

**L.D.College of Engineering,Ahmedabad**  
**Department of Biomedical Engineering**  
**Project - II SEM VIII Summer-2020**  
**Project Details**

Sr. No.	Project Title	Enrollment No.	Name of Student	Guided By	Abstract	Remarks
1	Design of crutches used in multi-terrians	160280103047	Prajwal Chauhan	Prof. B. H. Parmar	A healthy leg can support the body weight, but when the patient has an injured leg or foot, you need to keep weight off it. Once he/she is told that he/she can put some weight on his/her leg, using a "weight-bearing" method of walking as the leg heals. Crutches are prescribed as per weight bearing. Depending on his/her arm strength and balance, he/she can either "step to" or "step through." Crutches are an important and widely used walking aid for person who cannot use their legs to support their weight, for reasons ranging from short-term injuries to lifelong disabilities. There are several types of crutches available in the market. However, with advantages few drawbacks also affect the user such as ulcer, less stability, swelling, etc. We aim to re-design these crutches for better stability and comfortable use overcoming these drawbacks.	
		160280103058	Krishna Thakkar			
		160280103010	Desai Akshi			
2	Smart Bins for Hospital	170283103002	Darji Rashmi	Prof. P. L. Gohel	Medical care is vital for our life, but the waste generated during the diagnosis, treatment or surgery of human beings or in research activities represents a real problem when the waste is not collected on regular basis with proper management. Improper management of medical waste generated in health care facilities causes a direct health impact on the community, the health care workers and on the environment. This waste is hazardous and may cause a serious threat to human health. Every day, a large amount of infectious and hazardous waste are generated in health care hospitals and if it does not collected from the bins at a right time, the amount of infections or diseases gets increased. So for preventing the problem of waste system in hospitals, clinics or in health centers, Smart Bins for Hospital can be used over the recent improper waste management system in hospital. The smart medical waste management system (smart bins) measures the level of waste in bins through sensors and then sends the corresponding information about the bin level to the concerned authority by IOT. The information can be accessed anywhere over the internet. This system will indirectly help to decrease the rate of infections in the hospitals.	SSIP
		170283103006	Joshi Pratiksha			
		170283103019	Yadav Riddhi			
3	Portable and Affordable Heamoglobin level detection system	160280103015	Gajjar Arpan	Prof. B. H. Parmar	Our aim to make device using a Point of care (POC) condition in which we'll take a picture of a nail image by applying processing & image algorithm. We introduce a completely non-invasive, on-demand diagnostics that may replace common blood-based laboratory tests using only photos. . Nail image will be used for feature extraction and further it will be used for Hemoglobin detection. This system has algorithm which will automatically extract nail area scrutinize this nail part for hemoglobin detection based on the textual and colour of a nail. . The development of this project will led to better diagnosis of Hb level using non -invasive method and it is affordable and portable.	
		170283103017	Vaishnav Nancy			
		170283103003	Gandhi Trusha			
4	Biodegradable Surgical Stapler	160280103027	Shwet Makadiya	Prof. B. H. Mehta	Surgical staples made of pure titanium and titanium alloys are widely used in gastrointestinal anastomosis. However the Ti staple cannot be absorbed in human body and produces artifacts on imaging examination. High Purity Magnesium can also be used as Bioabsorbable material for staple but such high purity magnesium is very expensive and it is not available easily. Thus, Polymers such as PGA, PLA, PLGA, PCL which are easy to synthesis are used as staple material. The bioabsorbable surgical staples made from polymers that can degrade in human body. These bioabsorbable staples are placed underneath the skin (epidermis). Bioabsorbable polymers used in the staples are Poly Lactic Acid (PLA) and Poly Glycolic Acid (PGA). These bioabsorbable staple does not need any specialized staple as PGA and PLA degrades into the body over time.	IDP-CUG
		160280103026	Nandan Kulkarni			
		160280103032	Meet Shah			
5	Trauma Patch	160280103049	Aayushi Raval	Prof. U. V. Pancholi	Approx. 1, 40,000 Road accidents occurs every Year in India. The major cause of death is due to Blood Loss. More than 50% of victims who die within first 24 – 48 hours are due to uncontrolled Bleeding. Treatment of bleeding wounds requires immediate action otherwise severe loss of blood can lead to haemorrhagic conditions. Thus in traumatic conditions control of bleeding and sealing the wound site is considered uttermost priority. Trauma patch gauze is different from standard surgical gauzes. They stop bleeding significantly faster and are more effective than standard gauze. It is safe and intuitive to use and is suitable for self application at wound site. The homeostatic composition has organic and inorganic homeostatic agents which enhance the clotting process. When applied with manual pressure it promotes clotting within minutes from application to help save more lives. It is very easy to use and so spot on application is very useful in traumatic conditions.	SSIP
		160280103044	Vishwa Patel			
