About expert system for Wi-Fi access points

SpotEx – new pseudo-indoor positioning service

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About us

International team:
Russia - Latvia (Moscow – Riga – Ventspils).

Long history in developing innovative telecom and software services, international contest awards.

Project examples:
- open API for telecom (Parlay, Parlay X)
- web access for telecom data,
- mobile web applications (QR code, HTML5)
- M2M applications, context-aware computing.

See http://servletsuite.blogspot.com

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1.Indoor positioning review

- Indoor positioning system (IPS) is a network of devices used to wirelessly locate objects or people inside a building.

- IPS relies on nearby anchors (nodes with a known position), which either actively locate tags or provide environmental context for devices to sense.

- Technologies used for indoor localization: Wi-Fi, RFID. optical, radio, or even acoustic technologies. However, all of them require the utilization of their own API with their own protocols.

2. The essence of SpotEx service

We offer a new model for messages delivery to mobile subscribers

Spot Expert application can use any Wi-Fi access point as presence sensor that could activate delivery for some user- generated messages right to mobile phones.

The key idea is how to associate some user-defined messages and Wi-Fi access points.
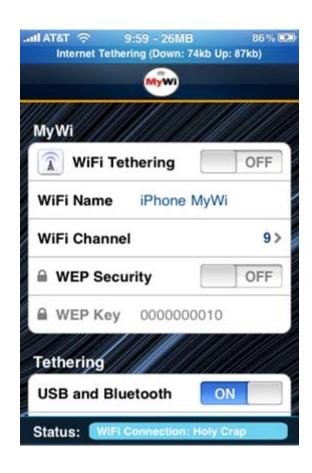
So, we can build rule-based expert system that describes delivery (or visibility) for user-defined content depending on visibility of Wi-Fi hotspots

SpotEx service

What is important? It is just because the Wi-Fi access points actually could be opened right on the mobile phones.
Components

- database (store) with productions (rules) associated with Wi-Fi networks rule editor

- Web application (including mobile web) that lets users add (edit) rule-set, associated with some Wi-Fi network

- client application for smart phones (currently – Android, in future version iPhone too) that lets execute rules against the current context (e.g. deliver messages to mobile terminals in proactive mode or make them readable)

Wi-Fi access point
iPhone

Wi-Fi access point
Android

How does it work?

We can take any existing Wi-Fi network and add some rules (messages) to that network.

Message here is just some text that should be delivered to the end-user's mobile terminal as soon as the above-mentioned network is getting detected via our mobile application.

Rules in generic form (Rete algorithm):

IF some_network_is_available THEN_message_is_available

3. **Implementation on Android OS**

The current implementation uses *WiFiManager* from Android SDK. This API let us pickup information about nearby networks:

- SSID - the network name
- BSSID - the address of the access point
- capabilities - describes the authentication, key management, and encryption schemes supported by the access point
- frequency - the frequency in MHz of the channel for communication with the access point
- level - the detected signal level in dBm

On SpotEx tools

- Database (rule set storage) has got web UI (including mobile web – it is actually an HTML5 application). The mobile web access would be fully enough for updating that database.

- Data set provides an open API (REST based requests) that lets third-party developers fill (update) database programmatically.

- Client side application actually uses the above-mentioned open API from database.

- With the existing API any set of rules is just an URL (end-point) for passing REST requests to.

4. Future development: WiFi chat

- **WiFi chat** is a new approach for local communications in mobile world. WiFi proximity is a main idea behind WiFi chat.

- WiFiChat lets you create discussions (forums) as well as live web chats associated with WiFi access points.

  Actually, WiFiChat is a side effect of our new system Spotex. It is like context-aware application (browsing), where WiFi access point (your own phone for example) defines the context.

Conclusion

We offer a new LBS developed on the ideas of
pseudo-indoor positioning with Wi-Fi networks.

This service could be used to deliver
    commercial information (deals, discounts, coupons etc.),
    personal news,
    hyper-local news data,
    as well as for creating context aware applications.

We are not aware about any other mobile service

with the similar features.

Thanks!