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Indoor Positioning Using Artificial Neural Network with Field Programmable Gate Array Implementation

Syahrulanuar Ngah, Rohani Abu Bakar, Suryanti Awang

Faculty of System Computer & Software Engineering, Universiti Malaysia Pahang,
Lebuhraya Tun Razak, jalan Gambang,
26300 Kuantan Pahang, Malaysia

Indoor positioning required fast and accurate result. This paper applied the artificial neural network (ANN) as a system for calculating the target in indoor environment. To speed up the calculation time, ANN then is run into field programmable gate array (FPGA). Since the original sigmoid function in ANN is not feasible to be applied into FPGA, two-steps sigmoid function calculation proposed by previous researcher then is used as a replacement. A new design of the FPGA is proposed to suite the requirement for implementing the previous researcher method. The results showing that FPGA can calculate 20 times faster with the maximum error 0.04 meters, slightly higher than the software implementation.

Keywords: Artificial neural network, field programmable gate array and indoor positioning

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An Integrated Trust Model Enhancing Generic Nodal Abstraction for Modeling Human-Agent Collaboration

¹Khudhair Abbas Mohammed, ^{1,2}Muamer n. mohammed, ¹Mazlina Abdul Majidmohd, ³Mohd Sharifuddin Ahmad

¹Faculty of Computer Systems & Software Engineering, University Malaysia Pahang, 26300 Kuantan, Pahang, Malaysia

²IBM Center of Excellence, University Malaysia Pahang, 26300 Kuantan, Pahang, Malaysia

³College of Computer Science and Information Technology, Universiti Tenaga Nasional, 43000 Kajang, Selangor, Malaysia

In most dynamic environment where human and agents are coexisting, agents overwhelming demands to cooperate with inner and outer services to achieve their goals. Along with line, agents are potentially being attracted by deceptive agents. Such situation is definitely not mitigated that risks the entire model and threaten its long-term performances. Due to the uncertainty of an agent and its potential behavior especially in human-agent collaboration systems, an agent might behave fraudulently to its partners (humans or agents). Therefore, trust and reputation merits are essentially determined to be applied in multi-agent systems. Consequently, an agent has to be qualified and constrained with certain criteria that render it trustworthy and reliable. During this process, these criteria are strictly formulated based on the number of tasks and interactions among agents. Over the past decade, many researchers propose various trust models with outstanding features. However, balancing between the enormous features of the proposed trust models, but still there is a lack of research effort in many security aspects which considered a critical challenge. In this paper, we present a trust model for a Generic Nodal Abstraction (GNA) approach that considers the reliability of agents and introduce their adaptation abilities to improve their preferences in systems. This paper gives an overview of some existing trust models in MASs.

Keywords: Software Agent, Trust agent, human agent collaboration