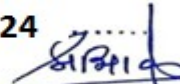


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Latest Trends in Sheet Metal Components and Its Processes—A Literature Review



Jibin J. Mathew, Chandrashekhar N. Sakhale and Sagar D. Shelare

Abstract Manual priming of sheet metal parts by traditional spray guns is a very skillful profession employed in diverse industries, uniquely for manufacturing through vendors. Although, this ability is ending up progressively unattainable, mostly because of the lack of skill and more expenses. In any case, a financially efficient and adaptable way to deal with priming of sheet metal components could considerably help different industries by giving a technique to quick prototyping sheet metal parts. This article includes a literature review of various available papers from renowned journals and conferences based on current sheet metal processes, type of work done, methodology, and results.

Keywords Priming · Sheet metal etc.

1 Introduction

Any metal component having a thickness of less than 6 mm is considered to be a sheet metal component. Priming process is a coating process which is done over a sheet metal component to protect the sheet metal component from its environment and provide a base for the painting which applied to the component for finishing. In many industries, individual skills applied for priming or coating process of sheet metals; yet, they commonly need flexibility and economic—viability when have to considered low-volume manufacture or prototype. The general manual priming process is as yet utilizing for these types of cases. However, manual priming process is a profoundly requires skill and shockingly, because of the absence of enthusiasm

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H. Sharma et al. (eds.), *Advances in Computing and Intelligent Systems*,
Algorithms for Intelligent Systems,
https://doi.org/10.1007/978-981-15-0222-4_54

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Abstract Manual priming of sheet metal parts by traditional spray guns is a very skillful profession employed in diverse industries, uniquely for manufacturing through vendors. Although, this ability is ending up progressively unattainable, mostly because of the lack of skill and more expenses. In any case, a financially efficient and adaptable way to deal with priming of sheet metal components could considerably help different industries by giving a technique to quick prototyping sheet metal parts. This article includes a literature review of various available papers from renowned journals and conferences based on current sheet metal processes, type of work done, methodology, and results.

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H. Sharma et al. (eds.), *Advances in Computing and Intelligent Systems*,
Algorithms for Intelligent Systems,
https://doi.org/10.1007/978-981-15-0222-4_54

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(3.3.3)

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Smart Water—An Automation of Existing Waste Water Filtration and Recycling System



Vrushali G. Nasre, Sudarshan Rao, Sushant Tupparwar, Disha Bhatt and Shriyash Deoghare

Abstract Clean and hygienic drinking water is a elementary requirement of human beings. Automation of water treatment plants plays a vibrant protagonist in the safe and consistent action in providing household usable water. This system emphasizes on an advanced, smart control & Checking system for water purification by using “IOT” And “microcontroller”. This proposed system is an attempt to design a cost effective water filtration with smart control recycling system. In this system the bathroom & kitchen basin waste-water is reused for gardening, and toilet flushing. The basin water is passed through the “purifier system” Which consist of different purification techniques such as sedimentation, charcoal purifier, silica beads treatment is used so the water get purified close to neutral pH value. Water recycled is neither acidic nor alkali. The system also eliminates the undesirable color & odor of the water. For this “microcontroller system” is used to control flow of water and check turbidity of water. It is an automatic device that can provide safe, reasonable and readily available water for household usage. “IOT System” is connected to incoming water supply and check’s the real time billing system and water usage. It also detects the “leakage of water”. This system has “Hydro-power generator” which generates power by flow of water & stores the energy in a Lithium-Ion battery, so in case of power failure it can provide power to the recycling system for uninterruptable service.

Keywords Water · Recycling · IOT—Internet of things · Purification · Sedimentation · Microcontroller · Leakage of water · Hydro-power generator

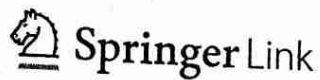
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R. K. Pillai et al. (eds.), *ISGW 2018 Compendium of Technical Papers*,
Lecture Notes in Electrical Engineering 580,
https://doi.org/10.1007/978-981-13-9119-5_21

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Medium Access Control Protocols for Wireless Sensor Networks

Handbook of Wireless Sensor Networks: Issues and Challenges in Current Scenario's pp 35-51 | Cite as

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Chapter

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Abstract

In wireless networks communication between sensor nodes is performed using a sole channel i.e. air. This channel has the characteristic that only one node is able to broadcast a message at any instant of time. Therefore this prevalent transmission medium should be allocated to each one of the nodes in an honest way. For accomplishing this purpose, a medium access control protocol is used. The goal of the medium access control protocol is to control access to the common wireless medium so that the concerned demands of the underlying operation are fulfilled.

