



# TECH VISION

The Innovative Explorer

Volume No: 03 July-Sept 2013

Special Technologies  
for Special People

How to Prevent  
Cyber Attacks

How Good are the  
Google Glasses

How Bluetooth has  
Become Smarter

How Gesture Control is  
Making Smartphone Smarter

How a Smart Microgrid can  
Electrify Rural Houses



Google GLASS



Department of Electronics & Communication Engineering



**SASI** INSTITUTE OF  
TECHNOLOGY  
& ENGINEERING  
TADEPALLIGUDEM, W.G.Dt., A.P.

## Department Vision and Mission

### Vision

To help in making the institute in providing competitive engineering education to the learner and bring out quality professionals in the field of Electronics and communication engineering, who can meet the industrial needs by taking up existing, new engineering and social challenges.

### Mission

To provide quality and effective training program in the domain of Electronics and Communication Engineering through curriculum, state of art laboratories, industrial collaborative programs, effective learning and teaching process.

## Program Educational Objectives

- P1. Develop strong foundation in Electronics and Communication Engineering to achieve the needs of industry with continuous skill improvement of faculty and students.
- P2. Contribute to society in solving technical problems using electronic and communication principles, tools, practices and Team work.
- P3. Personally encourage peers to uphold to professional, ethical, social, environmental responsibilities of their profession.

# Digital Jewelry Made Possible Using wireless Communication

## INTRODUCTION:

The latest computer craze has been to be able to wear wireless computers. The Computer Fashion Wave, "Digital Jewelry" looks to be the next sizzling fashion trend of the technological wave. Today's, manufacturers place millions of transistors on a microchip, which can be used to make small devices that store tons of digital data.. The whole concept behind this is to be able to communicate to others by means of wireless appliances. The other key factor of this concept is to stay fashionable at the same time.

## WHAT IS DIGITAL JEWELRY?

Digital jewelry is the fashion jewelry with embedded intelligence. "Digital jewelry" can help you solve problems like forgotten passwords and security badges. "Digital jewelry" is a nascent catchphrase for wearable ID devices that contain personal information like passwords, identification, and account information. They have the potential to be all-in-one replacements for your driver's license, key chain, business cards, credit cards, health insurance card, corporate security badge, and loose cash. They can also solve a common dilemma of today's wired world – the forgotten password.



## DIGITAL JEWELRY AND ITS COMPONENTS:

Soon, cell phones will take a totally new form, appearing to have no form at all. Instead of one single device, cell phones will be broken up into their basic components and packaged as various pieces of digital jewelry. Each piece of jewelry will contain a fraction of the components found in a conventional mobile phone. Together, the digital-jewelry cell phone should work just like a conventional cell phone. The various components that are inside a cell phone: Microphone, Receiver, Touch pad, Display, Circuit board, Antenna, and Battery. A prototype of a cell phone that consists of several pieces of digital jewelry that will work together wirelessly, possibly with Blue tooth wireless technology, to perform the functions of the above components. Cell phones may one day be comprised of digital accessories that Work together through wireless connections. Here are the pieces of computerized-

jewelry phone and their functions:

- **Earrings** - Speakers embedded into these earrings will be the phone's receiver.
- **Necklace** - Users will talk into the necklace's embedded microphone.
- **Ring** - Perhaps the most interesting piece of the phone, this "magic decoder ring" is can also be programmed to flash different colors to identify a particular equipped with light-emitting diodes (LEDs) that flash to indicate an incoming call. It caller or indicate the importance of a call.
- **Bracelet** -Equipped with a video graphics array (VGA) display, this wrist display could also be used as a caller identifier that flashes the name and phone number of the caller.
- With a jewelry phone, the keypad and dialing function could be integrated into the bracelet, or else dumped altogether -- it's likely that voice-recognition software will be used to make calls, a capability that is already commonplace in many of

today's cell phones. Simply say the name of the person you want to call and the phone will dial that person. IBM is also working on a miniature rechargeable battery to power these components.



The basic idea behind the digital jewelry concept is to have the convenience of wireless, wearable computers while remaining fashionably sound. It is hoped to be marketable soon, however, several bugs remain. Charging capabilities and cost are just a sample of the problems that lurk.

