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Transforming the Mechanical Engineering Industry with Intellectual Internet of Things: A Review of its Benefits and Potential Challenges

-Dr. Shivaleela Arlimatti¹, Dr. Suresh D. Mane² and Mr. Ganesh Rathod³

Abstract

The Intellectual Internet of Things (IIoT) is causing a significant transformation in industries worldwide, including the mechanical industry. This Article delves into the topic and provides a comprehensive review of the benefits and challenges associated with this game-changing technology. By connecting devices, machines, and systems, the Internet of Things (IoT) is revolutionizing the way mechanical systems are designed, built, and maintained. The benefits of IIoT are numerous, including increased efficiency, reduced downtime, enhanced safety, and improved customer satisfaction. These benefits are leading to a more sustainable, efficient, and innovative future for the mechanical industry. However, challenges remain, such as data security, privacy concerns, and the need for new skills and expertise. We explore these challenges in the context of the mechanical engineering industry (MEI) and highlight the unique considerations that must be addressed. We also provide examples of the various applications of IIoT in the MEI, such as predictive maintenance, smart manufacturing, autonomous vehicles, smart logistics, and industrial robotics. The article also offers a comprehensive overview of the benefits and challenges associated with IIoT in the MEI, collaboration between

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A Social Distancing Hat using Passive Infrared & Ultrasonic Sensor

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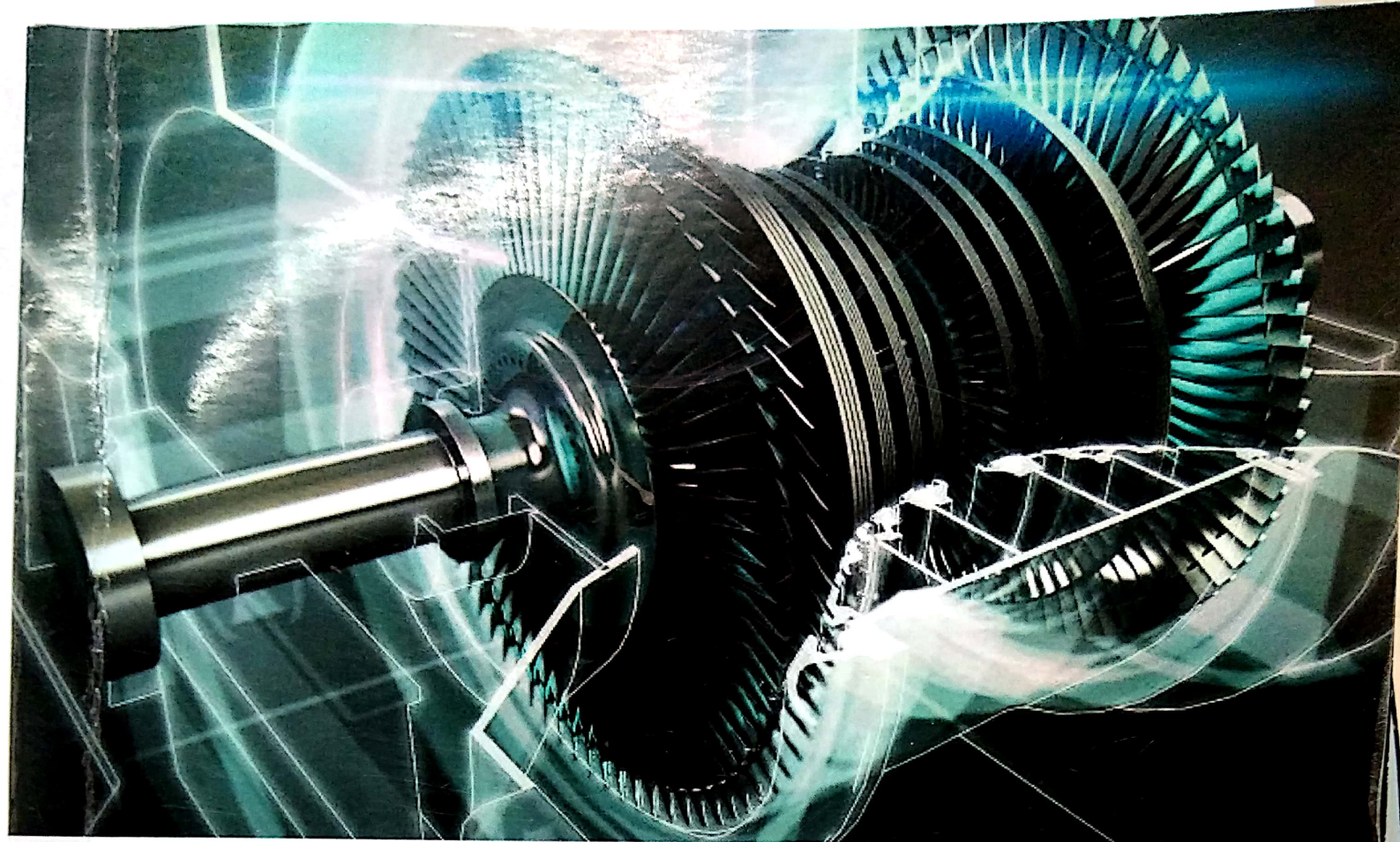
Abstract—While various new coronavirus strains have been identified and are still haunting to affect the life of the people, social distancing still plays a vital role to restrain COVID-19 virus. “A Social Distancing Hat using Passive Infrared & Ultrasonic Sensor”, helps to maintain social distancing within one meter for blind people and kids, since they cannot exactly measure one-meter distance. Proposed project uses Passive Infrared Sensor (PIR), to detect human being and uses ultrasonic sensor along with PIR to measure accurate one-meter distance. If any human being within one-meter comes in contact with the person wearing the hat, then the buzzer beeps and alerts to keep distance.