In devising MAC protocols for common access medium the main complexity comes up due to spatial allotment of the nodes. To identify the node that is able to ingress the medium instantaneously, node has to transfer certain correlating details among them. However it requires employment of the transmission channel himself. This will increase the complexity of the protocol and as a result the overhead required to control access of the nodes to the medium.

Also immediate status of other nodes cannot be identified by the node under consideration because of the spatial distribution. The intellect of the verdict by the protocol along with the overhead employed, affect the overall performance of a distributed multiple access protocol.

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Smart Guide Stick for Blind People Using Artificial Intelligence

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Abstract—

Blindness is a condition in which a person is unable to see and detect the things happening in his/her surroundings that cause various problems, which cannot be solved by medical means. The difficult situations arises in front of blind person when he/she is travelling in his/her path. He/she is unable to determine obstacles appearing in front of them. Therefore, for such reasons, they are unable to move from one place to another. The smart blind stick helps the blind person to find its way during travel and to do their work with ease and in a secure manner. Usually a blind person use conventional stick in which the obstacles are not determined and conventional stick is not that much efficient for blind person. The conventional blind stick is unable to recognize and detect what type of things or objects is coming ahead of them. The quick progress in technology has brought the re-structuring of better system for helping the blind person, such as AI image processing, which can provide smart way-finding capabilities to the blind. Our paper describes the design of the smart guide stick having A.I. technologies such as object detection and image processing which helps the blind person to travel in his/her path easily.

KEYWORDS— FEATURE EXTRACTION, FILTERING, IMAGE PROCESSING

I. INTRODUCTION

The vision, construct a mental representation of the world around us. This contribute to our ability to successfully navigate through physical space and interact with important individuals and objects in our environments.

Eye is the most significant part of our human body. Most of the environmental information is obtained to a person is through, his/her sight. Although, there are several people with severe vision impairment which prohibit them from travelling individually over their path.

As per 2010 report by the World Health Organization (WHO) there are people of all ages who are visually challenged and their number estimated is 285 million of which 39 million are blind. People 50 years and older are 82% of all blind.

Consistently, these blind persons must use range of proficiency and tools which will help them in travelling in their path.

Some of the previously used tools for the dim-sighted person was walking stick which is commonly known as the wide stick, though functional these aids have significant problems. The rapid growth of advanced technology has, although saw the arrival of better system like the supported vision advance glasses and smart guide stick that can provide intelligent way-finding capability to the dim-sighted person. Our paper describes the design of a guide stick, i.e. an Artificial Intelligence based smart guide stick, furnished with object recognition and image processing technologies that takeover front-side, and rear images and implement Artificial Intelligence and machine learning to operate them.

The main aim of the smart guide stick is to detect obstacles and to inform the blind person previously the objects coming in front of him/her. The obstacles or the objects coming in front of the blind person is given in the form of audio messages to the blind person which will make them attentive and thus reduce the chances of accidents. A voice messages enable automatic switching is also included to help them in their private space. The smart guide stick will detect the images of obstacles which are present in outdoor and indoor with the help of camera.

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He/She has presented Technical paper titled Smart Security Solution for Women using IoT

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Advance Surveillance Security Using AI and Face Detection

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Abstract— Face detection and recognition from an image or a video is one of the most interesting, and well known topic in biometric research as it deals with security and privacy purpose. The human face plays a very crucial role in the social association and offers each and every individual a unique identity face recognition technology has broadly attracted attention due to its massive application value, and market potential, such as real time video surveillance and fraud detection. It is widely recognized that the face recognition plays a prominent in surveillance system as it doesn't require the participation of an object. We used image set algorithm with the aid of OpenCV and Python programming development and having a preexisting database of faces. The module distributed in three sub modules: Detection module, Training module and Recognition module

Keywords—Face detection, Face Recognition, OpenCV.