**Submitted by**



Vanamadi Ravi  
10K61A04B6  
IV ECE

# Google Glass

## INTRODUCTION:

Google glass is part of the evolution from desktop to mobile to wearable technology, including watches, bracelets, and other eyewear. The main features of it are:

1. Just say the word and Google Glass will take a picture or record a video – you will never have to touch the hardware. The photos and videos will be stored on the 4GB flash memory of the device, and can also be shared on social networking websites or emailed.
2. Google Glass will show you text messages as well as emails you receive and allow you to reply to them via voice commands.
3. If you are in the habit of Googling things a lot, you will find that your task has been made easier by the new Glass. You simply need to ask a question and the device will pull the answer from the internet.
4. The widely used Google Maps are integrated into Glass, so that users will be able to chart the course of their journey or look up locations

or establishments via voice commands.

5. Google Glass can show the world what you are seeing – live! If you are attending a family function, your child's school play or a concert, you can share the feed with your friends and family in real-time and make them a part of the experience.
6. Google Now, the digital voice assistant from the search giant, has been integrated in this device. It will keep track of your daily habits, such as when you leave for office or the route you take. It will give you alternate routes if there is traffic on the way or give you weather updates periodically, among various other functions another and it will speak that out.

**Submitted by**



K. Naga Jyothi  
10K61A0456  
IV ECE

## Micro grids for Rural Electrification

Micro grids distributed systems of local energy generation, transmission and use are today technologically and operationally ready to provide communities with electricity services, particularly in rural and “peri-urban” (close-to urban) areas of less developed countries. This approach is technically and financially inefficient due to a combination of capital scarcity, insufficient energy service, reduced grid reliability, extended building times and construction challenges to connect remote areas.



The micro grid systems included in the report differ substantially from one another in their business, financial and organizational models, as they depend on size, technology, demand, resource availability, social context, and quality and quantity of the service they strive to provide. The developers of the

micro grids represent a significant diversity in terms of their business models, location, the policies they interact with and the financing sources available to them.

Through the lens of these case studies, we critically reexamined the recommendations in the existing micro grid literature on best practices for micro grid operations. In doing this, we took into account developers’ varying objectives, which range from delivering societal benefits to delivering profits to shareholders. In the most general terms, we found that virtuous cycles are achieved through the production of (1) sufficient revenue to support the grid and (2) service and schedule reliability to keep consumers as loyal customers. In contrast, vicious cycles are characterized by a chain of poor maintenance, disappointed customers, insufficient revenue and dysfunctional community support.

We identified seven critical factors that should be thoughtfully planned for: tariff design, tariff collection mechanisms, maintenance and contractor performance, theft

management, demand growth, load limits and local training and institutionalization. But we also found that not every practice is equally relevant, and that much depends on the type of business model set up by a specific developer: for-profit, partially subsidized and fully subsidized.



### **Some technical considerations:**

Though technology was not the main focus of our survey report, we did pay close attention to some technical considerations, notably aspects of demand-side management and operational maintenance, both preventive and corrective.

Except in the one case of the Haitian micro grid, where available power always well exceeds load, all the grids sampled used some form of demand management. In almost every case these included encouragement of efficient appliances, customer agreements, home wiring

restrictions, over-use penalties, and load limiters. Though the details of experience varied widely, most developers provided alternatives to incandescent bulbs and some used load limiting devices such as miniature circuit breakers to prevent demand from exceeding supply measures widely recommended in the general literature on micro grids.

Preventive and corrective maintenance has both physical and institutional aspects, and especially with subsidized projects, social arrangements can be crucial. If ownership and maintenance activities are to be transferred to the community, time and funds must be allocated appropriately to ensure that the community is willing and prepared to manage the system on their own for 25-30 years. And even when a community takes full responsibility for maintenance and does its best, catastrophic events can happen that even a diligent community may be incapable of fixing.

### **Submitted by**



Pallapothu Manikanta  
10K61A0481  
IV ECE

# Gecko Bluetooth Smart Tag

## Bluetooth enabled device that makes your smart phone smarter:

The Gecko Bluetooth Smart Tag is an easy to use Bluetooth Low Energy enabled device that makes your smart phone smarter. With Gecko Tag you can create an Internet of Things that consists of previously non-connected items. Gecko Bluetooth Smart Tag and Gecko App combine to enable your iPhone or iPad to monitor, locate, and control a virtually endless list of everyday items.