6	Assistive device for visually impaired person	160280103023	Snehal kasavala	Prof. Y. M. Parikh	A smart assistive device is invented to provide a smart electric aid to visually impaired people. Traditionally visually impaired individuals used a normal stick to find out if any obstacles are present in front of them. However this stick is not efficient in several aspects and the person using it has to face various difficulties. The smart assistive device that we have designed will help the visually impaired individual by providing more convenient means of life and to move around independently. The objective of our project is to provide voice based assistance to visually impaired individuals. Our device first uses ultrasonic sensors to detect obstacles ahead using ultrasonic waves. On sensing obstacles the sensor passes this data to the raspberry pi microcontroller. The raspberry pi microcontroller then processes this data and calculates if the obstacle is close enough. If the obstacle is close, the output is announced through the earphone. The GPS module tracks blind people's location and sends the longitude and latitude information to its related person who can help in an emergency by the help of GSM module. This is provided by manually pressing the emergency switch. One more feature of this device is a moisture sensor which helps to detect water at the ground level on rainy days.	SSIP
		160280103059	Priya vaddoriya			
		160280103060	Uttam vaghani			
7	Impact of different meditative practices on HRV abd mood variation	160280103052	Shah Meghal	Prof. K. B. Bhojania	The health of our body and mind is extensively dependent on our habits as well as habitat and the nature of energy surrounding them. This project determines how meditative practices and humming affects the physiology of our body and mind through checking various parameters such as HRV, Stress, Moods etc. It also includes the comparative effect on body and mind through meditative practices tested on various subjects.	IDP - Wellness Space
		160280103014	Dhok Meghana			
		160280103063	Vidhi Patel			
8	HMI Display for X-RAY Machine	160280103002	Atara Raj	Prof. B. H. Mehta	Traditional x-ray machine has microprocessor embedded controlling board to control the x-ray machine parameters. Push buttons are used to control x-ray machine parameters in this controlling board. Generally, Manufacturing industries suffer from this old controlling technology which effects sale of product. This controlling board is more complex and take physical efforts to operate. So, we are using less complex microcontroller base Arduino board and touch screen display to control x-ray machine parameters. A touch screen is very useful for easily accessing information or giving a command by simply touching the display screen.	IDP- Genuine X-ray
		160280103009	Delavadiya Meetkumar			
		160280103051	Savani mayur			
9	Detection of rheumatoid arthritis using thermal data	170283103008	Karan Mistry	Prof. B. H. Parmar	Rheumatoid arthritis (RA) is an inflammatory progressive disease which in the absence of appropriate treatment can lead to joint destruction and disability. In Arthritis, the self-limiting inflammatory process becomes continuous and as a result chronic inflammatory disease might occur. Rheumatoid arthritis (RA) is an inflammatory rheumatic disease with progressive course affecting articular and extra-articular structures resulting in pain, disability and mortality. Persistent inflammation leads to erosive joint damage and functional impairment in the vast majority of patients. Effect on the extra-articular disk can create temperature variation in that portion of that joint due to presence level of synovial fluid. The skin surface is responsible for maintaining the core internal body temperature. Medical Infrared thermography (MIT) as a diagnostic tool is well known for its contribution in providing statistical quantification to detect acute to minute temperature deviation for accurate assessment of inflammation. Accurate assessment of inflammation helps in making early individual treatment plan and also offers an insight to the determination of severity of the disease. Infrared (IR) sensor used as the functional sensing modality for measuring the inflammation radiated from the superficial dermal microcirculation that resides 1–2 mm below the epidermal surface. The infrared energy radiated from the human body are converted into electric pulses and digitally indicated on the spatial temperature map. Depending on the temperature map, the IR sensing is also used to analyse the temperature oriented physiological functions. We use this technique to diagnosis RA non-invasively.	SSIP
		160280103040	Karan Patel			
10	Myoelectric Arm	160280103020	Pruthvirajsinh Jadeja	Prof. H. B. Patel	When an arm or other extremity is amputated or lost, a prosthetic device, or prosthesis, can play an important role in rehabilitation. For many people, an artificial limb can improve mobility and the ability to manage daily activities, as well as provide the means to stay independent. A Myoelectric controlled prosthesis is an externally powered artificial limb that you control with the electrical signals generated naturally by your own muscles. The Objective of the project is to design low cost myoelectric hand which utilizes myoelectric control. EMG signals acquires from the hand, perform pre-processing task and the final output of EMG signals applied to the servo motor for movement of 3D myoelectric hand. The hand will be able to help improve the quality of life of upper limb amputees at an affordable cost.	
