Wake up call:

-A meaningful healthy lifestyle is the must. Its essential to go for sustainability not only for the humans as well for this planet to keep it green. Are we for it?

-A need of transforming normal cities into smart and sustainable city is essential and necessary around the world. As the population grows, the need for space, energy and vital resources would need to be maintained and managed properly in order for the citizens and all the other beings to live a better life.

-The necessity of going green is critical and vital. **Global warming** is a threat hanging on this planet, due to manmade inventions in modern technology. A research, practices and educations are necessary amongst the public in order to reduce the **greenhouse gases (40 Billion tons emitted annually),**which causes the global warming. It is evident that every individual on this planet must respect the mother earth. *It is a high time for GREEN, Sustainable and Smart education, ideations, research and innovations in professions, Pedagogy (School to universities), services and practices, and homes.*

<div align="right">

Dr. V. P. Kallimani
Principal, DYPSN

</div>

How you can enhance your workplace using IoT?

The IoT (Internet of Things) has already penetrated in almost every industry. It's time for workplaces to revolutionize themselves with this technology. IoT, in simple terms, means the exchange of data with multiple devices connected over a network. One thing that mustn't be ignored is cybersecurity because as the number of devices increase, the greater the risks.

The biggest benefit IoT can offer in a workplace is to ease communication. Productivity enhancement, employee satisfaction, and self-automated intelligence are the other advantages that are worth being mentioned.

Artificial Intelligence Assistant

With multiple devices and computers connected over a network with IoT, more than thousands of tasks can be performed. With IoT devices interfaced, more than a thousand tasks can be performed in a matter of a few seconds. Managers and floor supervisors can operate workplace regulations such as floor temperature and lighting.

Telepresence Technology

Telepresence means utilizing a technology, like Virtual Reality, to give a user an entire overview of an environment. IoT merged with telepresence can give employers and executives an upper hand and can detect any backdrop that needs to be driven away.

Granting Admittance Right

Digital gateways have taken the place of keys and locks. Fingerprints and face scanners have removed the idea of writing down your name and arrival time on a thick register. All thanks to IoT, IT experts came up with the idea of doing this task with mobile apps.

A Sophisticated Environment

Apart from keeping track of an employee's performance and preferences, IoT can make the workplace interactive than ever. Detecting the space in a trash bin, the level of water in a water dispenser and when it needs to be changed are a few examples to make employees remind them of something other than their work.

Final Words

Sensors have made our lives easy. From our home to shopping malls, every place where people gather has been rejuvenated with automation. It's time that offices implement IoT in order to boost their profits and increase their market value.

<div align="right">

Samrin N. Makandar
BE. CSE

</div>

माझ्या मित्राचे हासू पाहून मी माझ दुःख विसरेन, पण माझ्या मित्राचे दुःख पाहून मला कधीच हसू येणार नाही – चार्ली चैप्लिन

Biomimicry

The science of biomimicry aims to create new ways of living that are well adapted to earth over long periods of time. The design seen in birds, animals, fish, plants, and other living things is often superior to what engineers come up with for the same task. So it is better to just copy what works and gives idea about potential present in biomimicry. Basically this article explains how superior biomimicry way of designing over conventional way subsequently gives practical and future applications. A bioethics approach explains how to live in nature without affecting it also leads to produce eco-friendly, efficient, reliable products.

What is "Biomimicry"?

Biomimicry (from bios, meaning life, and mimesis, meaning to imitate) is a new discipline that studies nature's best ideas and then imitates these designs and processes to solve human problems. Studying a leaf to invent a better solar cell is an example. **It is "Innovation Inspired By Nature."**

The core idea is that nature, imaginative by necessity, has already solved many of the problems we are grappling with. Animals, plants, and microbes are the consummate engineers. They have found what works, what is appropriate, and most important, what lasts here on Earth. We humans are imitating the best adapted organisms in our habitat. We are learning, for instance, how to harness energy like a leaf, grow food like a prairie, build ceramics like an abalone, self-medicate like a chimp, create color like a peacock, compute like a cell, and run a business like a hickory forest. The more our world functions like the natural world, the more likely we are to endure on this home that is ours. Here at the beginning of the twenty first century, environmental reality is setting in, pushing us to find saner and more sustainable ways to live on Earth. Equally important is what is pulling us towards biomimicry—that is, our deepening knowledge of how the natural world works.