I. INTRODUCTION

Face recognition technology was commonly observed as a something straight out of science fiction. But over the past decade, this groundbreaking technology has not just become viable, but also it has become widespread. Face detection and recognition is technology which is used to recognize an individual from a video or photo source. The pioneers of facial recognition were Woodrow Wilson Bledsoe, Helen Chan Wolf and Charls Bisson. In the 1960s the concept of face recognition was introduced by Woodrow Wilson Bledsoe. Bledsoe developed a system called as RAND tablet that could classify photos of faces by hand. RAND tablet is a device that people could use to input horizontal and vertical coordinates on a grid using a stylus that emitted electromagnetic pulses. The system could be used to record manually the coordinate locations of various facial features including the eyes, nose, hairline and mouth. These set of data could then be inserted in a database. Then, when the system was given a new image of an individual, it was able to retrieve the image from the database that most closely resembled to that individual. Ever since then recognition

system is being improved and optimized constantly, the technology becomes gradually mature and is more and more widely used in human daily life. There are several industries benefiting from this technology. Law enforcement agencies are using face recognition technology to keep communities safer from impostors. Retailers are preventing crime and violence. Airports are improving traveler's convenience and security. Nowadays mobile phone companies are using face recognition technology to provide consumers with new layers of biometric security. In this paper, we propose a face detection and recognition system with the aid of python along with OpenCV. This system contains three modules which are detection module, training module and recognition module. The detection module recognizes the face which gets into the field of vision of the camera and saves the face in the form of an image in JPG format. Then the training modules trains the system with the aid of Haar cascade algorithm which was proposed by Paul Viola and Michael Jones.

A. Haar Feature Selection

First step is to collect the Haar Features. [8]A Haar feature considers adjacent rectangular areas at a specific position in a detection window, which adds the pixelintensities in each area and calculates the difference between these additions.

B. Creating Integral Images

Integral Images are used to make this procedure swift. Most of the calculated features are irrelevant. The Integral Image is used as a quick and effective way of calculating the sum of values (pixel values) in a given image – or a rectangular subset of a grid. It can also, or is mainly, used for calculating the average intensity within a given image. If one wants to use the Integral Image, it is normally a wise idea to make sure the image is in greyscale first.

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This is to certify that Dr./Mr./Ms. Prerana Deshmukhi has presented/published a Short length paper with the title PCE Diary: A System for Student Data Monitoring in the International Conference on Trends in Electronics & Communication (IC-TELCON-2020) organized during February 28th & 29th, 2020 at Thakur College of Engineering and Technology, Kandhwa (E), Mumbai.



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MRAS BASED SPEED SENSORLESS VECTOR CONTROL OF INDUCTION MOTOR USING SLIDING MODE OBSERVER

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Abstract

This paper presents the speed estimation of vector controlled speed sensorless Induction motor (I.M.) using Model Reference Adaptive System (MRAS) and Sliding mode observer. At very low speed the dynamic and steady state performance of I.M. is not adequate due to mismatch of parameters of machine. The low speed performance of induction motor is improved by using MRAS and sliding mode observer. In the reference model of MRAS the sliding mode observer is placed and current model of Induction motor is used as adjustable model. The output of the reference model and adaptive model is compared and is given to adaption mechanism and it estimates the speed of vector control induction motor. The rotor flux MRAS is used to estimate the rotor speed of induction motor and is used as feedback signals for the vector controlled Induction motor.

AN UNVEILING NAVIGATION IN FOG AMBIANCE BY FPGA BASED AUTONOMOUS VEHICLE WITH MINIMAL SENSING

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Abstract

This paper provides an approach for reference-less object detection for outdoor environment adaptable for navigating an autonomous vehicle. The computational efficiency of the image processing is to be questioned on its throughput in practical environment; a minimal sensing approach is needed to fulfil the gap formed due to this, so we propose a heuristic approach for tracking an object in dense fog ambiance. Driving through an environment with partial visibility may be fatal; a solution to this problem relies in prior intimation of object to be confronted based on the echo signal obtained. Depending on the nature of the obstacle, it can be dodged accordingly. As soon as the obstacle is detected the array of sensors gives the basic information of the obstacle. The Proposed algorithm is capable enough of finding the distance between the objects and analysing them through control unit designed by FPGA thereby confirming their nature of being static or dynamic. Efficiently making the robot to traverse through this adverse environment. This can be extended/applied to the field of automotive



PEDES 2018



Certificate of Participation

This is to certify that Prof./Dr./Mr./Ms. **Dhanashree Porate** presented a paper titled **Performance of PMSG Based Variable Speed WECS with Parallel Back-to-Back Converters Using Separate Zero d-axis Current Control** in the *8th International Conference on Power Electronics, Drives and Energy Systems (PEDES)*, held at *Indian Institute of Technology Madras, Chennai, Tamil Nadu, India* between 18-21 December 2018.