Index Terms— Passive Infrared Sensor (PIR), Ultrasonic sensor, Hat, Social Distancing, Piezo Buzzer.

I. INTRODUCTION

Deadly virus COVID-19 has affected entire world and World Health Organization (WHO), has declared COVID-19 as a Pandemic, which is caused by Novel Corona Virus. According to WHO [12], globally, as of 12:37pm CEST, 3 April 2021, there have been 129,619,536 confirmed cases of COVID-19, including 2,827,610 deaths, reported to WHO. Entire world is fighting against this pandemic, they have become mentally strong and are trying to stand tall economically and during this process scientists have collectively developed various COVID-19 vaccines, which are vaccinated to people in various phases. According to WHO [12], 200 additional vaccines are in development, of which more than 60 are in clinical development., Though, as of 30 March 2021, a total of 547,727,346 vaccine doses have been administered, various new strains of corona virus are being identified and are affecting few countries very badly. Since, COVID-19 are in initial phase of distribution and while new coronavirus strains are identified, social distancing plays a vital role to restrain COVID-19 virus. Social distancing and wearing the masks become more vital, because many countries have lifted the lockdown completely to stable their economic growth.

Social Distancing is a proven effective approach to minimize the spread of highly dangerous disease like COVID-19. In simple term, people should keep distance from each other so that virus cannot spread from infected person to healthy person. During the pandemic, governments from various countries have imposed social distancing measures, but faced significant challenges like economic slowdown, rise of unemployment rate, personal right violation, etc. In such context,[1] has provided a survey on how latest technologies can encourage, enable, and even enforce social distancing practice. One of examples given by [1], is to build smart infrastructures using 6G and AI that can incorporate a pandemic mode in their standard architectures/designs