For engineers: Biomimicry is a tool for developing sustainable design solutions.
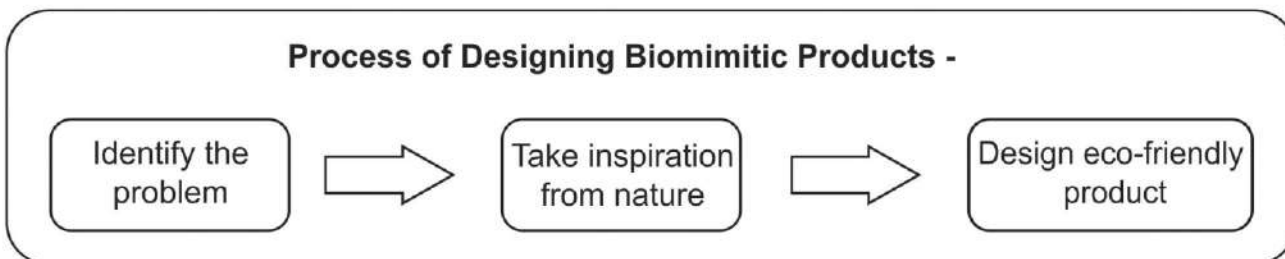
Sense of urgency

We humans are at a turning point in our evolution. Though we began as a small population in a very large world, we have expanded in number and territory until we are now bursting the seams of that world. There are too many of us, and our habits are unsustainable. Having reached the limits of nature's tolerance, we are finally shopping for answers to the question: "How can we live on this home planet without destroying it?"

Levels of Biomimicry

Thare are biomimic at three levels -
1. **Natural Form**
2. **Natural Process**
3. **Natural System**

Process of Designing Biomimitic Products -

Identify the problem → Take inspiration from nature → Design eco-friendly product

Prof. Bharat M. Powar
Mech. Engg., DYPSN

तुमच्या जगण्याचा दर्जा तुमच्या विचारांच्या गुणवत्तेवर अवलंबून असतो – रॉबिन शर्मा

Passing Cooling in buildings inspired by Termite Mound

Bionic Concept Car - Mercedes Benz Inspired by Box Fish

Wall Climbing Robot inspired by Gecko

Self-Cleaning paints inspired by Lotus Leaf

Whale wind Turbine inspired by Humpback whale Fins.

Bionic Concept Car - Mercedes Benz Inspired by Box Fish

Inspiration	Application	Product/ Company
Kingfisher beak	Increase Aerodynamics & energy efficiency & reduced noise when entering & existing tunnels.	Shinkansen Bullet Train-West Japan Railway Company
Box Fish	Optimized aerodynamics to interior volume ratio	"Bionic " Concept Car – Mercedes
Humpback Whale Fins	Efficient wind turbines blades & propellers	Tubercle Technology – Whale Power
Termite Mound	Low/ zero energy natural ventilation & temperature regulation	Eastgate Centre (Harare, Zimbabwe) – Arup
Lotus leaf	Non- toxic textile coating to repel stains;Paint that allow surfaces to self clean with rain	Greenshield – G3 technology innovation Lotusan - StoCoat

जर तुम्हाल आनंदी आयुष्य जगायचे असेल तर माणसांवर किंवा गोष्टींवर लक्ष केंद्रित न करता, तुमच लक्ष ध्येयावर केंद्रित करा – अल्बर्ट आईंस्टीन

Research on Aquaponics Chatbot : A Knowledge Management System

Prof Dr Vish Kallimani
DYP College of Engineering,
Kolhapur, India

Nurshazlyn Mohd Aszemi
Department of Computer Information and
SciencesUniversiti Teknologi Petronas
Perak, Malaysia

Prof Dr Low Tan Jung
Department of Computer Information
and Sciences Universiti Teknologi
Petronas Perak, Malaysia