Tag your front door and get an alert when it is opened or closed, tag a pill box to ensure a loved one never misses a vital medication dose, use as a motion detector on luggage, purse or laptop, find your lost keys, wallet or even smartphone via the Gecko

app. Gecko can also serve as a remote trigger for your camera, activate voice memo or record a video. Gecko Tag's compact size, approximately 1-inch square, allows for seamless integration with both connected and non-connected world. It is also equipped with a LED light, buzzer, an ambient thermometer and one standard micro USB hardware port. Gecko is iOS compatible and Android version available soon

## Specifications:

- Bluetooth Low Energy (BLE)
- Accelerometer sensor for motion detection
- TI CC2541 SOC
- LED indicator
- Buzzer for audible alerts
- 1 micro USB port
- Replaceable battery-CR2032, 3V
- 1 year average battery life (depending on usage)

## Submitted by



Kantheti Tharun Sai Ram

11K61A0435

III ECE

## 12 Quick Internet Safety Tips That Will Save Your Digital Life from Getting Hacked

If we've learned anything about cyber security in 2014, it's that hackers are becoming more of a threat than ever before. Within the past two months companies such as Microsoft, AOL, and eBay have been the victim of security breaches. And let's not forget about the Heart bleed bug - a giant vulnerability that was discovered within an encryption protocol that guards a massive chunk of the internet. If you've been laid back about your online habits, now might be a great time to change your ways. Here are some tips to help prevent your digital life from being stolen, whether it be a password breach or an internet-wide vulnerability.

**Make sure you've got a super strong, unique password:** In other words, ensure that your password is difficult to guess. One way to come up with a creative password is to brainstorm a random sentence. Take the first letter of each word in that sentence and use that acronym as the base for your password.

**Don't use the same password for multiple services:** Using the same term for all of your passwords leaves your entire digital life vulnerable to attack. This means that if a hacker has one password, he or she has all of your passwords.

**Enable two-factor authentication:** Many services, including Google, offer two-factor authentication for logging into your account. Instead of simply entering a username and password to log in, the website will prompt you to enter a code sent to your smartphone to verify your identity.

**Apply software updates when necessary:** Apple, Google, and Microsoft typically include security bug fixes and patches in their most recent software updates. So don't ignore those annoying prompts and keep your software up-to-date.

**Carefully read the permissions before installing apps:** This is one of the most prominent ways in which malicious apps can gain access to your personal information. These types of issues have been especially present in the Google Play store. A lot of apps ask for a lengthy list of permissions, and that doesn't mean they're all ill-intentioned. But it's important to be aware of the types of information your apps are accessing, which can include your contacts, location, and even your phone's camera.

**Check the app publisher before installing:** There have been numerous instances in which scammers have published apps in

the Google Play store posing as another popular app. For example, in late 2012 an illegitimate developer posted an imposter app in Google Play pretending to be "Temple Run."

**Avoid inserting hard drives and thumb drives you don't trust into your computer:** If you find a random USB stick, don't let your curiosity tempt you to plug it in. Someone could have loaded malware onto it hoping that an interested person was careless enough to insert it into their device. If you don't trust the source, you're better off not putting your computer at risk.

**Make sure a website is secure before you enter personal information:** Look for the little padlock symbol in front of the web address in the URL bar. Also, make sure the web address starts with the prefix https://. If these things aren't there, then the network isn't secure and you shouldn't enter any data you wouldn't want made public.

**Don't send personal data via email:** Sending critical information such as credit card numbers or bank account numbers puts it at risk of being intercepted by hackers or cyber-attacks.

**Keep an eye out for phishing scams:** A phishing scam is an email or website that's designed to

steal from you. Often times, a hacker will use this email or website to install malicious software onto your computer. These web entities are designed to look like a normal email or website, which is how hackers convince their victims to hand over personal information. Phishing scams are typically easy to spot, but you should know what to look out for.

**Avoid logging into your important accounts on public computers:** Sometimes you've got no choice but to use a computer at the coffee shop, library, or local FedEx. But try not to do it frequently, and make sure you completely wipe the browser's history when you're finished.

**Back up your personal files to avoid losing them:** You should keep a copy of all important files in the cloud and on some sort of hard drive. If one of them gets hacked or damaged, you'll still have a backup copy.

**Submitted by**



Nanduri Rama Harika  
11K61A0474  
III ECE

## Google developing cancer and heart attack detector

SAN FRANCISCO: Google is exploring a way to search inside people's bodies for early signs of deadly illnesses such as cancer or heart disease.

A Life Sciences team at the special projects Google X Lab are experimenting with having "nanoparticles" hunt for signs of medical trouble in bloodstreams and then essentially report findings to sensors people could wear. "This is still early-stage research, but we've done a number of promising experiments, so we're going to keep going," Google said in a description of the project made public on Tuesday. Imagined applications include a test for enzymes given off by arterial plaques that are about to rupture and cause a heart attack or stroke, or a way to watch for cancer cells after surgery or chemo treatments.

