Teddy Mantoro
Professor, Faculty of Science and Technology
Sampoerna University, Indonesia

Topic: **Computational Intelligence for Tracking User Location**

Abstract:

User location can be considered as a key-driver factor in achieving smarter life style in our everyday user activity. User Location in a smart environment can be used to track indoor or outdoor computing environtment. In tracking user location outdoor, the best practice is using GPS but for tracking user location indoor, the current best option is by applying computational intelligence using IEEE 802.11 (Wi-Fi) signals. Unfortunately the Wi-Fi signals tend to fluctuate greatly (nearly 33% within 14 hour observations). This signal behavior makes the determination of descriptive and coordinate user location difficult. To solve this problem computational inteligence such as a. nk-Nearest Neighbor, b. Self-Organizing Map, c. Extreme Machine Learning, and d. Multivariate Regression are discussed. During the experiments four different multi-observers location were tested, in two different conditions (with and without disturbance). To extend from tracking, this presentation also explore the navigation for multiple dynamic objects or person by providing visualisation and navigation of multiple users in 3D maps in 3D Walk-space for mobile users.

Bio:

Teddy Mantoro is a Computer Science Professor in Sampoerna University, Jakarta. His research interest is in Pervasive/Ubiquitous Computing, Wireless Sensor Network, Context Aware Computing, Mobile Computing and Intelligent Environment/IoT. He worked in Intelligent Environment which uses Computational Intelligence. He developed the concept and theory of Context Aware Computing for Intelligent Environment, and as a proof of concept, his research team have developed many prototypes including a 'plug and play' Smart Home, HajjLocator (An Interactive Monitoring and Tracking System for Hajj Pilgrims), Rich Information Delivery Using Smart Posters, User Activity Recognition Using Hybrid Sensors, Online Authentication Using Smart Card and NFC, a Real Time Speech News Service for Smart Environment, Visualization and User Navigation in 3D Walk-spaces for Mobile User which lead to many awards. He received 5 Gold, 9 Silver and 11 Bronze Medals (2009-now) for National and International IT Innovation Competitions. He has published more than 150 conference/journal papers (126 papers in Scopus, h-index=9). He has filed 4 (four) patents in credit to his name. He has received 20+ research grants to date. He is a Senior Member of IEEE. He obtained a PhD, an MSc and a BSc, all in Computer Science, and his PhD was awarded from School of Computer Science, the Australian National University (ANU), Canberra, Australia.