Abstract

whereby experts are not available 24 hours and with different knowledge requires difference expert which are not accessible. A focus group interviews were used to collect data about what knowledge is needed in developing proposed agriculture systems which will be used in Sustainable Model Village (SMV) system and Aquaponics Chatbot. The results of the research show that farmers are having difficulty in acquiring right knowledge and dependency on human expert or codified documents is not convenient in getting knowledge on time. Thus, findings also stated that the use of aquaponics system will be suitable in Sustainable Model Village (SMV) system as it will produce higher yields for farmers. The results can also be drawn that the development of Aquaponics Chatbot will benefit farmers in acquiring knowledge on time which will reduce the issues beforehand and improvement for better village economy. The research was conducted at the University Technology Petronas, Malaysia. Keywords—chatbot, knowledge management system, sustainability, agriculture

INTRODUCTION

Today, agriculture is one of the world's biggest employer and the largest economic sector in many countries. However, 80 percent of our food is being produced by rural people that make up four-fifths of the global poor. These people depend on agriculture as their primary source of income. Hence, without proper development and improvement to their livelihood, there will be insufficient food to feed the country. The availability of sufficient food is a necessary condition for food security.

Fig. 1: The Sustainable Model Village (SMV) system

The rural areas/village economy is a matter of fact, agriculture-based. A constant yield from the agriculture produce is thus a vital factor in ensuring a stable economy in these areas. Unfortunately, due to the lack of proper knowledge and technology related to some basic agriculture elements such as soil fertility, water & air quality, it is always a challenge for the village farmers to maintain constant agriculture yields. The direct consequence would be an adverse impact on the village economy at large.

The SMV (fig 1) has been developed research could address these challenges comprehensively. In reference with the United Nations Sustainable Development Goals 2 (USG) which is to "end hunger, achieve food security, improve nutrition and promote sustainable agriculture," it could tackle the deficits of each sector and fill an adequate focus on the special needs of the rural villages. Furthermore, SMV system meet the goal of Economic Transformation Programme Malaysia which take part in the agriculture National Key Economic Areas (NKEA) Malaysia that focuses on transforming a traditionally small-scale production-based sector into a large-scale agribusiness industry that contributes to economic growth and sustainability.

Another issue faced by the farmers is growing multiple food items in parallel which is organic, hygiene, low cost, consume less waste and with a sustainable concept. One of the initiatives that can be
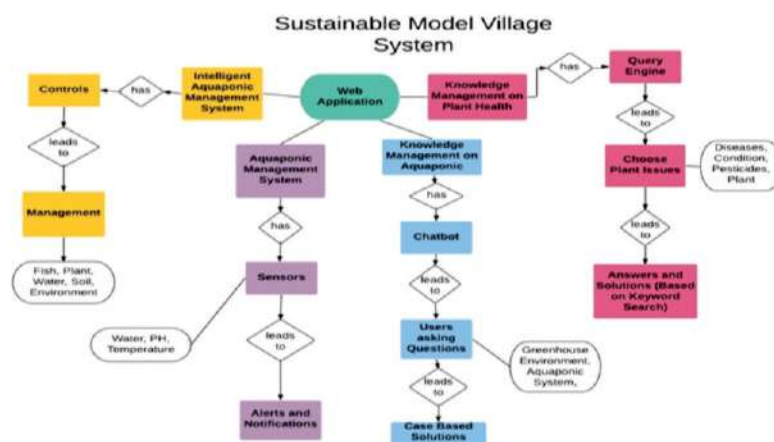
विद्येचे चांगले फळ म्हणजे उत्तम चारित्र्य आणि सदाचार – विनोबा भावे

created is by having an aquaponics greenhouse system that produces three products; fish, plants and compost in parallel. This SMV system also aimed to leverage on the currently available technologies for setting up an aquaponics greenhouse-based knowledge platform that allows farmers to maintain good health and plant using sensors application (hardware), mobile application, knowledge management system of plant health query engine and Aquaponics Chatbot.

Furthermore, such knowledge is, unfortunately often not available on a real-time basis. In the present greenhouse system, farmers face several critical challenges including expensive maintenance and consultation, effective farming for specific products, quick response to the change of environmental conditions, and availability of up-to-date information or knowledge to mitigate the unforeseen environment condition changes. Hence, this research will focus on the development of Aquaponics Chatbot as part of the SMV system which serves as a knowledge management system that assists in the address problem.

