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Mobile Jammer

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Abstract: A GSM Jammer or cell phone jammer is a device that transmit signal on the same frequency at which the GSM system operates, the jamming success when the mobile phones in the area where the jammer is located are disabled. Communication jamming devices were first developed and used by military. Where tactical commanders use RF communications to exercise control of their forces, an enemy has interest in those communications. This interest comes from the fundamental area of denying the successful transport of the information from the sender to the receiver. Nowadays the mobile jammer devices or cell phone jammer software are becoming civilian products rather than electronic warfare devices, since with the increasing number of the mobile phone users the need to disable mobile phones in specific places where the ringing of cell phone would be disruptive has increased. These places include worship places, university lecture rooms, libraries, concert halls, meeting rooms, and other places where silence is appreciated.

Keywords: Mobile Jammer, Phone Systems, GSM, CDMA.

INTRODUCTION

Jamming devices overpower the cell phone by transmitting a signal on the same frequency as the cell phone and at a high enough power that the two signals collide and cancel each other out. Cell phones are designed to add power if they experience low-level interference, so the jammer must recognize and match the power increase from the phone. Cell phones are full-duplex devices, which mean they use two separate frequencies, one for talking and one for listening simultaneously. Some jammers block only one of the frequencies used by cell phones, which has the effect of blocking both.

The phone is tricked into thinking there is no service because it can receive only one of the frequencies.

Less complex devices block only one group of frequencies, while sophisticated jammers can block several types of networks at once to head off dual-mode or tri-mode phones that automatically switch among different network types to find an open signal. Some of the high-end devices block all frequencies at once and others can be tuned to specific frequencies.

Scope of the Project

To jam a cell phone, all you need is a device that broadcasts on the correct frequencies. Although different cellular systems process signals differently, all cell-phone networks use radio signals that can be interrupted. GSM, used in digital cellular and PCS-based systems, operates in the 900-MHz and 1800-MHz bands in Europe and Asia and in the 1900-MHz (sometimes referred to as 1.9-GHz) band in the United States.

Jammers can broadcast on any frequency and are effective against AMPS, CDMA, TDMA, GSM, PCS, DCS, iDEN and Nextel systems. Old-fashioned analog cell phones and today's digital devices are equally susceptible to jamming. Disrupting a cell phone is the same as jamming any other type of radio communication. A cell phone works by communicating with its service network through a cell tower or base station. Cell towers divide a city into small areas, or cells. As a cell phone user drives down the street, the signal is handed from tower to tower.

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LITERATURE SURVEY

TITLE 1: **'SMART' JAMMER FOR MOBILE PHONE SYSTEMS**

AUTHOR: Sami Azzam, Ahmad Hijazi, Ali Mahmoudy

The last few years have witnessed a dramatic boom in the wireless communications industry, hence, increasing the number of users of mobile communication devices. This magnified the need for a more efficient and reliable signal scrambler. This paper discusses two alternative methods for jammer design and implementation, and aims to present a solution for the problems of durability and cost related to the issue of high power consumption present in jammer designs.

TITLE 2: **Mobile Phone Signal Jammer for GSM, CDMA with Pre-scheduled Time Duration using ARM7**

AUTHOR: P.Naresh, P. Raveendra Babu, K.Satyaswathi

This Paper is designed and implemented for Mobile phone signal jammer for GSM, CDMA with prescheduled time duration using Mobile jammer and ARM7. The jamming device broadcasts an RF signal in the frequency range reserved for cell phones that interferes with the cell phone signal, which results in a "no network available" display on the cell phone screen. All phones within the effective radius of the jammer are silenced. The activation and deactivation time schedules can be programmed with microcontroller. Real time clock chip DS1307 is used to set the schedule.

TITLE 3: **Zone of silence [cellphone jammer]**

AUTHOR: E. Guizzo

This paper presents a gadget that jams a cellphone's radiofrequency bands with a junk signal of a few milliwatts. Called the Wave Bubble, it creates a cellphone-free bubble of silence four meters in diameter. The Wave Bubble works by generating a range of voltages in a circuit that tunes an oscillator. This voltage-controlled oscillator's amplified output, in turn, spews out signals between 800 megahertz and 2.5 gigahertz, a range wide enough to cover the bands for CDMA and GSM cellphones, radiofrequency identification tags, Wi-Fi networks, and the Global Positioning System.