THERMAL ENGINEERING

Dr. D.R. Srinivasan | Sudhan A | Dr. M. Pandian | Dr. Suresh D. Mane





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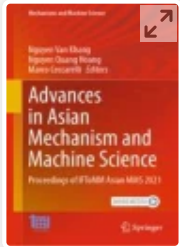
*This certificate is presented to **Mr. Jagannath Vitthal Ware, Assistant Professor** from **Dr. D. Y. Patil Pratishthan's College of Engineering, Salokhenagar, Kolhapur** for presenting a paper on **"The Role of ICT in English Language Teaching at Engineering Colleges"** during the International Conference on **"New Directions in English Language Teaching: Issues, Practices, Challenges"** held on 3rd May - 5th May, 2021.*

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Abstract

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Shivaleela Arlimatti

The Potential of Blockchain for 5G Technologies: Opportunities and Challenges

Authors S. Arlimatti, S., Elbrieki, W. & Hassan

Publication date 2020

Conference 6th International Conference on Internet Applications, Protocols and Services



Shivaleela Arlimatti

Artificial Intelligence Based Traffic Control System Using Reinforcement Learning

Authors S. 1. Arlimatti, S., Elbrieki, W. & Hassan

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The Power And Importance Of Thought, Word, Place, Cultural Landscape And Sense Of Oneness With Community Reflected In Native American Oral Literature

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Abstract

The Present research paper is an attempt to state different aspects of Native American oral literature. Oral Traditions which reflected in Native American Literature include myths, Ritual Dramas, legends, songs, chants, ceremonies, Narratives and oratory. Native American Literature has huge background of cultural heritage, tribal heritage, communal ceremonies passed from one generation to the next in the form of oral aspects. This oral background has been reflected in most of the literary works of Native American Writers. Many critics have focused on traditional song, cultural aspect, power of word, orality and chant while analyzing the works of Native Americans. Hence, this research paper an attempt to elaborate the power and importance of thought, word, place, cultural landscape and sense of oneness with community reflected in Native American oral literature.

Key Words: *thought, word, place, cultural landscape, sense of oneness, oral literature.*

Introduction

Native American Literature or Indian American Literature, another sub-category of American Literature, has grown up and matured considerably in the past fifty years. Though it has flourished in past fifty years, it is intimately linkened with the rich oral traditions of the Tribes which migrated to the continent over 2000 years before. Native American tribes were nothing but different groups based on culture and language. These tribes preserved their literature in the form of oral stories, songs, and chants. Several communities or tribes like Kiowa, Wichita, Osage, Arapaho, Ojibwa, Laguna, and Siouan had their own culture and

traditions. They depict their cultural experience, tribal heritage, cultural conflict by using their traditional literary sources but each writer has different experiences regarding it. American Indian literatures are the oldest literature and it was transmitted orally and aurally before contact. Oral literature remained dominant form until the twentieth century. Since, 1972, American Indian authors published their written work but they have become highly accomplished and prolific writers since 1968. Oral literature is blend of verbal art, folklore, oral poetry and narrative, and myth. This oral literature had been transmitted by their ancestors from generation to next generation. So, the Native American literature was being preserved in the form oral traditions and when it appeared in written form by various Native writers, there was huge influence and actual inclusion of oral aspects of their own tribes, community. So, the term *oral literature*, used in this paper refers to both oral and written works. American Indian oral literatures are vibrant force that were continued, created and performed by the tribal peoples and that strongly influenced the written works of Indian authors, as Simon Ortiz (Acoma) makes clear in her one of the interviews that oral tradition is not merely a simple matter of speaking and listening but living that process.

The power and importance of thought, word, place, cultural landscape and sense of oneness with community reflected in Native American oral literature can be well elaborated with reference to the writings of Leslie Marmon Silko, N.Scott Momaday and Paula Gunn Allen.

