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SOFTWARE AGENTS

A Research Paper Writing Proposal

Submitted by

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To

School of Computer Applications

In partial fulfillment of the Requirement for the

Award of the Degree of

Master of Computer Applications

Under the guidance of

Puneet Mangla

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CERTIFICATE

This is to certify that **Vinod Goyal, Renu Yadav, Elangbam Shashikumar Singh** have completed their MCA Research Paper Literature Review Writing Proposal titled **" Software Agents"** under my guidance and supervision. To the best of my knowledge, the present work is the result of their original investigation and study. No part of the dissertation proposal has ever been submitted to any other degree or diploma.

The proposal is fit for the submission and the partial fulfillment of the conditions for the award of the degree of Master in Computer Applications.

Date: ----------------------------
                                                                   Signature of the Advisor

                                                                   Name: Puneet Mangla

<u>DECLARATION</u>

We hereby declare that the dissertation entitled, "**Software Agents"** submitted for the M.C.A Degree is entirely my original work and all ideas and references have been duly acknowledged. It does not contain any work for the award of any other degree or diploma.

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Abstract

A word "Software Agents" some peoples may heard of this word even they have used the software agents in their life but some peoples don't know what they are ,what they do, to remove this problem we are giving review paper on software agents. Software Agent is Intelligent and Powerful system that that is used for Communication And also help in solving any Complicated Problem In this paper we have explained all about agents their working, framework and we have answered some basic questions of users and also introduced some new agents. In future agents will mostly use by everyone Hence, this is an attempt to form express abundant of what's typically inexplicit the Agents literature. This paper is written on various research papers on agents and also data gathered from internet also use of new agents so The main goal of this review paper is to spread knowledge about software agents and introduce new software agents and answer the basic question about agents of user.

Introduction

Software agent is Software that work behalf of human and show their best interest without any direct interaction. Agent Metaphor is based on designing methodology, Feeling control, and safety privacy. This software agent is slightly different from existing software's because it works any time when you are busy in doing other work. Software agent is totally based on your knowledge of your preferences.

Agents are self-dependent they are not dependent with user or other program they are goal oriented they will help to achieve the goal of user and they don't need any direct manipulation. They will solve complex problems which humans are not able to solve or which are time taking problems to save the time of human's agents do their work on behalf of them.

Software agents don't have to give input and any interaction with others they will autonomous they will initiate, process, terminate itself automatically.

Example:-travelling agent work behalf of human and book tickets, on bases of your need and this agent is autonomous agent.

The agent continuously analyses the behavior of user it help to remember certain things.

There is many other software agents which will help to user are:

- Internet searches.
- Manage incoming e-mail.
- Test computer games.
- Fill out e-forms.
- Online job searches.
- Assemble customized news reports.
- Find good deals in e-commerce.

On the web, associate intelligent agent (or merely associate agent) could be a program that gathers data or performs another service while not your immediate presence and on some regular schedule. Typically, associate agent program, Victimization parameters you've got provided, searches all or some a part of the web, gathers data you are inquisitive about, and presents it to you on a daily or alternative periodic basis. Associate agent is usually referred to as a larva (short for robot).

Alternative agents are developed that change data on an internet website supported registration data and usage analysis. Alternative forms of agents embody specific website watchers that tell you once the location have been updated or rummage around for alternative events and analyst agents that not solely gather however organize and interpret data for you.

The apply or technology of getting data delivered to you by associate agent is usually observed as push technology.

The basic attributes of a computer code agent area unit that Agent

- Autonomies (initiate, processing, terminate themselves)
- Independent.
- Goal oriented.
 -No need of communication required to do the task or no need of any input.
- Capable of doing multiple tasks with communication with other agents.

Other attributes of agents are:-

 Persistence –they don't execute or start task on demand they know how, when, where they have to start the task by itself.

 Autonomy –they are intelligent enough to select which task they have to start and choose best decisions in problem and they are fully motivated towards the goals.

 Social ability – they also collaborate with others agents to achieve best result they talk with other agents on internet to get the best results through social media, internet etc.

 Reactivity –they are reactive in behavior they will react according to the situation like if teacher have not done attendance then it will notify or react to that you have not taken an attendance.