EXISTING SYSTEM

Communication jamming devices were first developed and used by military. This interest comes from the fundamental objective of denying the successful transport of information from the sender (tactical commanders) to the receiver (the army personnel), and vice-versa. Nowadays, mobile (or cell) phones are becoming essential tools in our daily life. Here in Jordan, for example, with a rather low population (around 5 million), three main cell phone carriers are available; namely; Zain, Orange, and UmniahThe first two use the GSM 900 system, while the third uses the GSM 1800 system. Needless to say, the wide use of mobile phones could create some problems as the sound of ringing becomes annoying or disrupting. This could happen in some places like conference rooms, law courts, libraries, lecture rooms and mosques. One way to stop these disrupting ringing is to install a device in such places which will inhibit the use of mobiles, i.e., make them obsolete. Such a device is known as cell phone jammer or "GSM jammer", which is basically some kind of electronic countermeasure device.

Disadvantages of Existing System

- Cost oriented.
- Requires special hardware.
- People feel inconvenience.
- V.I.P.'s may lose some important calls.

PROPOSED SYSTEM

A jamming device transmits on the same radio frequencies as the cell phone, disrupting the communication between the phone and the cell-phone base station in the town. It's a called a denial-of-service attack.[3-5]The jammer denies service of the radio spectrum to the cell-phone users within range of the jamming device. Older jammers sometimes were limited to working on phones using only analog or older digital mobile phone standards. Newer models such as the double and triple band jammers can block all widely used systems (AMPS, iDEN, GSM, etc) and are even very effective against newer phones which hop to different frequencies and systems when interfered with. As the dominant network technology and frequencies used for mobile phones vary worldwide, some work only in specific regions such as Europe or North America.

Advantages of Proposed System

- By using cell phone jammers we can maintain law and order for maintaining peace.
- It is very necessary to use cell phone jammers in nasal feared places. This helps the authorities to work their duty softly.
- By using cell phone jammers in the vehicles, we can overcome accidents problem which is very helpful to the people.
- We can provide security to V.I.P's from the anti-social elements.

FLOWCHART DIAGRAM

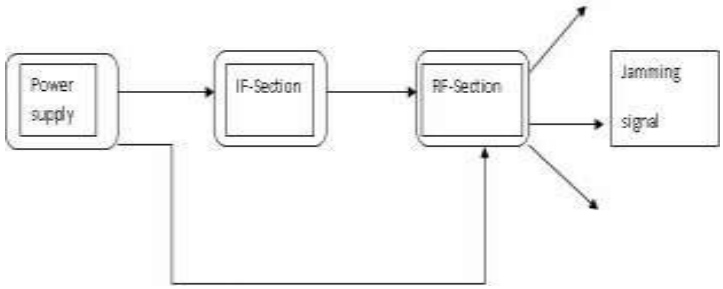


Fig.5.1: Mobile Jammer

MODULES DESCRIPTION

List of Modules

- Jammer/Disabler Technology
- Selective Frequency Jamming
- Suggested 'Smart' Jammer
- Simulation

1) Jammer/Disabler Technology:

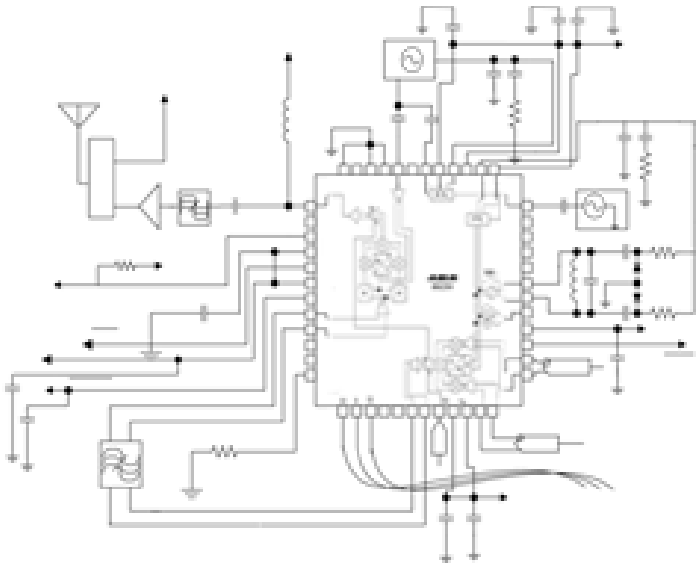


Fig. 6.1.1: GSM Jammer

Five types of devices are known to have been developed as shown in the fig 6.1.1 (or being considered for development) for preventing mobile phones' communications in certain specified locations:

A. Type 'A' Devices: 'jammers'. It contains several independent oscillators transmitting 'jamming signals' that block frequencies used by mobile communication devices for call establishment.

B. Type 'B' Devices: 'intelligent cellular disablers'. The device normally works as a detector. When it detects signaling from the Base station to the mobile station, it signals the base station not to establish communication. This process of detection and interruption of call establishment is done during the interval normally reserved for signaling and handshaking.

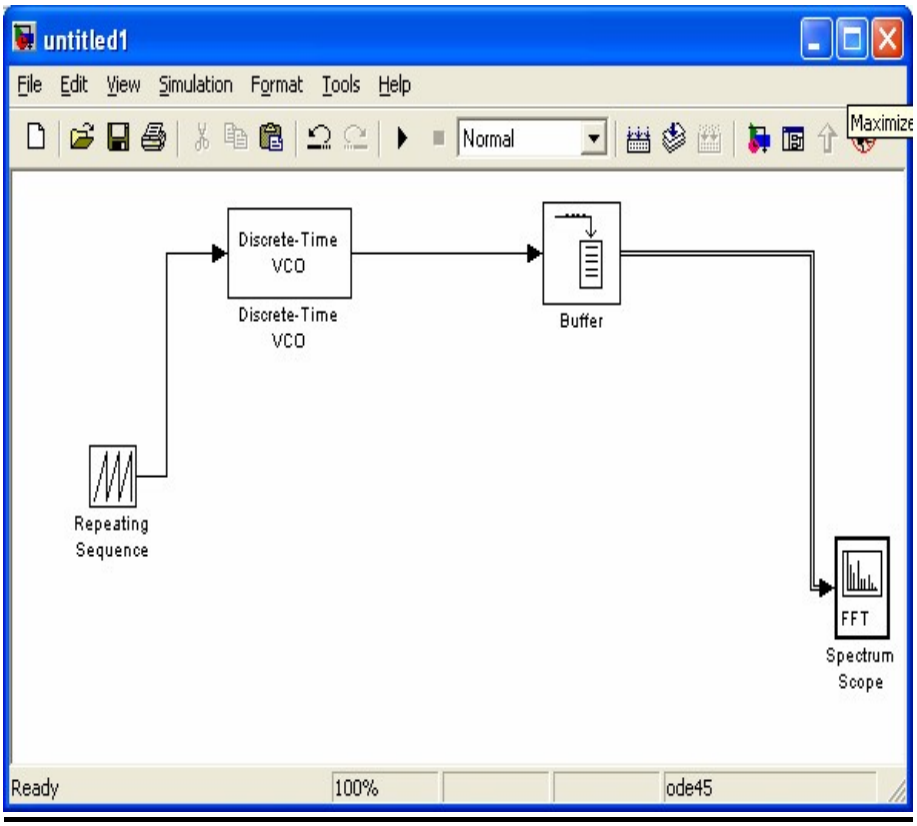
C. Type 'C' Devices: 'intelligent beacon disablers'. These devices act as 'beacons', i.e. they instruct any mobile device within their area of coverage to disable its ringer or disable its operation. The problem is that these types of devices require intelligent handsets.

D. Type 'D' Devices: 'Direct Receive and Transmit Jammers'. They behave as a small independent base station. The jammer is predominantly in receive mode and will intelligently choose to interact and block the cell phone directly if it is within close proximity of the jammer.

E. Type "E" Devices: 'EMI Shield - Passive Jamming'. This technique uses Electro Magnetic Interference (EMI) suppression techniques to construct what is called a Faraday cage. The Faraday cage essentially blocks, or greatly attenuates, virtually all electromagnetic radiation from entering or leaving the cage.