		170283103013	Palak Raj			
		170283103018	Tejasvi Vala			

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11	Indian Currency recognition system for visually impaired	160280103012	Shweta Devani	Prof. Y. M. Parikh	One of the most important problems faced by visually impaired people is money recognition especially paper currency. In this project we present a simple currency recognition system applied on Indian banknotes. Proposed system is based on Neural Networking that ensures performing the process as fast and robust as possible. The basic techniques utilized in our proposed system includes image foreground segmentation, region of interest (ROI) extraction and finally template matching based on trained network.	
		160280103013	Maher Dhanani			
		160280103019	Himanshi Shah			
12	Wearable device for drowsy drivers	160280103041	Patel priyaben hasmukhlal	Prof. P. L. Gohel	In recent years, driver drowsiness has been one of the major causes of road accidents and can lead to severe physical injuries, deaths and significant economic losses. Statistics indicate the need of a reliable driver drowsiness detection system which could alert the driver before a mishap happens. Researchers have attempted to determine driver drowsiness using the following measures: (1) vehicle-based measures; (2) behavioural measures and (3) physiological measures. A detailed review on these measures will provide insight on the present systems, issues associated with them and the enhancements that need to be done to make a robust system. In this paper, we review these three measures as to the sensors used and discuss the advantages and limitations of each. The various ways through which drowsiness has been experimentally manipulated is also discussed. We conclude that by designing a hybrid drowsiness detection system that combines non-intrusive physiological measures with other measures one would accurately determine the drowsiness level of a driver. A number of road accidents might then be avoided if an alert is sent to a driver that is deemed drowsy.	
		150280103003	Arjun Dahiphale			
		170283103007	Drashti Mehta			
13	Manual drug delivery device for respiratory diseases	160280103046	KRUNAL R PRAJAPATI	Prof. U. V. Pancholi	Nebulization or atomization is a technique of transforming liquid into a fine mist and the machine used for this particular purpose is called a nebulizer. Generally, nebulizers can be sorted into jet, ultrasound and mesh which are classified on the basis of the method of production of aerosols from liquid. Various factors such as distal drug deposition on the face and mask, median aerodynamic diameter, remaining drug after nebulizing and nebulization time, determine the extent of performance and its efficiency. Aerosolization is the first-choice route of administration for the treatment of many respiratory diseases. Pressurized metered-dose inhalers (pMDIs), dry powder inhalers (DPIs) and nebulizers are the devices currently used to administer the aerosolized drugs to the lungs. Among these delivery devices, nebulizers are currently only considered as the first choice for aerosol therapy when the prescribed drug cannot be aerosolized by other systems or in patients unable to draw maximal benefits from both pMDIs and DPIs. Currently, home nebulizer practice seems to be very heterogeneous among different countries. The goal of this project was to produce a MANUAL DRUG DELIVERY DEVICES FOR RESPIRATORY DISEASES and to overcome and troubleshoot the problems of existing devices faced by individuals.	
		160280103056	VIJAYRAJ SINGH SOLANKI			
		160280103053	PRIYA SHAH			
14	Fabrication of Paper based microfluidic device using printed circuit technology	160280103045	Prajapati Devanshi R.	Prof. U. V. Pancholi	The project describes the use of a printed circuit technology to generate hydrophilic channels in a filter paper. Patterns of channels were designed using AUTOCAD. Then, the patterns were transferred to copper sheet using electric iron. The copper sheet with patterns was dipped into ferric chloride solution to etch the whole pattern. At last, the etched copper sheet was coated with a film of paraffin and then a filter paper. An electric iron was used to heat the other side of the copper sheet. The melting paraffin penetrated full thickness of the filter paper and formed a hydrophobic "wall". Colorimetric assays for the presence of protein and glucose were demonstrated which is helpful for monitoring health and detecting diseases.	