Mobility-they can easily move to other environment and location.

Adaptive-they will easily observe user and adapt their experience or new experiences to act on behalf of them.

Review of Literature

There are some research papers that we had read is written below.

1) SOFTWARE (INTELLIGENT) AGENTS

Christina Wallin described, computer software agents—also called intelligent agents, softbots, or bots for short—have been the topic of a good deal of speculation and promoting hoopla. this kind of hoopla has been oxyacetylene by "computer science fiction"—personified pictures of agents paying homage to the automaton HAL in Stanley Kubrick's moving picture 2001: an area Odyssey or the "Roboboy" Dave within the moving picture Artificial Intelligence. As numerous chapters within the text demonstrate, computer code agents have come to play Associate in Nursing progressively necessary role in EC—providing help with Web searches, serving to customers comparison search, and notifying users of recent events . This Paper is provided for those readers WHO wish to be told slightly additional regarding the overall options and operation of software agents during a networked world like the net. **[1]**

2) Approach of Intelligent Software Agents in Future Development

Jyoti tewari ,swati arya,prem Narayan singh had described Now day by day techno is updating very fast there are no. of new technologies are arrived but its security issues are very important new technologies are arrived which can offers best outcomes or remove our workload so agents is the one of the that technologies. The agents square measure special software system objects, that as associate freelance entity give autonomous communication. They can be merge into Internet area and used for making safe and secure interaction. Intelligent Agents recurrently interact to share information and to perform tasks to achieve their goals. Without communication, different agents cannot know from each other that are doing what and how they can cooperate. Therefore communication is a must if we want to set up a useful multi-agent system using this agent's technology. This paper offers a prediction of future developments of Intelligent Software Agents. **[2]**

3) An Intelligent Software Agent Framework for Decision Support Systems Development.

Nikolaos F. Matsatsinis, Pavlos Mora_tis, Vangelis Psomatakis, Nikos Spanoudakis had describes associate intelligent package agent framework for call support systems development. An original consumer-based methodology for product penetration strategy choice in planet things supported this framework was enforced. Intelligent package agent technology is that the latest innovation of the distributed artificial intelligence analysis field and once several makers and system developers adopted it, the requirement for a consistent, reusable and open framework arose. Agents' are at the same time thought of consistent with 2 totally different levels: a useful and a structural level. Within the useful level, we've got 3 varieties of agents: task agents, data agents and interface agents assumptive task's fulfillment through cooperation, operational tasks, and mediation between users and artificial agents severally. Within the structural level we've got elementary agents supported a generic reusable design and sophisticated agents thought of as associate agent organization that's created dynamically in an exceedingly algorithmic way. [3]

4) Agent-Based Software Engineering

Michael Wooldridge had described The technology of intelligent agents and multi-agent systems seems set to radically alter the way among that sophisticated, distributed, open systems unit conceptualized and implemented. The purpose of this paper is to deem the matter of building a multi-agent system as a code engineering organization. This paper focuses on three issues: (i) but agents could also be specified; (ii) but these specifications could also be refined or otherwise reworked into economical implementations; and (iii) but implemented agents and multi-agent systems may later be verified, therefore on entails that they\'re correct with respect to their specifications. The article concludes by commencing some issues and open problems for future research. **[4]**

5) A Perspective on Software Agents Research

Hyacinth S. Nwana and Divine T. Ndumu set out, ambitiously, to present a brief reappraisal of software agent's research. Evidently, software Agent technology has promised much. However some five years after the word 'agent' came into vogue in the Popular computing press, it is perhaps time the efforts in this fledgling area are thoroughly evaluated with a View to refocusing future efforts. We do not pretend to have done this in this paper – but we hope we have sown the first seeds towards a thorough first 5-year report of the software agent's area. The paper contains some a strong view not necessarily widely accepted by the agent community. The main goal of this paper is to supply a short perspective on the progress of package agent's analysis. Though 'agents' analysis had been happening for quite a 15 years before, agents very became a buzzword within the widespread computing press (and additionally at intervals the bogus intelligence and computing communities) around 1994. **[5]**