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Certificate of Presentation

Awarded to

Dhanashree K. Porate

for presenting the paper,

Performance of Grid-Connected Variable Speed WECS using PMSG under MTPA Control with Common Synchronizing Circuit

at PEDEPS 2019 organized by the Department of Electrical Engineering of
Shri Ramdeobaba College of Engineering & Management, Nagpur, Maharashtra, India

on 23rd & 24th December 2019

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16-10

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DESIGN OF SLOTTED E-SHAPED MICROSTRIP PATCH ANTENNA AT 5.8 GHz

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Abstract- A dual band E-shaped microstrip patch antenna is proposed and experimentally investigated at 5.8 GHz for wireless applications. The proposed antenna is designed and simulated using CST Microwave STUDIO SUITE simulation software. The parameters of the E-shaped antenna are changed by inserting three edge slits cut into the structure. It achieves return loss below -10dB by using FR-4 lossy substrate with the permittivity of $\epsilon_r = 4.3$. In this paper different parameters of an antenna like VSWR, radiation pattern, directivity, gain, 3D polar plot have been discussed. Hence this antenna is highly suitable for applications such as cordless phones, Ultra wide band, ISM (Industrial, Scientific, Medical) and S Band & C Band Applications.

Keywords— RADAR, S band, C band

I. Introduction

An antenna acts as a transducer that converts radio-frequency signal into alternating current or vice-versa. Antennas play an important role in the field of communication. They are used in wireless local area networks, mobile telephony, satellite communication, RADAR Systems [1]. Basically Microstrip element consists of an area of metallization part above the ground plane, named as Microstrip patch. The supporting element is called substrate which is placed between the patch and the ground plane. The performance characteristics of an antenna depends on the substrate material and its physical parameters. Microstrip antennas can be designed as very thin planar printed antennas and they are very useful elements for communication applications. Circuit analysis of suspended ring antenna is done in [4]. Broadband E-H shaped Microstrip patch antenna is proposed and experimentally investigated in [5]. In this paper an E shaped patch antenna have been studied and designed. The simulated and measured results are investigated. Good agreement is achieved for this design. Microstrip patch antennas are the most popular antennas in the field of communication. These antennas are mostly preferred in RADAR and Satellite Communication because of their light weight, low mass, high performance and low fabrication cost. The coaxial feeding technique is preferred for this design. This feeding is corner feed instead of centre feed. The antenna get resonates due to the insertion of slits into the design. Also antenna size reduction can be achieved by the insertion of slits. The antenna structure can be used in planar array design for the improvement of gain and directivity. Impedance matching is achieved for this design. Fig. 1 shows the microstrip patch

antenna design and fig. 2 shows the coaxial feeding top view and bottom view.

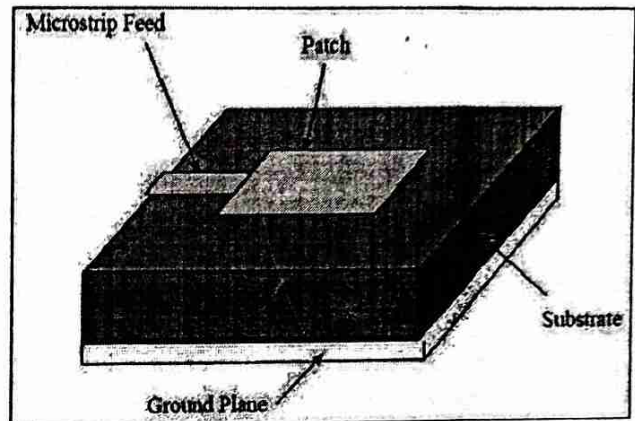


Fig: 1. Microstrip patch antenna

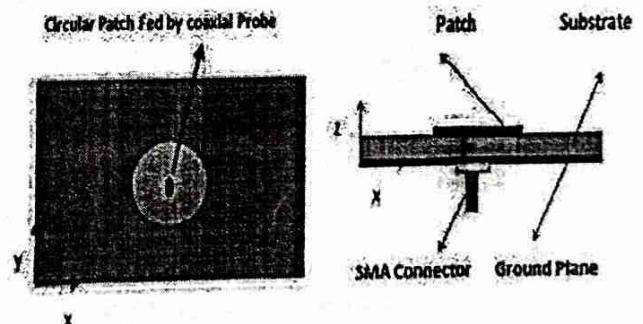


Fig: 2 Coaxial feeding method a) top view b) side view.