With current advances in EMI shielding techniques and commercially available products one could conceivably implement this into the architecture of newly designed buildings for so called "quiet-conference" rooms.

2) Selective Frequency Jamming

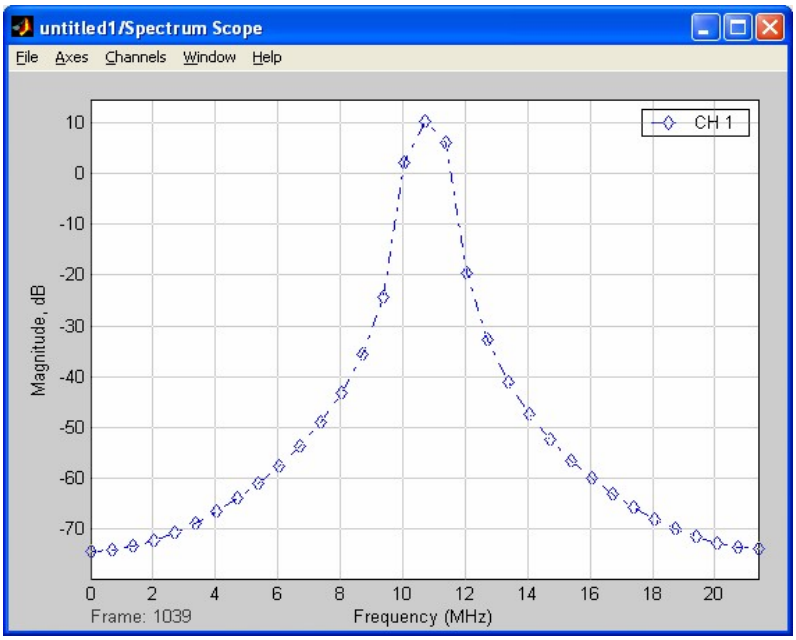


A 'smart' jamming approach would be to disturb the control process and thus prevent the establishment of a speech channel. This can be achieved by transmitting noise at the same frequency of the signal performing the control process. This method consists of detecting the frequency of the control process using the radio frequency signal analyzer PXI 5660. The latter interfaces with a computer, providing it with a data file in which all detected frequencies and their corresponding power level are recorded. The frequency detection process consists of selecting the frequencies with a power level greater than 33.01 dBm. As a second step and after determining the frequency of the channel reserved for the control process, the system transmits noise at the detected frequency. Below is a block diagram representing the first approach.

3) Suggested 'Smart' Jammer

As a last step in our research for an acceptable design, we decided to drop the selective frequency option, and based our attention on the power compensation issue of the mobile jammer.[1-2] In this last design, we decided to broadcast a single low-bandwidth signal with a varying carrier that covers the whole uplink/downlink bandwidth while restricting the jammer operation time. A receiver (possibly the NI PXI-5660 RF signal analyzer) is utilized for monitoring the GSM band in order to detect an increase of the power levels above 33 dBm, and then cause the sending of a control. This latter will be used either for turning on the whole transmitter circuit (mainly the max2364 IC), or for triggering an oscillator to generate the signal to be sent.

4) Simulation



A Matlab/Simulink simulation to show the generation of $f_{REF}$was carried out to illustrate the behavior of the oscillating generated signal.

- The repeating sequence block represents the periodic input signal to the VCO (more specifically the varying voltage at the pins of the variable capacitor) In the simulation it is considered to be a triangular signal buty any periodic signal would lead to the same results. The signal was given a triangular variation from 0 ∅ 5v and a period of 0.2885 msec.
- The VCO which represents the oscillator formed by the varactor and an inductor, the range to be traversed by fREF is 285.9 KHz which corresponds to a 5v variation in the input signal and thus a sensitivity of 57.11 KHz/volt. A Discrete-time VCO was used to allow the use of the fast fourier transform to analyze the signal.
- The last part is the buffer and the FFT which help construct the frequency domain representation of the output signal achieved.

CONCLUSION

This paper present a survey of mobile jammer. The increased need for mobile scramblers makes it vital that they integrate more features and provide more control on the whole process. This paper discusses mobile jamming technology, and introduces suggested improvements on existing designs. It presents possible approaches for a more intelligent design. The first approach (Selective Jamming) was not implemented due to hardware speed limitation, which may be overcome with certain technologies. The proposed design achieves lower power consumption, taking into consideration health and cost issues.