6) A Framework on Typology of Software Agents

Meenakshi, Mona Sehgal & Payal Anand had describes software system agent is a very developing space of analysis. Among framework of software system agent's intensive analysis work has been meted out. the most goal of this paper is to reanalyze the chop-chop evolving space of software system agents. Firstly, this paper presents a definition, attributes and scope of software system agents then presents a classification of agents. Next, it presents critique read of software system agents. It conjointly spells out another general problems and way forward for the agents. Finally, we have a tendency to conclude with transient description of MAS, a true time software system agent system. This paper includes the broad literature of software system agents and then classifies the agents in numerous classes according to specific criteria. Varied professionals and cons square measure discussed of given compartmentalization and alternative general problems with software agents. We've reanalyzed the software system agent's framework and that we will explore rather more during this space by using recent technologies. **[6]**

Problem definition

:-In Our real life software agents are very useful to do our task on behalf on ourselves but people do not know what Software agents are, how to use them, how they will help us, what they are, how they are important to them. Most of peoples are using agents in their mobiles but they don't know these are the software agents because of lack of knowledge they don't know back end of software agents so we will purpose a review paper on software agents which will include their structure, framework, their types, feature, issues, Latest agents, and answer the user question.

Objective

-Help to improve user Knowledge about Software agents.

-Help to understand the software agent and using them.

-Answers the question of users.

-Introducing agents features, issues related with them for better understanding.

Platform

Jade (Java agent development framework) is the platform for developing agents it is developed by telecom Italia and and provided as a free to users. It will develop agents under this standard FIPA (Foundation for intelligent physically agents) provide ACL (agent communication language) to communicate with one agents to other agents and provide multi-agents concept. Jade have containers which have a hosts and in each host there are some agents. It have two special agents DF (directory facilitator) and AMS (agent management system) which will manage the others agents.

It allow:-

 -Environment where agents are developed.

 -- Set of various class, packages which are used to develop agent and its services, behavior.

 -- A graphical tool to monitor and manage the platform of software agents.

JADE is the software that is use for development of agent, Implemented in java. It work as Coordinator between Several agent FIFA gives you the Development of Communication language FIFA-ACL, which provides the message transfer between agent and allow the service detection of the system.

JADE work   as middleware help in development of Multi agent .In the presence of FIPA which work as container and create multiple containers each can run on one or more system.

*Provide Environment where jade agent are Executed.

*Monitoring graphical toolkit.-

It is platform where containers are available for each host in which agents are communicates with others. It has its own class libraries, packages and user interface and debugs tools to implement the agents. Every platform have their own special containers which kept two special agents DF and AMS which will manage all the agents in a framework.

Frame Work:-

**Agent management System

1. Agent management system enhances the standardizing framework within which FIFA agent exists and operates. It Develop the logical model, for Creating, Registering, locating, communicating an agent .The entities has in reference model are logically sets and do not and denote physical Configuration .Agent management reference model containing large no of logical components.

**Directory facilitator

A-Directory facilitator:-

This agent is a special agent that is present in parent container it will manage the entire agent in a platform. Tasks done by this agent are:-

-create the new agents using class library.

-List all agents in platform that are available.

-Get name of agents-

-Get services offered by agents-

-Get behavior of agents.

-Search for other agents.

-Register the agent.

-Deregistered the agent.

*Message transport services:-

It is a default communication system to Transfer The information between two Agents. The Message Transport Service (MTS) conveys messages between operators inside an AP and to Specialists occupant on different APs. All FIPA operators have admittance to no less than one MTS and just messages tended to Specialists can be sent to the MTS. for more data on the MTS.

Transport address:-

Transport agent is the physical agent.... through agent can connect and usually specify the message transfer protocol. An Agent Support various means of communication and give multiple transport address to the Address Parameter to the AID.

Naming resolution:-

It is the service called name Resolution that provided by AMS (agent management system) Through the Search Function. Agent management Reference model:-Agent management Provide and regulate framework which framework within an FIPA .Agent can exist and operate. agent is a fundamental actor which on an AP capable of combine one or more services and include access of external software ,users ,communication facilities.

**Agent platform:-

FIPA operators exist physically on an AP and use the offices offered by the AP for understanding their functionalities. In this connection, an operator, as a physical programming procedure, has a physical life cycle that must be overseen by the AP.