		160280103057	Kokni Sonalikumari D.			
		160280103007	Chavda Nirav			
15	Design and fabrication of wheelchair for differently-abled person	160280103031	MANGAROLIYA DHRUVI B.	Prof. B. H. Mehta	Mobility of the Physically Challenged people or crippled people is a great concern of the society. A wheelchair is a chair with wheels. It is used when walking is very difficult or impossible due to illness, disability, or injury. Joystick controller based mobility aid wheelchair has been designed for the all possible direction of movements like left, right, straight and back. Moreover, the DC geared motors are used for the movement of the wheels for the purpose of lower speed movement of chair which will be convenient for the physically challenged. Now a day's expensive Motorized Wheelchair cannot be used by people under weak financial circumstances. This state of financial weakness which may be due to old age or functional disability. The wheelchairs available in the market have multiple features and complex design which makes it expensive for such users. In this project an attempt was made to design a low cost motorized wheelchair which can be afforded by people with low financial stability. The proposed wheelchair system has the idea to run both in indoor and outdoor environments. The wheelchair has been designed to convert as a stretcher which will make the physical challenged people to feel better during relaxation and night times.	
		160280103035	PANCHAL DHARTI Y.			
		160280103005	DHRUTIV BHAVSAR			
		160280103039	JINIT PATEL			
16	Hazardous Obnoxious pollutant eliminator (Hope Mask)	170283103011	Juhi Sanjivkumar Patel	Prof. B. H. Mehta	It is an irrefutable fact that health is an essential part of everyone's life but pollution is gradually augmenting and that creates some innumerable health problems such as Asthma, Lung cancer, Cardiovascular problem and cause infection in eye, nose and throat. So for controlling this detrimental effect we introduce a HOPE mask. This mask is convenient to extract the PM 2.5 from the breath and help individual to inhale toxic free air. Main component of this mask is filter material. Filter is made from different material such as Polyvinylpyrrolidone (PVP), Ethanol, Polysulfone, Borosilicate, Activated Carbon, Nano gauze fiber, Cotton and other. Filter is made from material used in filter part; nonwoven fiber material which is used as substrate material and generated fibers are bound with these substrate material. Whenever particles and aerosols are interacting with fiber at that time particles are easily absorb and provide fresh air to person. The work presented here primarily focuses on generating the fiber device using random, non-woven polymer nanofibers electrospun using E-SPIN NANOTECH endowing nano*(a miniaturized handheld electrospinning apparatus). In the current scope of work, a blend of Polyvinylpyrrolidone (PVP), Ethanol at varying concentrations was used to rapidly fabricate nanofibers.	
		170283103005	Jethwa Saloni G			
		170283103015	Sagar Khushbu A			
		160280103037	BHUMI PATEL			
17	Analysis of Heart Sound & Murmurs for Cardiac Disorder	160280103034	Nagar Anjali Mukeshbhai	Prof. K. B. Bhojania	Cardiovascular diseases have become one of the most prevalent threats to human health throughout the world. As a non-invasive assistant diagnostic tool, the heart sound detection techniques play an important role in the prediction of cardiovascular diseases. Advances in technology and signal processing allow the design of computer-aided systems for heart illnesses detection from heart sound Signal. It covers in depth every key component of the computer-aided system with stethoscope, from sensor design, front-end circuitry, denoising algorithm, heart sound segmentation, to the final machine learning techniques. It provides the technological and medical basis for the development and commercialization of a real-time integrated heart sound detection, acquisition and quantification system.	