Early detection is known to dramatically increase chances of successfully treating a number of life-threatening diseases. Batches of specially crafted nanoparticles, each microscopic in size, could be swallowed in pills and then absorbed into bloodstreams where they would stick to targeted cells such as cancer.

Magnetic qualities designed into nanoparticles allow

them to be drawn to worn devices and counted using non-invasive detection methods such as light or radio waves, according to Google. If successful, the technology could "help physicians detect a disease that's starting to develop in the body," the California-based technology titan said. Google said that it would license the technology to companies interested in using it for medically approved diagnostics.

Google Life Sciences team innovations include contact lenses that measure glucose levels in tears to allow people with diabetes to track blood sugar, and eating utensils that cancel out trembling hands caused by diseases such as Parkinsons.

Google also last year formed a company called Calico with a mission to address problems of health and aging by harnessing advanced technologies.

### Submitted by



K. Rama Pujith

11K61A0432

III ECE

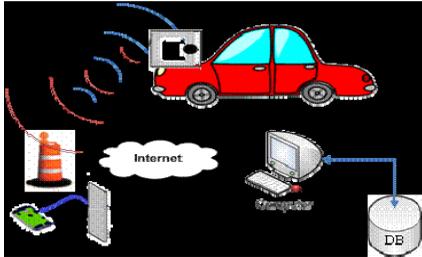
# Intelligent Traffic Cone based on Vehicle Accident Detection and Identification Using Image Compression Analysis and RFID System

The proposed intelligent RFID traffic cone for vehicle accident detection and identification avoids problems that usually arise with normally vehicle crash reporting systems, especially those related to image processing and insurance techniques. This RFID technique deals with a multi-vehicles, multi lane and multi road even or junction area. It provides an efficiency time management scheme with correct data reporting, in which a dynamic time schedule is worked out in real time for the driver or passengers of each accident situations. The time operation of the system emulates the judgment of a traffic policeman on duty or user that may have PDA nearby RFID traffic cone. The image compression present here is used along with RFID information to get a precise event data that composed of image encoding and decoding algorithms called wavelet transform with principle component analysis (PCA) via vector quantization techniques (VQ). The small bit rates for high-speed data transmission with a small space for data storage are required on wireless transmission channel. Simultaneously, the peak signal to noise ratio (PSNR) has to be maintained. The traffic

management system model is constructed for testing on traffic lights, vehicles transit and traffic cone with RFID solution system. By applying the proposed technique, performance has been improved which indicated by lower bit rate and better PSNR for image compression algorithm. The RFID data records of vehicles can be sent to the traffic information center on wide area network Housing – The array is fit inside a 6 foot long cabinet and 1.4 inch tall. This array will force sound waves to travel through a narrow slot channel and hence produces a highly directional strong sound wave.

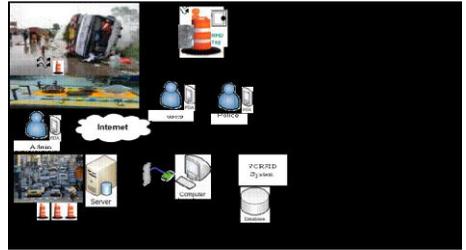
The RFID solutions in the fields of intelligent traffic management system started more recently but especially increasing rapidly in transit intelligent transportation system or automatic vehicle identification (AVI) system, but seldom see in the topic of vehicle clash analysis system such as traffic cone monitoring. The objective of this paper is to present the application of new traffic cone designed with RFID solution algorithm combination with image compression analysis for vehicle accident detection and identification system. The main

ideas of automatic vehicle detection with RFID system and system block diagram are shown in figures 1 and 2 respectively.



In the system block diagram, the car crash may be detected for accident information by RFID traffic cone that operated by traffic policeman. The car crash information is evaluated by RFID traffic cone software and then store in it database and may be sent to the traffic management center. While the accident image is captured by CCD camera and evaluate with image compression algorithms for small bit rate and high PSNR for wireless transceiver channel via on Pocket PC connecting or may be store in embedded system next work.

The type of traffic cone is one of the key factors to concern about they used that basically hard cones are easily to use but breakable easily and can't be reshape, while reflective cones can be more effective in this problems but difficult technical to use.



One issue of researches in image compression system is to find coding methods with low bit rate and high PSNR in order to enhance the efficiency of real-time image transmission. The closed loop control (CLC) plus system error compensate (SEC) with principle component analysis (PCA) are analyzed for image compression

In this paper, we present the intelligent RFID traffic cone system that can be applied for vehicle accident detection and identification method. The information of each car clash can be read and store in traffic cone software and then sent to the traffic administration center via communication networks both for wire line or wireless channel or internet network.