**Operators Management Ontology

-Object Descriptions

This area depicts an arrangement of casings that speak to the classes of articles in the space of talk inside the system of the FIPA-Agent-Management cosmology.

The accompanying terms are utilized to depict the objects of the area:

· Frame. This is the required name of this element that must be utilized to speak to every occasion of this class.

.Ontology. This is the name of the cosmology, whose space of talk incorporates the parameters portrayed in the table.

· Parameter. This is the required name of a parameter of this casing.

· Description. This is a characteristic dialect portrayal of the semantics of every parameter.

· Presence. This demonstrates whether every parameter is required or discretionary.

· Type. This is the sort of the estimations of the parameter.

· Reserved Values. This is a rundown of FIPA-characterized constants that can accept values for this par

Agent Communication Language (**ACL**), is given by FIPA is a standard communication language between agents define various standards how they can communicate with each other make agent to make a message template.

The most popular ACLs are:

- FIPA-ACL (by the Foundation for Intelligent Physical Agents)
- KQML (Knowledge Query and Manipulation Language)

Both developed by Searle in the 1960s and enhanced by Win grad and Flores purpose of this language is to provide easy communication between agents so that agents will understand each other and comfortable with others besides this similar language agent shave ontology which defines what kind of things agents can deal with them how they are related to that things.

Impacts of Agent

Software agents help all of us in various categories but it also has positive impact and negative impact. Whenever new technology arrives it also have advantages and disadvantages so we have discussed some impacts of agents below.

Organizational impact

Agents do their tasks easily they can easily search things on internet they can do complex things in minutes, so impact of agents in organization is agents can search websites easily with best product deals so that end user don't have to search these websites manually. But it also increase the price for implementing agents in a company it requires resources, networks, securities.

Work happiness and job satisfaction impact

Peoples are satisfied with their work only if work is not very complex and overload but agents satisfied peoples to do their job they can help in their work on behalf of them and do their work in very short time so it will satisfied them because peoples want tension free work so with agents they can do their work without any tension and with satisfaction.

Cultural impact

This impact is trust, skills, detachment from other peoples because when you will use software agents in order to do your work or act behalf on you agents have to observe you so you have to do fully contact with agents in this case you will go far from your friend and you cannot able to enhance your skills because agents will do all complex work so you can't try that it will stop your skills to increase and it will also impact on your privacy, irresponsible because if agent will do some wrong thing then you will say I have not done this work by me it had done by my agent.

Examples of intelligent computer code agents

Four essential forms of intelligent computer code agents:

- Purchaser agents or searching bots

  - User or personal agents

  - Monitoring-and-surveillance agents

  - Data-mining agents

Buyer agents (shopping agents)

These type of agents do shopping for user by using internet it observe all internet and tell user to best deals, offers, any product information with cheap price it can buy any product like laptops, hard disks etc. it will use shopping sites to do that task but it will use your money and act behalf on you and compare your choice with others and give you best result.

User agents (personal agents)

These type of agents do some personal task of user on behalf of them there are some tasks done by agents are:-

-They will check your email and also delete your email and reply, forward on behalf of you.

-Play games as behalf of you.

-Show news reports to you so you can always updated with what happens out there.

-Helps you to find any information of anything or any subject.

-Give suggestion to you in your projects or work.

-Fill your form on behalf of you and save your information for future use.

-Give you full information of sports, music etc. that you like.

-Help you to find job search for job entries fill your resume for job.

Monitoring-and-surveillance (predictive) agents

This type of agents are smart and intelligent enough to do their task they are mostly used in organizations their work is monitoring the things that is done in companies like sales report, prices, competitors, annually reports, stock, employs salary, employs attendance ,projects. Their main goal is planning, management, monitor all the organization work and audit it. They also manage the company assets monitoring them; handle complex computer networks, plans and strategies to expand the organization.

Data-mining agents

This agent use data wares house to do these task so basically data mining is finding information in data warehouse which is full of data finding useful information which will help you to do some task like you have to make list of consumers which are permanent and always purchasing goods from your site so that type of mining is done by this agent data mining agent. Another example is when your hiring some employs so you have to find all previous record of that employee or if you want to give promotion to employee so you have to see all performance of that employee so this agent will help you to find that information which is necessary to do some action or task.