		160280103021	Jayas Tanuja			
18	Low Cost Vein Detection Technoogy	170283103009	Maushmi Mukherji	Prof. B. H. Parmar	Vein Detector is a system which aims to help locate and distinguish vein effectively for various medical purposes. The existing technology is complex and expensive. In this project, a simple design is proposed to capture the vein images under infrared lighting and extract the vein pattern using image processing technique. The enhanced image can be projected back on to the patient's hand. In some cases like of an obese person, premature baby and diabetic patients; it becomes very necessary to design a device that detects the exact location of required vein and I sincerely have tried to develop a Low Cost Vein Detection System with Infrared source and an Infrared camera with a good processing technique using certain particular software for perfect visualization.	IDP- Bioteknika
19	Breast Cancer detection using Mammograms	160280103062	Varsolia Anjlai A	Prof. P. L. Gohel	Mammography is specialized medical imaging for scanning the breasts. A mammography exam (A Mammogram) helps in the early detection and diagnosis of breast cancer. Mammogram image segmentation is useful in detecting the breast cancer regions, hence, better diagnosis. In this paper, we applied enhanced double thresholding-based approach for Mammograms' image segmentation. Moreover, we added the borders of the final segmented image as a contour to the original image helping physicians to easily detect the breast cancer into different Mammograms. The result is enhanced wise effect onto breast cancer qualitative detection into Mammograms, helping physicians for better diagnosis. Generalization for our study is possible for not only x-ray based Mammograms, but also for all biomedical images, as an enhanced segmentation way for better visualization, detection, and feature extraction, thus better diagnosis. Moreover, this manual thresholding method has the advantage of not only reducing processing time but also the processing storage area.	
		160280103055	Solanki Divyesh B.			
		160280103061	Vankar Mahesh			

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20	Agnikalpa (Flameless Portable Kettle)	160280103067	Subhajit Das	Prof. H. B. Patel	The name of our project is 'Agnikalpa' (Flameless portable kettle) this is a sanskrit word which means 'Bikalpa of Agni' or in English "an option to fire". from ancient time to till today people are conquering different parts of the world and establishing settlements. In present time we see that man has to go to different places either for his work or for his refreshments like travelling, trekking etc and for work like guarding our borders which are at different places having different climatic conditions, for example Siachin glacier which is having one of the worlds extreme climatic condition. our project is is mainly focused to provide contribution help to those people who are living in such conditions. it is basically cooking device which makes the use of chemical energy for producing heat it in the form of exothermic chemical reaction. and you too it's lightweight and appropriate design it can be carried along anywhere at any time and the design of three layered wall makes it suitable to be used at any climatic condition weather too hot or too cold.	
		170283103001	Chaturvedi Isheet Kumar R.			
		170283103004	Gohil Parth Rajesh			
21	Motion based Message Conveyor for disabled Person	160280103022	Adil Karnelia	Prof. H. B. Patel	Paralysis people are not capable of full body movement as compared to a normal person and they also can't able to speak. In such a situation, we propose a system that helps paralysis/disabled person display a message by just simple motion of any part of his body. Our proposed system works by reading the tilt direction of the user part. This device needs to be mounted on the user finger of hand or any body part which can make some moment. The user now just need to tilt the device in a particular angle to convey a message. Tilting the device in different directions conveys a different message.	
		160280103033	Ashikali Momin			
		170283103016	Harsh Siddhpura			
22	Wireless Heart Rate Monitor	160280103050	Savan sanghani	Prof. Y. M. Parikh	A wireless heart rate monitor is a personal monitoring device that allows one to measure heart rate from the remote location. It is largely used to gather heart rate data while performing various types of physical exercise. Measuring electrical information is referred as electrocardiography. In this first the electrical potential from the heart is carried out by a electrodes and it is amplify by instrumentation amplifier because the signal from the electrode is too small around 5 micro volt. After that the signal is filtered by second order Butterworth bandpass filter which pass band is 0.5 to 150 HZ. The mains frequency is removed by 50HZ notch filter. Then the signal is convert in to digital form by arduino board and further process like digital filtering and heart rate frequency detection in MATLAB. After that the signal is transmit or receive over distance using RF transmitter receiver module.	
