iLukBA: Indoor User Location System with Speech Recognition for Mobile User

ABSTRACT

iLukBa provided a solution for determining indoor symbolic (hierarchical) user location for mobile user. It works with small mobile devices such as PDAs and it is combined with the speech recognition systems on how the environment response delivered using speech recognition based on user location. It has been developed using an advanced and robust algorithm in determining user location for indoor environment which offers location precision accuracy less than a meter. iLukBA is capable to handle the unpredictability of IEEE 802.11 (WiFi) signals across perturbations in space, and in time (diurnally) by considering not only the use of WiFi’s signal strength but also WiFi’s signal quality and WiFi’s noise. iLukBA also provides direct service delivery when a user is on the move from one location to another. The environment response in delivering service is based on the speed of user. Dynamic buffer is created, the buffer size depends on the speed of the user. The faster a user moves, the smaller the buffer in delivering the speech. iLukba is proof of a concept with a low cost smart environment capability, i.e. indoor user location can be worked out in the low cost environment.

METHODS

• To provide a real-practical solution in determining indoor user location using WiFi signals, since the signals fluctuate up to 33% in 12-hour observations.
• To provide a capability for smart environment to deliver a service, while the user is on the move, based on user speed, user location and location resolution on mobile devices.
• To provide a proof of a concept that the combination techniques, indoor user location and speech recognition, are workable in our low cost smart environment.

RESULTS AND DISCUSSIONS

MyLoCA client-server: Web Service Delivery Based on User Location

CONCLUSIONS

• iLukBA intends to change computing paradigms: providing service directly to where the user is located. The current paradigm is delivering service without knowing the user location and the new paradigm is delivering the service directly to current user location.
• The content of service delivery can be in the form of sound/speech, image/graphics (such as jpeg or video) or text based (email, news, micro-blog, etc.).
• The service delivery for this prototype is using scenario “where is” and “tell him” approach using speech recognition based on indoor user location.

REFERENCES