A. Aquaponics system for farmer

Aquaponics is a combination between aquaculture (raising fish) and hydroponics (grow plants without soil) which more sustainable and it is integrated into one system. Aquaponics system does not require additional nutrients or plants disease such as "root rot." It is a symbiotic system that supports the whole cycle from plant to fish to bacteria. This is supported by the research that has been done by[13], that not one disease or parasite occurred. The results from his research concluded that the same yield produced by hydroponics is more achievable in aquaponics technology. The aquaponics system is found to be having self–regulation capacity to balance the nutrients than hydroponics. Hence, the aquaponics system is more feasible on the type of plants such as vegetables and herbs which the farmers in Malaysia are massively producing it to sell in the market.

B. Aquaponic Chatbot Taxonomy

Aquaponics chatbot taxonomy serves as a hierarchical structure that shapes the body of aquaponics knowledge. Taxonomy helps in the development of aquaponics chatbot by providing the domain and relationships between elements, as shown in Figure 4.

C.Aquaponic Chatbot System Architecture

The design will take place by having the overall overview of the system architecture to the flow of the systems and, finally the conversation graphical user interface (GUI) using Botmock [14]. [14]allows creating a step by step or flow of the conversation that chatbot should work. This tool will visualize and design the path of the chatbot conversation will take. Dialogflow[15] will

Fig. 1.Taxonomy of Aquaponics Chatbot

be the platform for building the chatbots. It allows the integration into many social messenger platforms. It matches the query to the most suitable intent based on information contained in the intent.

In the system architecture of the Aquaponics Chatbot. The first tier shows the overall system architecture that starts with the user (farmers) input questions which involve in query engine which then will be processed in-process engine. This later will match one of the intents inside agent. Intents are the predefined or developer-defined components of agents that process a user's request. Then such actionable data are the action that will be processed to produce output to the user (farmers).

In summary, a proper solution at proper time, reduces the risks faced by farmers in crop management. Chatboat system with knowledge management system on mobile, helps the farmers to take on the spot decisions in solving the crop related issues, which help in increasing the yields.
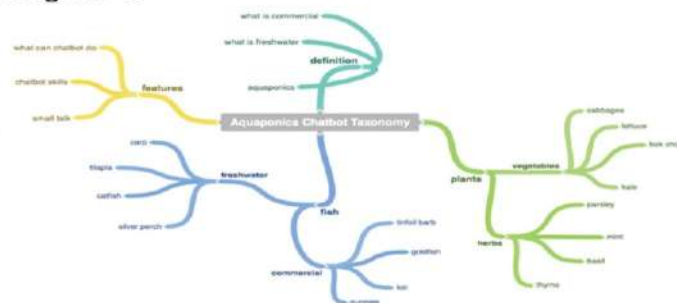
Dr. V. P. Kallimani
Principal, DYPSN

Internet of Things (IoT)

The Internet of things or IoT, refer to the billions of physical devices around the world that are now connected to the internet, collecting and sharing data its really that simple.

The concept of network of smart device was discus as early as 1982, whith mofide coke vending machine at Carnegine Melbn university becoming the first internet - Connected appliance. The term "Internet of Things " was coined by Kevin Asthon of procter and Gamble, later MIT's Auto-ID center in 1999. At that point, he viewed Radio frequency identification (RFID) as essential to the Internet of things, which would allow computer's to manage all individual things.

The best way to define IoT would be: " An open and Comprehensive network of intelligent objects that have the capacity to auto - organize, share information, data and resources, reacting and acting in fact of situations and changes in environment.

The internet of things can also be considered as global network which allows the communication between human-to-human, human-to-things and things-to-things, which is anything in the world by providing unique identity to each and every object.

Internet of Things is getting bigger. This new wave of connectivity is going beyond laptops and smartphones, its going towards connected cars, smart homes, smart cities, connected healthcare and wearables. Basically a connected life. These devices will bridge the gap between physical and digital world to improve the quality and productivity of life society & industries for example with apple watch & more devices to flow in, these connected device are going to keep us hooked with the inner connected world. Analyst Gartner calculate that about 8.4 billion IoT device were in we in 2107 and this will likely reach 20.4 billion by 2020.

The recent most discussed example of IoT, Lightbulb that can be switched on using a smartphone app is an IoT device, as is a motion sensor are a smart there most at in office are a connected streetlight.