REFERENCES

[1] Sharmila, S., Jeyanthi Rebecca, L., Saduzzaman, M. (2013). Biodegradation of domestic effluent using different solvent extracts of Murraya koenigii. *Journal of Chemical and Pharmaceutical Research, 5*(2), 279-282.

[2] Asiri, S., Sertkol, M., Guner, S., Gungunes, H., Batoo, K.M., Saleh, T.A., & Baykal, A. (2018). Hydrothermal synthesis of CoyZnyMn1-2yFe2O4 nanoferrites: magneto-optical investigation. *Ceramics International*, *44*(5), 5751-5759.

[3] Rani, A.J., & Mythili, S.V. (2014). Study on total antioxidant status in relation to oxidative stress in type 2 diabetes mellitus. *Journal of clinical and diagnostic research: JCDR*, *8*(3), 108-110, 2014.

[4] Karthik, B. (2014). Arulselvi, Noise removal using mixtures of projected gaussian scale mixtures. *Middle-East Journal of Scientific Research*, *20*(12), 2335-2340.

[5] Karthik, B., & Arulselvi, S.A. (2014). Test data compression architecture for lowpower vlsi testing. *Middle - East Journal of Scientific Research*, 20(12), 2331-2334.

[6] Vijayaragavan, S.P., Karthik, B., & Kiran Kumar, T.V.U. (2014). Privacy conscious screening framework for frequently moving objects. *Middle-East Journal of Scientific Research*, *20*(8), 1000-1005.

[7] Kaliyamurthie, K.P., Parameswari, D., & Udayakumar, R. (2013). QOS aware privacy preserving location monitoring in wireless sensor network. *Indian Journal of Science and Technology*, *6*(5), 4648-4652.

[8] Silambarasu, A., Manikandan, A., & Balakrishnan, K. (2017). Room-temperature superparamagnetism and enhanced photocatalytic activity of magnetically reusable spinel ZnFe 2 O 4 nanocatalysts. *Journal of Superconductivity and Novel Magnetism*, *30*(9), 2631-2640.

[9] Jasmin, M., Vigneshwaran, T., & Beulah Hemalatha, S. (2015). Design of power aware on chip embedded memory based FSM encoding in FPGA. *International Journal of Applied Engineering Research*, *10*(2), 4487-4496.

[10] Philomina, S., & Karthik, B. (2014). Wi-Fi energy meter implementation using embedded linux in ARM 9. *Middle-East Journal of Scientific Research*, *20*, 2434-2438.

[11] Vijayaragavan, S.P., Karthik, B., & Kiran Kumar, T.V.U. (2014). A DFIG based wind generation system with unbalanced stator and grid condition. *Middle-East Journal of Scientific Research*, *20*(8).

[12] Rajakumari, S.B., & Nalini, C. (2014). An efficient data mining dataset preparation using aggregation in relational database. *Indian Journal of Science and Technology*, *7*, 44-46.

[13] Karthik, B., Kiran Kumar, T.V.U., Vijayaragavan, P., & Bharath Kumaran, E. (1803). Design of a digital PLL using 0.35 Î¼m CMOS technology. *Middle-East Journal of Scientific Research*, *18*(12), 1803-1806.

[14] Sudhakara, P., Jagadeesh, D., Wang, Y., Prasad, C. V., Devi, A. K., Balakrishnan, G., ... & Song, J. I. (2013). Fabrication of Borassus fruit lignocellulose fiber/PP composites and comparison with jute, sisal and coir fibers. *Carbohydrate polymers*, *98*(1), 1002-1010.

[15] Kanniga, E., & Sundararajan, M. (2011). Modelling and characterization of DCO using pass transistors. In *Future Intelligent Information Systems*, 451-457.

[16] Sachithanandam, P., Meikandaan, T.P., & Srividya, T. (2014). Steel framed multi storey residential building analysis and design. *International Journal of Applied Engineering Research*, *9*(22), 5527-5529.

[17] Kaliyamurthie, K.P., Udayakumar, R., Parameswari, D., & Mugunthan, S.N. (2013). Highly secured online voting system over network. *Indian Journal of Science and Technology*, *6*(S6), 4831-4836.

