

Maulik Mangukiya

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EXPERIENCE

BAPS Pramukh Swami Hospital, Surat Responsibilities as Biomedical Engineer

June-18 -Current

- Preventive maintenance and QA of all medical Instruments.
- Prepare documents as per NABH and JCI Standards.
- Maintain records of Inventory, AMC, and CAMC.
- Improve quality of the department by measuring quality indicator.
- Maintain Oxygen Supply and Vacuum Plant.
- Improve patient safety by taking rounds with RSO and safety officers.

Turtle Shell Technologies, Bangalore Responsibilities as Hardware Designer

May'16-April'18

- Designing signal conditioning circuit for Ballistocardiography, Breathing Rate, Snoring Detection using Piezo Sensor.
- Designing of Piezo sensor Sheet.
- Filter Design for Removing A.C Noise.
- Testing and Validation of PCB Board.
- R&D in Medical Devices and Human Sleep Cycle.
- Circuit Design Using EAGLE Software.

As Turtle shell is more researching about Human sleep cycle and how vitals are being affected during sleep. I was also working in analyzing REM, NREM, Deep sleep and significance of Heart Rate, Breathing Rate during sleep cycle. Also acquiring signal from various sensors like Piezo, Cap sense, LDR and process with relevant signal conditioning like Instrumentation amplifier, Operational Amplifier circuit that depends on design of Piezo sensor alignment whether it's connected in parallel or series. While designing of signal conditioning circuit major constraint or demanding task was capacitance effect of Piezo Sensor and tuning of gain. Therefore have established relationship between capacitance and gain of Op-amp as it is also affects the stability of system. After signal acquisition signal is being evaluated in Python Software. In Testing and validation design standards and make hypothesis to predict possible error and meticulously test integral circuit blocks of each circuitry.

EDUCATION

Master of Technology in Biomedical Engineering

May '15

SRM University, Chennai, Tamilnadu, India

CGPA: 7.0/10.0

Have studied core subjects like MEMS, Biological control system, Medical Instrumentation, Mathematical Modeling for the concept of Signal and systems.

Bachelor of Engineering - Biomedical Engineering

Jun '13

U.V Patel College of Engineering, Mehsana, Gujarat, India

Score: 66%

Interested in sensors and transducers signal conditioning circuit, Bio-material, Control system and stability, Bio-Mechanics.

ACADEMIC PROJECTS

BIOMEDICAL SLEEP INDUCER | U.V. Patel College of Engineering

7th Semester

We made this project for insomniac patient to give them healthy sleep. As Based on Plausible hypothesis which relates with brain hypothalamus and magnetic field that increasing in magnetic field with certain level will give healthy sleep. Based on this reasoning have design magnetic cap which was generating magnetic field around 80-100 μ T. First block was rectifier which was driver for V-I circuit and output of V-I circuit was driver of relay circuit and micro controller after timing and PWM done by controller have design relay circuit and Magnetic Cap using coil turn.

The objective of this project was to help physically handicapped patient (for hand) by getting EMG signals from triceps muscle and send these signals were in micro volts and has to be amplified by instrumentation amplifier, second stage was and filtering using 2nd order R-C low Pass filter after filtering signal is drive to relay circuit and motor driver block which controls servo motor movement of prosthetic arm.

ANIMTRONICS HAND | SRM University**M.Tech**

Have designed project using very rudimentary concept of wireless technology and Bio-medical Sensor. Have place accelerometer and Flex sensor for movement detection and these data has to be read by micro-controller and assign for a specific of task each output bits of PIC micro controller is transmitted and received by Zig bee module. Which was input for motor driver and relay circuit was attached to the prosthetic arm for the movements like elbow and Move up-down.

COMPUTER & TECHNICALSKILLS

Proficient in software such as MATLAB, LABVIEW, KEIL, MIMICS, PROTEUS, EAGLE.

Basic knowledge of electronic circuitry microprocessor-controller, Arduino, human body physiology and anatomy, instrumentation, control-systems, analog circuits, transducers, signal and systems

Familiar with the concept of Medical Instruments, Digital Electronics, Neuroscience, Analog Devices, Signal and System

HOSPITAL & INDUSTRIAL VISITS

20 days of hospital training at Shree Mahaveer Health & Medical Relief Society, Surat, Gujarat
As Biomedical Engineer spent very crucial time in hospital to aware with medical devices and its operations. During internship have learnt an installation of medical devices, troubleshooting and its applications.

Shaili endoscopy, Baroda, Gujarat

The company is developing products of Gastroenterology, Bronchoscopy and came to know its design and medical standard constraint during manufacturing.

Civil hospital, Ahmadabad, Gujarat

EXTRA CIRRICULAR ACTIVITIES, SEMINAR & ACHIEVEMENTS

Best employee of the month in December -2019 and June-2020.

Attended one day workshop on 'Medical informatics & telemedicine'.

Attended one day conference on 'Plastic in medical field' IMDI.

Poster presentation on 'Sleep Inducer' in IMDI-2013, Ahmadabad.

Project presentation on 'Myoelectric arm' in national level convergence 2013 and secure 2nd price at UV Patel College of Engineering.

Participated in two day Workshop on Lab view training.

Works shop was driven by Nation Instruments and was about developing Biological modeling using Lab View tools and have developed different Bio-Electro systems like cardiovascular by simulating pulse generator as SA node of Heart ,blood pressure and Lung Model could be simulate by lab view tool pump mechanism.

Seminar presentation on 'Chronic Heart Failure' in UV Patel College of Engineering

DECLARATION

Hereby declare that above mentioned information is true as per best of my knowledge .

By,

Maulik D. Mangukiya