WIFI task

WLAN Fingerprint-based positioning systems are based on the Received Signal Strength Indicator (RSSI) value.

The main characteristics of the database3 are:

• It covers a surface of 108703m2 including 3 buildings with 4 or 5 ﬂoors depending on the building.

• The number of different places (reference points) appearing in the database is 933.

• 21049 sampled points have been captured: 19938 for training/learning and 1111 for validation/testing.

• Dataset independence has been assured by taking Validation (or testing) samples 4 months after Training ones.

• The number of different wireless access points(WAPs) appearing in the database is 520.

• Data were collected by more than 20 users using 25 different models of mobile devices (some users used more than one model).

Two Android applications have been used to create the database CaptureLoc and ValidationLoc. Both applications use as a reference map services that are published in ArcGIS server. These services contain the geographic information of the building interiors as well as the training reference points localization.

1. Description of elements stored As it was previously introduced, the whole proposed databasecontains21049records.Eachrecordisdirectlyrelated to a single capture and it contains the following 529 numeric elements:

001-520 RSSI levels

521-523 Real world coordinates of the sample points

524 BuildingID

525 SpaceID

526 Relative position with respect to SpaceID

527 UserID

528 PhoneID

529 Timestamp

The most important information for WLAN ﬁngerprinting comparison purposes are the WAPs detected and their RSSI level values.

Localizations with no coverage have not been removed from the database

**524:** TABLE VI. RELATION BETWEEN

BuildingID AND THE REAL BUILDING.

Building ID Real Building

0 ESTCE - TI

1 ESTCE - TD

2 ESTCE – TC

**525:** Space ID

**526** position and it denotes if the capture was taken inside (value 1) or outside (value 2) the space at the corridor. Outside means in front of the door of the space.

However, in the validation subset,the measures were taken at arbitrary points as would happen in a real localization system and, for this reason, these reference points (identiﬁed by SpaceID and Relative position) are not stored in the validation records.

User Identiﬁer: UserID, position 527, contains an integer value that ranges from 1 to 18. This value is used to represent the 18 different users who participated in the procedure to generate the training samples. The **height** of each user is also provided

**Attribute Definitions**

**WAP001**

Intensity value for WAP001. Negative integer values from -104 to 0 and +100. Positive value 100 used if WAP001 was not detected.

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**WAP520**

Intensity value for WAP520. Negative integer values from -104 to 0 and +100. Positive value 100 used if WAP520 was not detected.

**Longitude**

Longitude. Negative real values from -7695.9387549299299000 to -7299.786516730871000

**Latitude**

Latitude. Positive real values from 4864745.7450159714 to 4865017.3646842018

**Floor**

Altitude in floors inside the building. Integer values from 0 to 4.

**BuildingID**

ID to identify the building. Measures were taken in three different buildings. Categorical integer values from 0 to 2.

**SpaceID**

Internal ID number to identify the Space (office, corridor, classroom) where the capture was taken. Categorical integer values.

**RelativePosition**

Relative position with respect to the Space (1 - Inside; 2 - Outside in Front of the door). Categorical integer values.

**UserID**

User identifier. Categorical integer values.

**PhoneID**

Android device identifier. Categorical integer values.

**Timestamp**

UNIX Time when the capture was taken. Integer value.

**55 WAPS not detected**

1 WAP003 19937

2 WAP004 19937

3 WAP092 19937

4 WAP093 19937

5 WAP094 19937

6 WAP095 19937

7 WAP152 19937

8 WAP158 19937

9 WAP159 19937

10 WAP160 19937

11 WAP215 19937

12 WAP217 19937

13 WAP226 19937

14 WAP227 19937

15 WAP238 19937

16 WAP239 19937

17 WAP240 19937

18 WAP241 19937

19 WAP242 19937

20 WAP243 19937

21 WAP244 19937

22 WAP245 19937

23 WAP246 19937

24 WAP247 19937

25 WAP254 19937

26 WAP293 19937

27 WAP296 19937

28 WAP301 19937

29 WAP303 19937

30 WAP304 19937

31 WAP307 19937

32 WAP333 19937

33 WAP349 19937

34 WAP353 19937

35 WAP360 19937

36 WAP365 19937

37 WAP416 19937

38 WAP419 19937

39 WAP423 19937

40 WAP429 19937

41 WAP433 19937

42 WAP438 19937

43 WAP441 19937

44 WAP442 19937

45 WAP444 19937

46 WAP445 19937

47 WAP451 19937

48 WAP458 19937

49 WAP482 19937

50 WAP485 19937

51 WAP487 19937

52 WAP488 19937

53 WAP491 19937

54 WAP497 19937

55 WAP520 19937