Networking and human activity agent

These agents handle user activity on network that activities which user can't control like

-Filter websites (block some unsecure or unsafe websites).

-Filter you mails (delete that mails which have malwares or which are not safe).

Design problems

Design issues with agents are in which manner agent will do their task like
-How the task will scheduled.
-How agent will decide which task is done first or which is done later.
-How it will collect resources.
-How agents will be re-installed in another environment.
-How they will communicate with other agents and respond to them.
-How we can change the behavior of an agent.

Methodology

We have read many research papers and on the basis of that research paper we have answered some basic question about agent from users and we have also introduced new agents to user that have described below.

What Is An Agent?

Agent is basically a Kind of software that is developed by human Being. Agent Perform the Task on The Behalf of human .it is very powerful and Complex software In the software Agent we can Also specify the agent Behavior also Agent behavior is the Action of Agent and Performance. Agent is Autonomous and it is able to operate independently in perform action without Direct participated of human Being. Agent is perceive and able to change In the Environment.

Examples:- online shopping ,Emails etc.

Why when and where to use the software Agents?

In the new Scenario Software Agent is very Popular In Every sector It sector, Industry sector, Management And business Sector. Software agent is Invention of New Technology by Using Software Languages Agent Languages. Software Agent is used to manage the Information. Software Agent Used all over the World. By new growing Technology Software Agent is new Creation of Developers. By using software Agent We can easily and fastly built new alliance Business sector Software Agent mostly useful In Doing Complicated Task and Easily Communicate to one agent to Another Agent And Cooperate with Each other to Solve the Complicated Problem. Software agent is very effectual Method of Developing new Information system.

Why area unit Agents important?

In order to manage complexity in building complex software for a reason high-level abstractions are being used by software developers and designers, which helps in hiding the incidental components of a problem and focus the important and essential properties of that problem. Agents help us providing the solution of managing the complexity of a problem in which it can easily define a system in agent-mediated processes. An agent is useful as they can do many things inherently. For example, in communicating an agent with various agents the system developer not need to design the communication protocols and message template, but what the agents are going to do in any given situation. As agents can provides this capability as a part of their mechanism to build their environment, monitor that environment state, reason and make decisions based on that state. software Agent is Invention of Developer by using high level abstraction we use High level abstraction to manage or solve the Complex problem And making their software more Intelligent. We can easily define a system by using software Agent. Agent is also Communication protocol .Agent is Easily Communicate with each Other.

When ought to i take advantage of Agents?

Software agents area unit appropriate to be used in a very big variety of applications. They will build it abundant easier to create several types of advanced systems. However, the system designer should keep in mind that agents don't seem to be the long-sought solution that developers are seeking. Package agent's area unit applicable to be used in implementing bound types of applications; in alternative downside domains, alternative technologies are going to be a lot of applicable. The developer should rigorously Analyze system needs to work out if agents area unit an applicable implementation mechanism. In order to achieve particular goals and objectives software agents can be use in making different kinds of applications as they can make it much easier to build complex systems. In order to implement different kinds of application, the developers must carefully analyze system requirements to determine if agents are an appropriate implementation mechanism. Some of the applications in which agent's technology can be use are application that involved distributed computation or communication between components, in which the communication or data received over a network, which utilize the Internet. Multi agents can be used for concurrent and distributed applications. For applications like robotics, plant and process automation, etc. autonomous agents which are capable of operating without user can be use.

If Agents area unit applicable to be used in implementing my system, then what number agents do I need?

To paraphrase Albert Einstein - an honest agent-based style can utilize as several agents as area unit needed and no a lot of. Like ancient applications, agent-based applications need careful analysis and style. whereas it's tempting to possess each process operate performed by AN agent, this can be usually a nasty plan. The designer should think about problems like communications information transfer needs, offered communications information measure, process power, memory and alternative pc resource constraints once developing a system design.

How good ought to agents be?

As agents can be used in making complex application by dividing the function of that application in several smaller and simple ones, each individual agent is use in solving a specific problem or performing a particular task, the complexity of that application can be solved by way of each simple agent communicating or interacting with each other. But developing a smart agent is depending on the designer by providing a good-based design.

