



International Conference on Computer Science and Computational Intelligence (ICCSCI 2015)

A Personal Agents in Ubiquitous Environment: A Survey

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Abstract

A personal agents can be implements in various areas. The previous work has been conducted in website and mobile in corresponding to information retrieval, mobile computing, and artificial intelligence. There are different methods and framework are proposed in previous research to obtain and enhance agent's performance for better recommendations. This research aims to present comparison previous research based on personal agent in different areas for understanding of proposed framework design, architecture and its implementations. Personal agent can be applied to analyse and assisting in completing task especially for solving one purpose, and multi agents system can be applied at education, industrial, commercial, governmental, military, and entertainment applications for solving multi purposes.

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Peer-review under responsibility of organizing committee of the International Conference on Computer Science and Computational Intelligence (ICCSCI 2015)

Keywords: Personal Agent; Collaborative System; Intelligence Agent; Adaptive Agent.

1. Introduction

People do a lot of activities every day. Not everyone can manage which activity must be done first, even confused how to do all the tasks before the specified time by utilizing the available time. A problem that cannot handled by to do list application are lack of managing priorities task and unable to identified user behavior, that caused several activity will be delayed or postponed³.

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A digital personal assistant is very needed according to rapid development in technology. The current issues in Microsoft according to Bill Gates is their desire to make a personal agent application that help its user to remember, find things, and pick which things that need to be done. This application will be implemented into all devices¹.

Today, people are attracted to get all tasks done by automatically and intelligently. An assistance offer the ability to make personal agents more helpful and assistance patterns represent a compiled form of a knowledge, which gathered all user's activities³. For example, Siri has been successful as a personal assistant in mobile devices. It based on user's voice to do several tasks: send messages, plan a schedule meetings, place phone calls, and etc. It is different than other traditional voice recognition application, which force you to remember keywords and its specific commands. Siri developed to understand natural speech, and intelligently asks a questions if an additional information is needed to complete a task⁴. It is uses a natural language processing to understand its user voice and intuitively make recommendations, answer questions and perform actions with a help of web service. However, its limitations relays on only available for iOS operating system.

Our life has changing since the development of technology is increasing where time, speed and accuracy is the main things. In every aspect of life, its development ranging from hardware, software and human resources to operate them. These areas required technology and it is accustomed to human behavior in applying it.

A computer has been a part of human's life which help human perform data processing and as data storage which effective and efficient. This leads the idea of research in time management issues which established by using personal agents. In academic area, a time management is the key to ensure all activities working effectively and efficiently which can performing complex tasks³.

The objective of this research is to present comparison previous research based on personal agent in different areas that are being implemented by current research effort. This research in this field follow 2 main lines:

1. The use of personal agent in various areas and to extend method used by the current research that can be used to develop in many areas.
2. To understand proposed framework design, architecture and its implementations in which platform personal agents has been used, its methodology and best practices of implementation of personal agents.

1.1. Intelligent Software Agent

The collection properties of intelligent software agents providing features which useful:

- Autonomy
An ability to perform actions without guidance from user.
- Learning
An ability to create user profiles automatically and adapting based on user preferences.
- Proactiveness
An ability to perform tasks based on user needs without direct guidance from user.
- Social ability
An ability to interact with other agents in collecting information based on user interests.

1.2. Personal Assistant

An assistant software agent acts semi-autonomously on behalf of user, simply gathering information to create model for user interest and perform services after learning user profile when required. It has a rich information regarding to user knowledge and areas of work. The notion founded by Foundation for Intelligent Physical Agents (FIPA)⁶. According to Kumar, personal agent very useful in one or more following activities: managing user diaries, email sorting, make priority of tasks, recommend entertainment, planning travel⁸.

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