[18] Sathyaseelan, B., Manikandan, E., Lakshmanan, V., Baskaran, I., Sivakumar, K., Ladchumananandasivam, R., & Maaza, M. (2016). Structural, optical and morphological properties of post-growth calcined TiO2 nanopowder for opto-electronic device application: Ex-situ studies. *Journal of Alloys and Compounds*, *671*, 486-492.

[19] Saravanan, T., Sundar Raj, M., & Gopalakrishnan, K. (2014). SMES technology, SMES and facts system, applications, advantages and technical limitations. *Middle-East Journal of Scientific Research*, *20*(11), 1353-1358.

[20] Jeyanthi Rebecca, L., Sharmila, S., Das, M.P., & Seshiah, C. (2014). Extraction and purification of carotenoids from vegetables. *Journal of Chemical and Pharmaceutical Research*, *6*(4), 594-598.

[21] Udayakumar, R., Khanaa, V., Saravanan, T. and Saritha, G. (2013). Retinal image analysis using curvelet transform and multistructure elements morphology by reconstruction. *Middle - East Journal of Scientific Research*, *16*(12), 1781-1785.

[22] Karthik, B., & Kiran Kumar, T.V.U. (2013). EMI developed test methodologies for short duration noises. *Indian Journal of Science and Technology*, *6*(5), 4615-4619.

[23] Bomila, R., Srinivasan, S., Gunasekaran, S., & Manikandan, A. (2018). Enhanced photocatalytic degradation of methylene blue dye, opto-magnetic and antibacterial behaviour of pure and la-doped ZnO nanoparticles, Journal of Superconductivity and Novel Magnetism, 31(3), 855-864.

[24] Manikandan, A., Mani, M.P., Jaganathan, S.K., Rajasekar, R., & Jagannath, M. (2017). Formation of functional nanofibrous electrospun polyurethane and murivenna oil with improved haemocompatibility for wound healing. *Polymer Testing*, *61*, 106-113.

[25] Saravanan, T., Sundar Raj, M., & Gopalakrishnan, K. (2014). Comparative performance evaluation of some fuzzy and classical edge operators. *Middle-East Journal of Scientific Research*, *20*(12), 2633-2633.

[26] Karthik, B., & Kiran Kumar, T.V.U. (2014). Authentication verification and remote digital signing based on embedded arm (LPC2378) platform. *Middle-East Journal of Scientific Research*, *20*(12), 2341-2345.

[27] Gopalakrishnan, K., Sundar Raj, M., & Saravanan, T. (2014). Multilevel inverter topologies for high-power applications. *Middle - East Journal of Scientific Research,* 20(12), 1950-1956.

[28] Sakthipriya, N. (2014). An effective method for crop monitoring using wireless sensor network. *Middle-East Journal of Scientific Research*, *20*(9), 1127-1132.

[29] Vijayaragavan, S.P., Karthik, B., & Kiran Kumar, T.V.U. (2014). Effective routing technique based on decision logic for open faults in fpgas interconnects. *Middle-East Journal of Scientific Research*, *20*(7), 808-811.

[30] Kanniga, E., Selvaramarathnam, K., & Sundararajan, M. (2014). Kandigital bike operating system. *Middle-East Journal of Scientific Research*, *20*(6), 685-688.

[31] Sundararajan, M. (2011). Optical instrument for correlative analysis of human ECG and breathing signal. *International Journal of Biomedical Engineering and Technology*, *6*(4), 350-362.

[32] Khanaa, V., Thooyamani, K.P., & Saravanan, T. (2013). Simulation of an all optical full adder using optical switch. *Indian Journal of Science and Technology*, *6*(6), 4733-4736.

[33] Slimani, Y., Baykal, A., Amir, M., Tashkandi, N., Güngüneş, H., Guner, S., & Manikandan, A. (2018). Substitution effect of Cr3+ on hyperfine interactions, magnetic and optical properties of Sr-hexaferrites. *Ceramics International*, *44*(13), 15995-16004.