		170823103010	Hinali Patel			
		170283103012	Poonam Patel			
23	Electronic Speaking glove	160280103036	Parth Panchal	Prof. K. B. Bhojania	In our daily life we have to communicate with many people. For the communication most of the task done with speaking and hearing. There are many people who can't speak and hear properly. Physically impaired person can't communicate with normal people using sign language because of the lack of the knowledge. So, here we designed simple embedded system for solving this problem. In this system we use the arduino inbuilt Atmega328p microcontroller chip which is interface with flex sensor. Flex sensor work on the change of resistance and used as a input device. Movement of the finger and the banding of the flex sensor makes the input in arduino and LCD gives the output in text. Bluetooth module(HC- 05) is used to convert the text in to the voice. Arduino programming software is used for the coding. This System will help the impaired people by provide a medium to communicate with others	
		160280103029	Bhagirath Makwana			
		160280103004	Vipul Baldaniya			
24	Skin Lesion using Image Processing	160280103017	Nikunj Gohel	Prof. P. L. Gohel	This project explains the method for detection of melanoma using image processing tools. The Efficient tools supporting quantitative medical diagnosis are computer analysis and image processing. So the feature extraction phase is enormously dependent on the detected region which has the disease. So suitable segmentation algorithm is required which can effectively detect the skin melanoma pixels in the information image. In this work, we have discussed various techniques which are used in the segmentation procedure. The input to the system is the Dermoscopic Image and then by applying novel image processing techniques. The pre-processing approaches employed in detecting various stages include collection of Dermoscopic Images. We can use deep learning tools for get effective output and as possible as to get maximum accuracy of our project software. Whole coding done in python language.	
		160280103016	Dhaivat Gohel			
		160280103003	Sanjay Baldaniya			
25	Anti swelling Orthopedic Cast	160280103042	Patel Rutu	Prof. U. V. Pancholi	3D printing is a manufacturing technique by which the material is added layer by layer to create a physical three-dimensional object. This manufacturing technique had primarily found uses in academic and commercial sectors for prototyping and product realization purposes. However, more recently the home consumer market has seen a surge in low cost printers bringing this capability to the masses. More recently 3D printing has seen considerable interest from the clinical sector, where alongside the synergistic use with medical imaging data, a whole generation of patient specific implantable technologies, splints/casts and resection guides can be created. Predominantly, clinical applications have focused on the use of 3D printing for bone replacement, however with the advent of more sophisticated multi-material printers, interest has now begun to move to applications in orthotics and orthopedic casting. This study is to review and evaluate the feasibility of designing and realizing a more patient specific orthopedic cast to surpass current limitation with traditional fiberglass/plaster casts, through the use of advanced 3D modelling and printing techniques. To directly compare the efficacy of the traditional and 3D printed casts, we shall investigate critical parameters such as the time for manufacture, the overall weight of the final product, the accuracy off the cast relative to the patient's unique anatomy and additional user-centric metrics (comfort, aesthetics, etc.). The design examined made use of advanced mesh structures throughout the bulk of the cast, such that the device would require less material (by weight) during fabrication, could allow for tunable weight and mechanical properties and allow for air penetration to the person skin, thereby reducing discomfort due to prolonged moisture exposure (chaffing, bad smells, etc.). As the primary focus of this study is the design and product realization phases and we shall not assess metrics relating to patient recover time or experience. Overall, it was found that the 3D printed cast was significantly lighter, with improved water repellent and air circulation properties, as compared to a traditional cast. Through the use of high precision design/manufacturing techniques, the final device could be accurately reproduced to match the test patient's unique anatomy, thereby optimizing the orientation of the patient's bones during post fracture recovery. It was however found that the manufacturing time for the 3D printed cast was slower than traditional casting methods owing to the additional time during the design phase. In future work we aim to address this limitation and to devise a streamlined methodology such that a generic cast design can be adapted to patient specific anatomical data through parametric design algorithms. Ultimately, it was found that through the use of advanced design techniques, patient specific data and 3D printing, a custom orthopedic cast could be realized and with significant potential to augment current use of this technology for surgical intervention and improve patient outcomes. The use of advanced manufacturing in the medical field will likely enable more patient specific/user-centric treatment in the near future.	
		160280103011	Desai Viral			
		160280103065	Abhirup Chakraborty			
26	SIGN LANGUAGE TO WORD PREDICT	160280103066	Pankaj Tajuria	Prof. B. H. Mehta	It is a deeplearning algorithm in which we can convert sign language into word for those peoples who are deaf or unable to communicate with world. The only way the speech and hearing impaired (i.e dumb and deaf) people can communicate is by sign language. The main problem of this way of communication is normal people who cannot understand sign language can't communicate with these people or vice versa. Our project aims to bridge the gap between the speech and hearing impaired people and the normal people. The basic idea of this project is to make a system using which dumb people can significantly communicate with all other people using their normal gestures. The system does not require the background to be perfectly black. It works on any background. The project uses image processing system to identify, especially English alphabetic sign language used by the deaf people to communicate and converts them into text so that normal people can understand.	