The Power of Thought and Word

The Power of thought and word is an integral part of American Indian religions, tribes, communities and so of oral and written literature. In *Language and Art in the Navajo Universe*, Gary Witherspoon points out that the Navajo world was being created by the gods, who entered the sweathouse and thought the world into existence. The thoughts of gods were realized through human speech, songs, and prayer. To understand and analyze Native American Literature, the study of such type of mythical and cultural beliefs becomes important. The following excerpt from Witherspoon's translation of the "Beginning of the World Song" illustrates the interrelation among knowledge, thought, and Speech in Navajo culture:

*The earth will be, from ancient
times with me there is knowledge of it.*

*The mountains will be, from ancient
times with me there is knowledge of it.
[and so on, mentioning other things to be]*

*The earth will be from the very
beginning I have thought it.
[and so on]*

*The earth will be, from ancient times
I speak it*

*The mountains will be, from ancient times
I speak it.*

[And so on] (16)

The power of thought and word to create and the continuum of the oral tradition from the mythic past of the Lagunas to the present are beautifully demonstrated by Leslie Marmon Silko in her introduction to her novel *Ceremony*. In the following Silko describes how the Laguna creator thought the universe into existence:

*Ts'its'tsi'nako, Thought – Woman
is sitting in her room
and whatever she thinks about
appears.
.....
Thought – Woman, the spider,
named things and*

as she named them

they appeared.

She is sitting in her room

thinking of a story now

I am telling you the story

she is thinking. (1)

American Indians hold thought and word in great reverence because of their symbolic power to alter the universe of good and evil. The power of thought and word enables native people to achieve harmony with the physical and spiritual universe: to bring rain, enrich the harvest, provide good hunting, heal physical and mental sickness, maintain good relations within the group, bring victory against an enemy, win a loved one, or ward off evil spirits.

The Importance of Place and Cultural Landscape

American Indians' desire for harmony is also reflected in their deep reverence for the land which is another recurrent theme in their oral and written literatures. American Indian authors continued to emphasize in their writings the importance of place, as Momaday movingly does in *The Way To Rainy Mountain*:

Once in his life a man ought to concentrate his mind upon the remembered earth, I believe. He ought to give himself up to a particular landscape in his experience, took at it from as many angles as he can, to wonder about it, to dwell upon it. He ought to imagine that he touches it with his hands at every season and listens to the sounds that are made upon it. He ought to imagine the creatures that are there and all the faintest motions of the wind. He ought to recollect the glare

of noon and all the colors of the dawn and dusk. (83)

In an interview, Silko reveals the importance of cultural landscape when she describes how the river that runs through Laguna pueblo influenced tribal stories and her own work. Though muddy and shallow, the river was “the one place where things can happen that can’t in the middle of the village”. It was special place where all sorts of things could go on. As an adolescent, Silko realized that the river was a place to meet boyfriends and lovers: “I used to wander around down there and try to imagine walking around the bend and just happening to stumble upon some beautiful man.” Later she understood that these fantasies were exactly the kind of thing that happened in the Laguna Yellow Woman stories, a series of abduction/seduction myths, as well as in the pueblo’s stories about those who used the river as a meeting place:

These stories about goings-on, about what people are up to, give identity to a place. There’s things about the river you can see with your own eyes, of course, but the feeling of the place, the whole identity of it was established for me by the stories I’d hear, all the stories....(Evers and Carr, “A Conversation with Silko”29)

If anyone reads the literary work of Native Americans with devotion, can find the Pictures, images of these writer’s Native places, Cultural landscapes which are created by their depiction.

The Sense of Oneness with Community

A strong sense of communality and cooperativeness, reflecting Native Americans’ belief in the importance of harmony, is another recurrent theme in American Indian literatures. Tribes are often stress cooperation and good relations within the group, demonstrated in communal rituals, work and play, and decision making. Among many tribes, generosity, helpfulness to others, and respect for age and experience are highly valued virtues that enabled them to survive. In spite of communal conflicts, their bonding to each other was of high level which had been reflected in their writings.