Sometimes, however, we tend to ought to build agents that area unit quite good. With the agent-based approach, you'll be able to implement agents with subtle intellectual capabilities like the flexibility to reason, learn, or plan. Additionally, intelligent package agents will utilize in depth amounts of information concerning their downside domain. This implies that the underlying agent design should support subtle reasoning, learning, planning, and data illustration.

Are agents difficult to build?

A sophisticated package agent is terribly tough to create if you're developing t them from start. You may want good skills and data in every form of areas as well as agent design, engineering, reasoning systems, data illustration, agent communication languages and protocols. If you wish to feature machine learning or machine coming up with capabilities, you may conjointly want talent in these areas furthermore. If you do not possess these specialized s kills and data, you must use an agent development toolkit. This toolkit enable package developers while not agent experience too quickly and simply build package agents.

What are the tools to build agents?

The best thanks to begin building AN agent-based system is to use AN integrated toolkit like Agent Builder. Agent Builder gives all of the tools you wish for constructing package agents. Victimization Agent Builder, a package developer solely desires downside domain experience. Agents can be build on various platforms like there various programming environment are use to build an agents. Aglet, facile, python these are various programming languages are used to build software agents it also provide friendly platform so that user can easily develop agent on that environment.

Direct Manipulation

Today mostly we are using direct manipulation it is a working without agent. user have full control of what they are doing they are responsible for their actions.it provide better flexibility, enhance your skills ,increase your knowledge stable your mental level but you will can't do very complex things which can agents do it is more time taking but it has a trust factor that anything is done that is done by you not by a software it provides jobs in industries because if agents do all of work so direct manipulation will cut off so there are no jobs are required for humans this is a very negative factor of agents so most of us believe in direct manipulation so we can give better standard to our work and enhance our knowledge and skill to doing complex work.

New Agents

There are some new software agents are available in mobiles like **siri** in Apple and **Cortana** in windows phone but those two are good but Cortana is best human digital assistance in phones it is a high level soft agent with good intelligence will use internet and take information from you and then act behalf on you

Example :-"you will say Cortana remind me to congratulate my friend when Vinod call me" so Cortana will automatically set an reminder when Vinod calls you it will popup that reminder which reminds you to congratulate your friend

you can do various other activities like news activity when you have set what type of news you are interested in so according to your interest Cortana will bring that news only but comparison to other like siri in apple it will not compare to Cortina siri will not capable to do things like Cortina and Cortana is developed by Microsoft and in future it will be more intelligent to do our task very quickly.

Cortana history:-

The development of Cortana started in 2009 by the Bing research-and-development team that at the time was supervised by Satya Nadella, the project was started by Zig, Serafin in an attempt to unify Microsoft's varied speech comes transfer along varied scientists from across Microsoft. so as for Microsoft to seek out the way to develop a digital assistant they interviewed real personal assistants and developed the "notebook" feature supported the feedback they've collected. Originally Cortana was solely meant to be a codename however a petition on Windows Phone's User Voice website that evidenced to be common created the codename official.
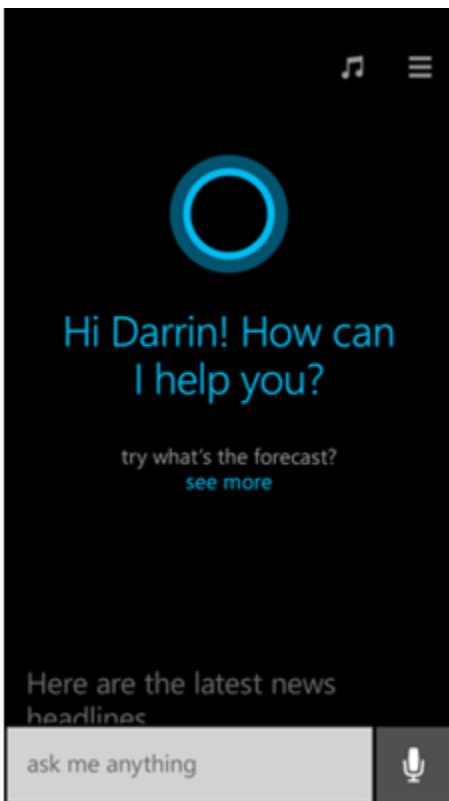
Features:-

-Use Bing smart search-Cortana is using Bing smart search engine to find all information that you will ask or you will need. You can change it to Google but by default it is a Bing search engine

-Put reminder to whenever you say remind me this you don't have to go manually to put reminders you have to just say to cortana put reminder at that time it will automatically put reminder of yours.