The extensive set of application for IoT device is often divided into consumer, commercial industrial & infrastructure spaces same of these application are provided in this article as an example

1.   Smart home-
A smart home or automated home could be based on a platform or hubs that controls smart devices and appliances. Home automation includes lighting, heating and air conditioning, media and security system. Long term benefits could include energy saving by automatically ensuring lights and electronics are turn off.

2. Wearables –
Wearable have experienced an explosive demand in markets all over the world. Wearable devices are installed with sensors and software which collect data and information about the users. these devices broadly cover Fitness, health& entertainment requirement.

3. Connected cars -
The automotive digital technique has focus on optimizing vehicles internal function. a connected maintenance as well as comfort of passengers using onboard sensor and internet connectivity.

These are some example use explain above, but are many more such as-industrial internet, smart cities, IoT in agriculture, Energy Engagement, IoT in healthcare; poultry and farming etc.

What bill gates said about IoT is "if you invent a breakthrough in artificial intelligence, so machine can learn, that is worth to Microsoft

Robert Cannon -Internet law and policy expert says-"Everything's that can be automated will be automated.

The internet of things is truly amazing development that is likely going to change our lives for the better. the best platform to analyze the collected data, cloud data storage etc.

Sahil Malekar, Nitin Morbale
BE CSE

पराक्रमाचा अभिमान असावा पण उन्माद नसावा – वि. स. खांडेकर

English

SECTION
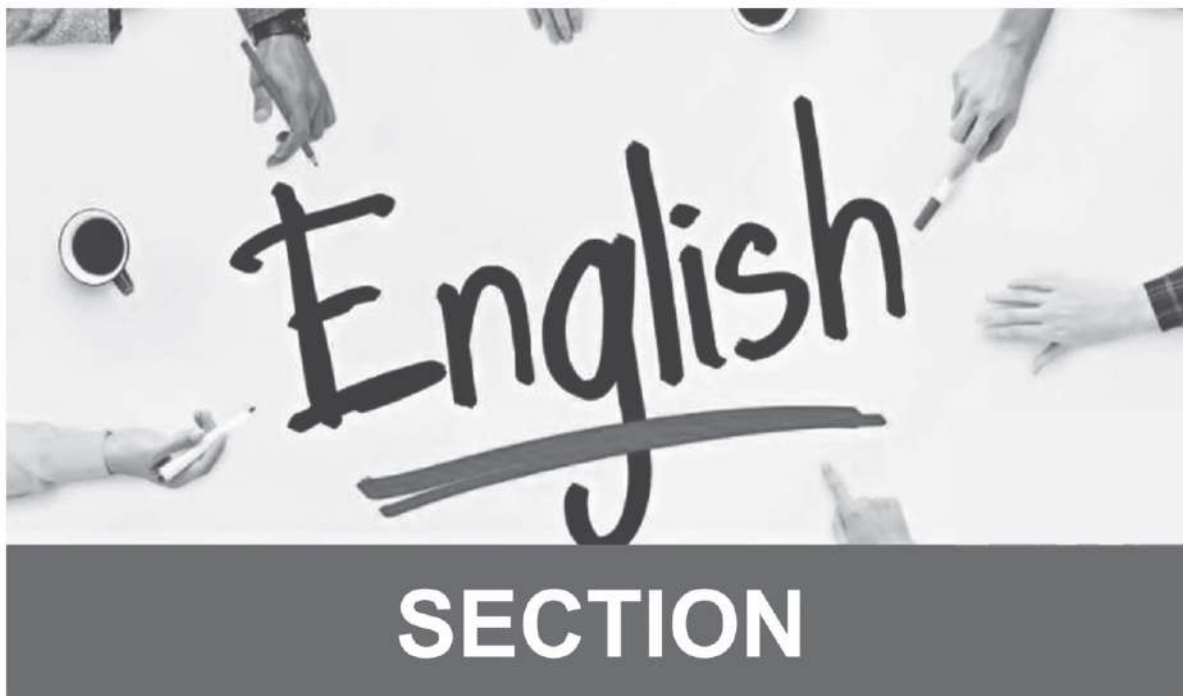
"The highest education is that which does not merely give us information but makes our life in harmony with all existence."

- Rabindranath Tagore

जेव्हा आम्ही नम्रते मध्ये महान होतो, तेव्ही आम्ही महानतेच्या निकट जातो – रबीन्द्रनाथ टागोर