Our Heritage

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The following Keres song, which Paula Gunn Allen learned from her cousin, exemplifies this sense of oneness with community and with the land:

I add my breath to your breath

That our days may be long on the Earth

That the days of our people may be long

That we may be one person

That we may finish our roads together

May our mother bless you with life

May our Life Paths be fulfilled.

(Qtd. In The Sacred Hoop 56)

Conclusion

Native American/ American Indian literature has its beauty in oral traditions that they included in their writings. It has oral aspects like ritual dramas, chants, ceremonies, rituals, songs, narratives, oratories which are based on their tribal/cultural/communal power of word, thought, native place and a sense of oneness with community.

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Software Defined Network Partitioning with Graph Partitioning Algorithms

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Abstract. Software Defined Networks is an emerging paradigm in Internet communication world that increases the flexibility of today's networks by decoupling control plane and data plane of the network devices. The fundamental aim is to centralize the control and reduce the complexity of the networks. The communication medium between control and data plane is through OpenFlow protocol, an open standard network protocol designed to manage the network traffic by software programs. To increase the scalability and flexibility of controllers the OpenFlow controllers are distributed based on location and network types. However, most critical issue is minimizing the communication cost between the controller domains. In this paper, two graph partitioning algorithms Fiduccia-Matthyses algorithm and Kernighan-Lin algorithm are used to minimize the communication cost between distributed OpenFlow controller domains. The implementation of the algorithms is under Matlab simulation environment. The methodology used for the proposed algorithms is to interchange the elements from one domain to other domain to calculate the gain. The simulated results show that Kernighan-Lin algorithm minimizes more communication cost rather than the Fiduccia-Matthyses algorithm.

Keywords: Fiduccia-Matthyses · Kernighan-Lin · Communication cost · OpenFlow

1 Introduction

The current economic slowdown is affecting the technology, industries and their market, networking being one of them. The economic-technological trends of networking and computing domains are converging. Conventionally, network operators configure network policies separately for individual network devices for efficient deployment of network applications. With the limited tools, they manually transform high-level policies to low-level commands for configuration of network conditions.

Considering all these factors, future network infrastructure needs simple, cost-effective and dynamic network management systems that rely more on software rather than hardware. The main point in current networks is the vertical integration of basic



Organizing Named Data Objects in Distributed Name Resolution System for Information-Centric Networks

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Abstract. The Information-centric Networks (ICN), an important research direction of the future Internet architecture, has gained lot of attention from the research community. The aim is to improve the current Internet with a new architecture where the design is completely based on information instead of the host. The information is named and is called as Named Data Object (NDO), utilized for data registration and name resolution, and the system that translates the object identifiers to network address is known as Name Resolution System (NRS). The random NRS distribution and network segregation are important and challenging issues in increasing NDO registration and storage. It is challenging for a single NRS to handle more than 10^{15} expected NDO's with low latency and good throughput, along with the issues interest flooding and interest congestion. To overcome these problems NRS is distributed based on the location of routers. The mechanism is called Distributed Name Resolution Mechanism (DNRM). The NDO storage needs to be organized to increase the scalability of NRS. Distributed hash table and Bloom Filter have their own problems such as high latency in individual element searching and member deletion respectively. To overcome the above-mentioned issues the Balance Binary Tree (BBT) data structure is introduced to manage large NDO storage. The implementation results reduce the end-to-end delay by increasing network throughput. The contribution of this study is significant in promoting the use of NRS in ICN for handling the heterogeneity of the future Internet.

Keywords: Name Resolution System · Named Data Objects · Balanced Binary Tree · Information-Centric Networks

1 Introduction

Current Internet architecture was introduced in the 1960s. The main intention behind the promulgation was to interconnect computing resources across a distributed geographical area. This led to benefits such as resource sharing, storing and transformation



Review of Applications and properties of Pervious concrete

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ABSTRACT

The use of conventional concrete for almost all the construction and other related activities as like a tradition continues from many decades and still continues the same. Pavement systems constituting about 30-40 per cent of the total urban roads have converted pervious natural ground into impervious systems, which have created a negative impact on the environment. The use of Pervious concrete as an alternative can be adopted in specific works with added advantages. In other words pervious concrete is known as No-fines concrete or concrete with low water-cement ratio. The pervious concrete is a homogeneous mixture of cement, coarse aggregate and water with use admixtures or fibres as if needed to modify certain properties of concrete.

