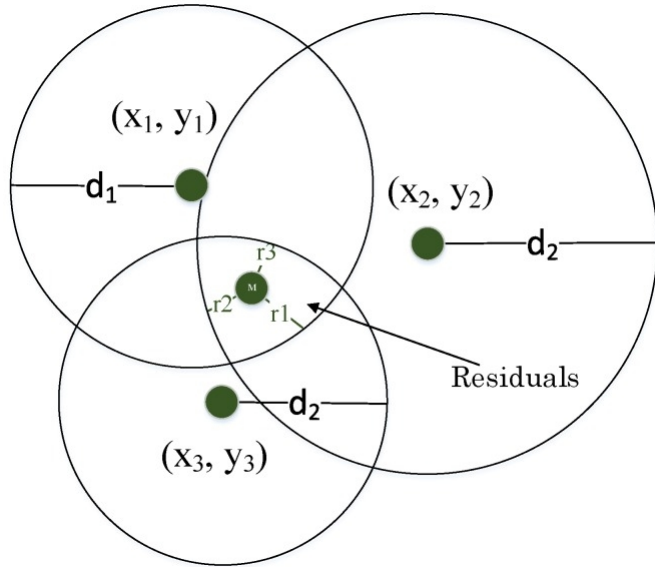
İlker AVCI (b2210356061)  
Buğra Kağan ACAR (b2210356097)

# Methodology / Probes

- **4 ESP32s as Probes**
- **Mosquitto MQTT server**
- **Bluetooth LE**

# Methodology / Frontend

- **Multilateration to Radar GUI**



$$A = \begin{bmatrix} 2(x_1 - x_n) & 2(y_1 - y_n) \\ \vdots & \vdots \\ 2(x_{n-1} - x_n) & 2(y_{n-1} - y_n) \end{bmatrix}$$

$$x = \begin{bmatrix} \hat{x} \\ \hat{y} \end{bmatrix}$$

$$b = \begin{bmatrix} x_1^2 - x_n^2 + y_1^2 - y_n^2 + d_n^2 - d_1^2 \\ \vdots \\ x_{n-1}^2 - x_n^2 + y_{n-1}^2 - y_n^2 + d_n^2 - d_1^2 \end{bmatrix}$$

$$x = (A^T A)^{-1} (A^T b)$$