-Send replies, set alarms, turn on Wi-Fi automatically these all task can be done in cortana it will send replies to user which have you set and automatically turn on your alarms and turn your Wi-Fi on and off when you are using or not also have a GPS locator whenever you day turn my Wi-Fi when I will reached at this place so it turn it automatically.

-Since the Lumia Denim series, launched in October 2014,voice recgnoization or active listening added to cortana now you don't ave to press search button again and again you have to simply say "hey cortana" it will automatically invoke and respond to you.

-The "Notebook" is collection of all the data that coratan have observed from you it is digital assistance so it will adapt your behavior all of your interest, like, hobbies, favor news, sports are kept in that notebook so cortana can use this notebook to respond you . You can also delete the data from note book.

E-mail agents

Basic task of these agent is to manage the emails in your email account like when you have lot to do with other work so you can't have time to see your emails so this agent will help you to manage your emails it will filter emails and delete that emails which are not useful, reply to emails which are necessary and forward some data to other emails all is done by email agent as behalf of you first you have to train this agent then it will work according to you
It provides

-Delete useless e mails
-Reply the emails
-Forward emails
-Save some important emails
-give push notification to user if any very important email is arrived.

Meeting and schedule:-
Other software agent is Meeting appointment scheduler -it will act on behalf of user. It learns from user experience and act according to user. it will give advantage to user for booking any meeting with Staff or anyone you have to say appoint an meeting with my new hired employee so now it is agent responsibility to book an appointment from your free Schedule i will learn from you like earlier you free on Monday but now you are busy on Monday so it will learn from your data you are imputing in agent as a output result it will not appoint a meeting on Monday.

Entertainment
this is another agent which will personal user agent that store all the information of user and act behalf on user like you will ask your software agent to bring some Punjabi music to you so your agent can also interact with other agent through online like it will interact other user agents ,like agent ,agent have choose folk Punjabi music for their users so now my agent will grab that information and pick that music to you this is also called social searching in software agent but one problem is not every agent is connected all the time to internet so how my agent will interact with other so Ans of this question is agent will interact with virtual environment in all agent which they have search in internet their information is stored in that environment

References

1) Research papers

[1] Christina Wallin, ABB Corporate Research (Department of Industrial IT) and Rikard Land, Mälardalens Högskola (Department of Computer Engineering), **SOFTWARE (INTELLIGENT) AGENTS.**

[2] **Jyoti tewari ,swati arya,prem Narayan singh (**Computer science teerthankar mahaveer university **), Approach of Intelligent Software Agents in Future Development, Volume 3, Issue 5, May 2013**

[3] Nikolaos F. Matsatsinis, Pavlos Mora_tis, Vangelis Psomatakis, Nikos Spanoudakis, An Intelligent Software Agent Framework for Decision Support Systems Development, Technical University of Crete University Campus, Kounoupidiana, 73100 Chania, Greece.

[4] **MichaelWooldridge, Agent-Based Software Engineering** ,Mitsubishi Electric Digital Library Group ,New Oxford Street**,**London WC1A 1EB, United Kingdom, September 19, 1997.

[5] **Hyacinth S. Nwana and Divine T. Ndumu , A Perspective on Software Agents Research**, Applied Research & Technology Department British Telecommunications Laboratories Martlesham Heath, Ipswich, Suffolk, IP5 3RE, UK.

[6]**Meenakshi, Mona Sehgal & Payal Anand**, **A FRAMEWORK ON TYPOLOGY OF SOFTWARE AGENTS**, International Journal of Information Technology and Knowledge Management July-December 2010, Volume 2, No. 2, pp. 251-254.

2) Websites

[1] en.wikipedia.org

[2] http://istqbexamcertification.com/

[3] www.slideshare.net

[4] www.agentbuilder.com

[5] www.techtarget.com

[6] www.techopedia.com