Keywords: flexural strength, no-fines, Pervious concrete, permeable, split tensile

I. INTRODUCTION

In this Twenty First Century era where the world is facing number of problems due to natural calamities like drought, floods etc. the need for an alternative technique rises on the top. The most important need of mankind is need of water mainly for drinking purpose and without which there will be no survival any kind of life on earth.

II. OBJECTIVES

The objective of this research paper is to study what is pervious concrete, properties governing it. The application of pervious concrete in variety of fields, its success and failure rates etc. The paper also reflects the different use of various admixtures and fibres which affect the strength and permeability properties of pervious concrete.

As in today rainwater harvesting has become the top priority for all the developed as well as the developing countries, pervious concrete as construction material can also help to achieve this water requirement at lowest cost and eco-friendly way. This concrete is used in decks of swimming pool, tennis courts, patios and drains, retaining walls. Pervious concrete decreases the overflow of rainwater from the paved areas. The major contribution of pervious concrete is recharging of groundwater storage and thereby reduce runoff and also supports sustainable construction.

Compressive strength of pervious concrete depends primarily on the porosity of concrete. Compressive strength of pervious concrete varies inversely with the porosity of concrete

Composition of Pervious concrete.

Compensation of Sag by using Distributed Generation

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ABSTRACT

Power quality (PQ) is one of the most discussed topics in power industry. It is simply the interaction of electrical power with electrical equipment. If electrical equipment operates correctly and reliably without being damaged or stressed, we would say that the electrical power is of good quality. There are numerous types of power quality issues like Transients, Interruptions, Sag or under-voltage, Swell or Overvoltage, Waveform distortion, Voltage fluctuations, Frequency variations which are due to the use of sensitive power electronic equipment's and non-linear loads in industry, commercial and domestic applications. In the thesis we will use Fuel cell and wind generator as DG sources. Boost converter is used for boost the output of fuel cell and then by using inverter it covert Dc to AC. In the wind generation DFIG is used as generator which gives large power output, mostly it used for wind generation.

The scope of this Project covers Power Quality issues of Distributed Generation of Smart grid with Storage devices. MATLAB software is used for simulation. Studied about the types of power quality issues and select one issue sag, which is become common issue. Fuel cells and wind generators are used as a Micro grid which of 0.5 MW and 1.5 MW rating respectively. If sag occurs in the system it will be cover by using injection transformer. To recover sag battery will be used as an inverter input. Control signal will give to the inverter and by using control signal the sag will cover by injecting voltage.

Key words: Voltage Sag, Distributed Generation, MATLAB

1.INTRODUCTION

Distributed generation is a generation of electrical energy through alternate energy-producing resources close to the load sites [1]. It is connected to the utility grid system at a Point of Common Coupling (PCC) to alleviate the expansion of present electric transmission system. Power Systems are experiencing immense growth in the field of Distributed Generation (DG) because of economic benefits, environmental concerns, reliability requirement etc. Today there is rapid growth of the use of DG at distribution level in restructured power system. This is due to the obvious advantages like increase in reliability of supply, voltage profile improved and reduction in transmission loss

IEEE Std.1547-2003 gives the upgraded information on interconnection between distributed generators and the utility grid. In the last few years, due to incredible growth of internet and data centres, industrial loads, power quality is an indispensable aspect for an increasing number of critical loads. Critical loads are the loads which require uninterruptable and quality power supply. So the power quality issue has become a concerning issue [2][3]. How to interconnect the new energy power generation with power system safely and reliably is a major