[34] Suguna, S., Shankar, S., Jaganathan, S. K., & Manikandan, A. (2017). Novel synthesis of spinel Mn x Co 1− x Al 2 O 4 (x= 0.0 to 1.0) nanocatalysts: effect of Mn 2+ doping on structural, morphological, and opto-magnetic properties. *Journal of Superconductivity and Novel Magnetism*, *30*(3), 691-699.

[35] Thamarai Selvan, M., Pasupathy, N., & Ashok Kumar, K. (2015). Floating Point Architecture based on FPGA. *International Journal of Advances in Engineering and Emerging Technology, 7*(11), 685-689.

[36] Ilakiya Devi, M., & Dr. Sebasthi Rani, K. (2015). Design and Implementation of a Single Stage CCM Zeta Microinverter for Renewable Applications. *International Journal of Advances in Engineering and Emerging Technology, 7*(11), 664-684.

[37] Jaya Prakash, B., Kamalambigai, K.V., Keerthi, S., MohanaPriya, R., & Sharmila, C. (2016). An Integrated Authentication Mechanism for Internet/Intranet Services. *Excel International Journal of Technology, Engineering and Management, 3*(1), 1-4.

[38] Vidhya, K., Sugapriya, C., Pradeepa, L., and Mohan Raj, P. (2016). Implementing a Secure Biometric Model to Authenticate the User in ATM Centre by Tagging with Aadhar Id. *Excel International Journal of Technology, Engineering and Management, 3*(2), 34-37.

[39] Deepan Kumar, E., Surendhiran, V., Naveen, N., and Karthik Kumar, S.S. (2016). Unique Label Natural Object Classification Using Artificial Neural Network. *Excel International Journal of Technology, Engineering and Management, 3*(3), 62-64.

[40] Anusha, V., Aswini, B., and Durga, S. (2017). Speech SMS. *Excel International Journal of Technology, Engineering and Management, 4*(1), 6-9.

[41] Mathubala, G., Manikandan, A., Arul Antony, S., Ramar, P. (2016). Enhanced photocatalytic activity of spinel CuxMn1-xFe2O4 nanocatalysts for the degradation of methylene blue dye and opto-magnetic properties. *Nanoscience and Nanotechnology Letters, 8*(5), 375-381.

[42] Kumaravel, A., & Dutta, P. (2014). Application of Pca for context selection for collaborative filtering. *Middle - East Journal of Scientific Research,* 20(1), 88-93.

[43] Krishnamoorthy, P., & Jayalakshmi, T., (2012). Preparation, characterization and synthesis of silver nanoparticles by using phyllanthusniruri for the antimicrobial activity and cytotoxic effects. *Journal of Chemical and Pharmaceutical Research*, *4*(11), 4783-4794.

[44] Amir, M., Gungunes, H., Slimani, Y., Tashkandi, N., El Sayed, H.S., Aldakheel, F., Sertkol, M., Sozeri, H., Manikandan A., Ercan I., Baykal A. (2019). Mössbauer Studies and Magnetic Properties of Cubic CuFe 2 O 4 Nanoparticles, Journal of Superconductivity and Novel Magnetism, *32*(3), 557-564.

[45] Raj, M.S., Saravanan, T., & Srinivasan, V., (2014). A modified direct torque control of induction motor using space vector modulation technique. *Middle - East Journal of Scientific Research*, 20(11), 1572-1574.

[46] Khanaa, V., & Thooyamani, K.P. (2013). Using triangular shaped stepped impedance resonators design of compact microstrip quad-band. *Middle - East Journal of Scientific Research,* 18(12), 1842-1844.

[47] Meharban, M.S., & Dr. Priya, S. (2016). A Review on Image Retrieval Techniques. *Bonfring International Journal of Advances in Image Processing, 6*(2), 07-10.

[48] Ravindaranaath, R.J., Karthik, K., Vishnupriyan, R., Suryakumar, S., & Thamaraiselvi, G. (2017). Automated Trolley System for Airport. *International Journal of Communication and Computer Technologies, 5*(1), 32-35.

[49] Balamurugan, R., & Nagarajan, N.R. (2017). Automatic Robotic Arm Using Hand Gesture. *International Journal of Communication and Computer Technologies, 5*(2), 43-45.

[50] Mahendran, S. (2017). Fault Detection in Power Transmission Line. *International Journal of Communication and Computer Technologies, 5*(2), 46-47.