II. DESIGN METHODOLOGIES

In our design, we have inserted slots and slits to achieve antenna miniaturization. It has been observed that the design becomes quite miniaturized. In our work, first we have designed a single antenna at 2.4 GHz. After that we have inserted slits and slots into the design to get the additional band at 5.8 GHz. Hence this antenna works at dual band frequency.

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Mathematical Modeling & Simulation of Chaff Cutter Energized by Human Powered Flywheel Motar

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Abstract. In the present research the Mathematical Modeling & Simulation of Chaff Cutter Energized by Human Powered Flywheel Motar has been studied. The machine system consists of a Human Powered Flywheel Motor as energy source. This source comprises of a Bicycle-drive mechanism with speed increasing gearing and a Flywheel. This energy source energizes the process unit through a spiral jaw clutch and torque-amplification gearing. The operator pumps human energy to the flywheel at a convenient input power level for about one minute. After enough energy is stored, pedaling is stopped and the energy in the flywheel is made available to the process unit by engaging the spiral jaw clutch[1].

An approximate generalized experimental data based models for the Human Powered Chaff cutting machine system has been established for responses of the system such as resistive torque, number of cuts and process time during one energization of the flywheel. On the basis of these models, optimal values of various independent dimensionless ratios were established to optimize the performance of this system. An Artificial Neural Network simulation has been developed for the phenomenon which truly represents the degree of interaction of various independent variables. The approximate generalized experimental data based models established in this research are amply validated by experimental findings.

Paper ID 67: Sensor Based Fault Detection System for Efficient and Effective Street Lighting

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Abstract: The smart street lighting system is being introduced in the smart cities of India. Smart street lighting systems use various sensors. In this paper, three different sensors are proposed to be used in the smart street lighting systems which work in coordination with each other. The Light Dependent Resistor (LDR) sensor to differentiate the day and night time, InfraRed (IR) sensor to detect the movement of an object and the photodiode to monitor the health of the Light Emitting Diode (LED) lights. The proposed system is cost-effective and results in improving the overall efficiency.

Paper ID 35: Design of Vision based Intelligent Lane Detection and Lane Tracking Under different Light, Weather and Lane Conditions

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Abstract: This work gives a detailed implementation of a Intelligent based Lane detection and Lane Tracking system based on Hough transform and Kalman filter algorithm to detect and track a lane. In this model the camera is put on the vehicle(car) by recorded the real time video. The video is taken by camera will go to the different image processing steps which includes Intensity image. In Image processing steps RGB to Gray conversion is important in this paper because our challenging task is to detect and track lane under different light, different weather and different lane conditions. In every conditions the features of RGB and Gray image are varied and due to that the performance of Lane detection and Lane tracking are poor. We may not be able to classify/identify lane in every condition but we need to find degree of accuracy in each scenario. Hence we design a Intelligent system by using fuzzy. In this system First find out the parameters of RGB and Intensity image of all the scenarios. This needs to select appropriate inputs to classify lanes in different conditions and apply the fuzzy system for better performance of detection and track of lane. The following table (features of different scenario) will help in deciding fuzzy system with appropriate inputs and related memberships functions(shape, range and placement). After that changing size, Interested region, Edge detection, Hough transform and Kalman filter algorithm used to detect and track Lane. In Lane detection and lane tracking techniques various mathematical tools which are used to detect and track lanes clearly. So many lane detection and lane tracking algorithms used their such as Hough transform, Ransac, Particle filter. The most commonly algorithms used are Hough transform and Kalman filter algorithm. In this work of making observations we give out with MATLAB SIMULINK model for Hough transform and kalman filter algorithm which are used to detect and track lanes. In this work of making observations work as first started to make a real time video of Lane taken by camera in dissimilar light, weather and road conditions is processed by using image processing algorithms, Edge detection, Lane detection, Lane tracking to detect and track lane. In this work of making observations we give out with MATLAB SIMULINK design to be for image processing steps and Sobel edge detection algorithm, Hough transform and kalman filter algorithm.

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