Artificial Solar Oxygen Tree

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ABSTRACT

In this, we proposed, to convert solar energy from solar tree for generation of Hydrogen, Oxygen and light. Very small space requires for solar tree than conventional solar panel system. The solar panels on solar tree convert solar radiation into electricity, which is used for decomposition of water into oxygen and hydrogen. Oxygen is released in the air to breathe and hydrogen is stored as fuel. Light Emitting Diode (LED) lights, driven from the generated electricity are used to radiate light during night. Solar Tree can be implemented to meet oxygen and Hydrogen fuel requirements and lighting demands of the cities in an eco-friendly manner. We have developed a solar tracking system using a combination of Arduino, servo motor and light dependent resistors (LDR's) with the primary aim of improving the power efficiency of the solar panels. The main component of this tracker is Arduino AT mega 328 which is programmed to detect the sunlight with the help of LDRs and then actuate the servo motor to position the solar panel in such a way so that it gets the maximum sunlight.

Key words: Solar, Electrolysis, Oxygen, Hydrogen etc

I.INTRODUCTION

There can be no denying in the fact that solar energy is an effective source of power, one that is going to serve us for long. Despite the need to harness this energy, very little re-search has been conducted to make photovoltaic cells cost effective and thereby available for utilization by masses for their various devices. Photovoltaic cells use sunlight and convert it directly to electricity without leaving any residual elements that can pollute the environment, and is therefore believed to be energy source that could be available to mankind. This project can generate and releasing pure oxygen in the atmosphere using renewable resources. In addition to it, hydrogen gas is produced which is stored and has potential to be used as fuel later. We believe that such a design will not only aid in supplying pure oxygen to urban environment but also meet lighting demands of developing and developed cities. All the waste water from the buildings is gushed out into the sea thereby ruining the sea life and collection of unnecessary waste in the sea. This would prove harmful to all of us. The waste water from the complexes when filtered and electrolyzed would not only help in generating oxygen and hydrogen but also reduce the sea pollution to a great extent.



Raspberry Pi Based Air & Sound Pollution Monitoring System

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ABSTRACT

Now a day, due to increased pollution of various types it becomes unhealthy or dangerous to our lives. It affect mostly on Respiratory system of all living things. In order to monitor the pollution of Air & Sound from a particular area our project useful. It uses Raspberry Pi, Gas Sensor, Sound Sensor, Aurdino & it send over the android app. Air sensor are used in order to sensor pollution or physical quantity such as dust particles, polutate gases such as Carbon Monoxide, Methane, Ammonia such a hazardous gases. Sound Sensor are used in order to sense Sound level in decibels here we have used groove sensor.

Key Words: Pollution, Sound & Air Sensor, Raspberry pi, Cloud, Android App etc.

I. INTRODUCTION

Air Pollution as well as sound pollution is becoming a growing issue in our world. It is needed to monitor the pollution from particular area as well particular organization, industries, hospitals etc.

By using our Raspberry Pi based air and Sound pollution monitoring system it becomes easy to monitor the pollution levels such as Air pollution level as in parts per minutes and Sound pollution level in decibels. Here in this system we have used a mainly the Raspberry Pi 3 model. It is small size single board computer. The Python Language used to program the Raspberry Pi.

Aurdino is used in order to convert the analog I/p signal from sensors into the digital signal. The data is send to particular authority by means of Cloud&Android app. It is used to provide services over public Network and on private Network such as LAN, MAN, WAN etc. Here we have used Android app to indicate the pollution level from particular Area over Android App. Here cloud transfer information on Android App Such as Twitter.

II. METHODOLOGY

In the Air and Sound pollution monitoring system. The monitoring of pollution is done by system using following elements such as

1. Sound Sensor-

The Groove Sensor is used as sound sensor in order to detect the pollution level of sound in the Decibel. The sound sensor is placed at the particular area where pollution is to be detected. The sound sensor consist of