**Submitted by**



**K.S.P.P. Bhaskar**  
**12K61A0441**  
**II ECE**

## Displays Solar cell performance improves with ion-conducting polymer

Drawing their inspiration from photosynthesis, dye-sensitized solar cells offer the promise of low cost solar photovoltaics and when coupled with catalysts even the possibility of generating hydrogen and oxygen, just like plants. A study published in August could lead to more efficient and longer-lasting dye-sensitized solar cells.

A dye-sensitized solar cell absorbs photons and injects electrons into the conduction band of a transparent semiconductor. This anode is actually a plate with a highly porous, thin layer of titanium dioxide that is sensitized with dyes that absorb visible light. The electrons in the semiconductor diffuse through the anode, out into the external circuit.

In the electrolyte, a cobalt complex redox shuttle acts as a catalyst, providing the internal electrical continuity between the anode and cathode. When the dye releases electrons and becomes oxidized by the titanium dioxide, the electrolyte supplies electrons to replenish the deficiency. This "resets" the dye molecules, reducing them back to their original states. As a result, the electrolyte becomes oxidized and electron-deficient and migrates

toward the cathode to recover its missing electrons.

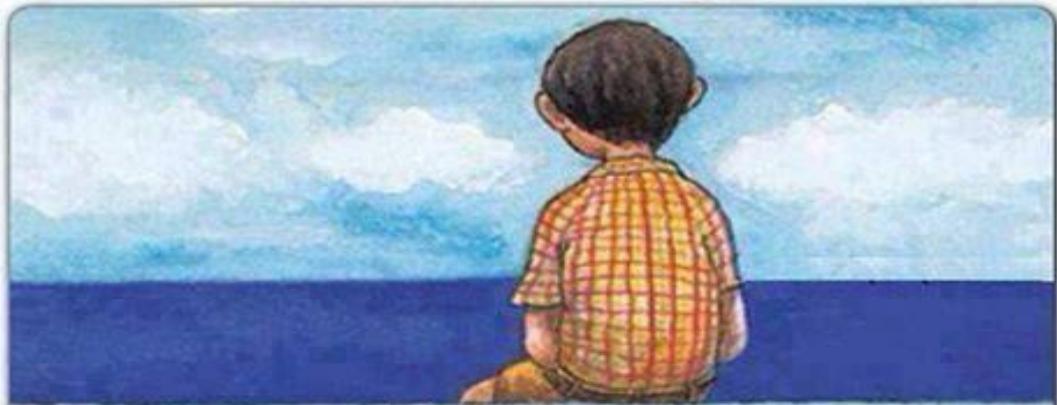
In the most efficient solar cells this is a new quasi-liquid, polymer-based electrolyte (containing the  $\text{Co}^{3+}/\text{Co}^{2+}$  redox mediator in 3-methoxy propionitrile solvent), the research team has overcome the viscosity problem, Gardner says. At the same time, adding the ion-conducting polymer to the electrolyte maintains its low volatility. This makes it possible for the oxidized form of the cobalt complex to reach the cathode, and get reduced, faster.

Speeding up this transport is important because when slowed down, more of the cobalt complexes react with electrons in the semiconductor anode instead of with the electrons at the cathode, resulting in rapid recombination losses. Speeding up the cobalt lowers resistance and increases voltage and current in the solar cell

**Submitted by**



A. Priyanka  
10K61A0433  
II ECE



Worry is a total waste of time. It doesn't change anything. All it does is steal your joy and keeps you very busy doing nothing.



The World Is Full  
Of Nice People.  
If You Can't Find  
One, Be One...!!

**Editorial members:**

A. Ravali

Asst. Professor

**Student Members:**

Ch. Pridvi Kumar, 10K61A0418

P. Pradeep, 10K61A0482

**Feedbacks and articles for next edition can be sent to [hodece@sasi.ac.in](mailto:hodece@sasi.ac.in).**

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING  
SASI INSTITUTE OF TECHNOLOGY AND ENGINEERING**

(Approved By AICTE, NEW DELHI, Affiliated to JNTUK, KAKINADA and SBTET, Hyderabad)

TADEPALLIGUEDEM-534101

Phone: 08818-244986, 987, 989 Fax: 08818-244628

Visit us at [www.sasi.ac.in](http://www.sasi.ac.in)