

July 2021

# INSIGHT BIOMEDICAL

Vol 2  
Issue 7



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*-by Danyal Talpur*

**GRAB YOUR BOARD  
AND RIDE THE WAVES**

*-by Shehzeen Fatima*



Submit your articles and feedback to  
Newsletter Committee:

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## RESEARCH PUBLICATIONS

### **Changing the Paradigm of Healthcare after COVID-19 - A Narrative Review**

Assistant Professors **Engr. Sidra Abid (Assisatnt Professor)** and **Engr. Hira Zahir (Assistant Professor)** have published another review article in HEC recognized Journal, *Pakistan Journal of Science*.

### **Comparative Analysis of CNN and RNN for Voice Pathology Detection**

**Engr. Sidra Abid (Assistant Professor)** published another HEC Recognized **3.411 Impact Factor** article in *Biomed Research International journal*.

### **Remedial Effect of Selected Seeds Extracts in Ameliorating the Hemoglobin and Associated Indices in Carbon Tetrachloride-Induced Hematotoxic Rats**

**Mr. Syed Muhammad Shabib Zaidi**, Lecturer in the department of Biomedical Engineering, published his research in highest ever (in ZUFESTM) **6.5 Impact Factor** journal *European Journal of Medicinal Chemistry*.

### **Classification Framework for Healthy Hairs and Alopecia Areata: A machine Learning Approach**

**Engr. Sobhan Shakil**, student of MS Biomedical Engineering and Lab Engineer published his first original research article in **2.238 Impact Factor** W category HEC Recognized journal *Computational and Mathematical Methods in Medicine*.



**Prospects of Face Shield with Wireless Monitoring of Temperature And Respiration for Front Line Health Workers & COVID-19 Patients**


Neha Khanzada and Warisha Baig, students of semester 8 final year have published their Final Year Project in HEC recognized journal **Pakistan Journal of Science** under the supervision of **Engr. Sidra Abid (Assisatnt Professor)** and co-supervision of **Engr. Taha Mushtaq (Lab Engineer)**.

**The Design of a Shoe for the Analysis of Ambulation Pattern of Diverse Age-Cohort**

One of the semester projects by our alumni **Sobhan Shakil, Munira Muhammadi, Fatima Ilyas and Umar Hassan** with the supervision of **Engr. Mehwish Faiz (Assistant Professor)** has been accepted in HEC Recognized Journal, *Quaid E Awam university research journal of Engineering, science and Technology*.

**The prevalence of Musculoskeletal pain symptoms during Stop and Go driving.**

A paper of **Dr. Saad Jawaid Khan**, Chairperson DBME has been accepted for publication and oral presentation in **6th Kuala Lumpur international Conference on Biomedical Engineering 2021** in collaboration with **University of Malaya, Malaysia**.



# FEATURED ARTICLE

## FEATURE EXTRACTION AND CLASSIFICATION OF SURFACE EMG SIGNAL OF RIGHT ARM TO MAKE AN ARTIFICIAL HAND AS ASSISTIVE DEVICE FOR UPPER LIMB AMPUTEES

The crucial technique of this era for electromyography (EMG) signal classification is the Artificial Neural Network which is the mimic of human neural network. The human machine interface has been done by this artificial network to integrate artificial hand and the human arm. This study has reduced the complexity of design by selecting the simple open-source design of open bionics “Ada Hand (V1.1)”. The structure of this mechanical design has the string mechanism which makes its assembling easy enough and the material of ninja-flex and Polylactic acid (PLA) used for its 3D printing reduces the manufacturing cost of the artificial hand. The programming of the algorithm has been done by using the neural network classifier for the learning of artificial hand that which movement belongs to which class. The flexor and extensor muscles of right arm have been used to acquire the Surface Electromyography (sEMG) signal with the help of metal electrodes of Gravity Analog EMG Sensor.



Engr. Osama Saeed and Engr. Bilal Fattah, alumni of DBME, registered a company name “Biomic Pakistan” for this artificial hand. He named his hand as Biomic Hand by integrating two words “bio” which means “life” and “mic” comes from “mimic” which means “copy”. He wants to copy the natural hand and make this artificial hand as functional as our natural hand. BIOMIC PAKISTAN has given two hands to a lady and one hand to a man with the help of donations.

### Awards:

- **Won Gold Medal in 35th IEEE Multi-topic Int. Symposium 2020**  
The competition was held in DHA Suffah University and the Gold Medal ceremony was held at Pearl Continental Karachi
- **Won Second Prize Major Adeel Shaheed Memorial Symposium:**  
Robotic & Drone Competition held in Sir Syed University.

### Publication:

The research work of this project has published in **Pakistan Journal of Engineering** volume 2020.

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# BETWEEN THE LINES

## Biomedical Engineering's Advancement Will Transform Human Body

By – Danyal Talpur (Semester-II, BE Biomedical Engineering)

Homo sapiens first evolve 300,000 years ago and the cognitive revolution makes human beings a grasp of the world from a trifling animal. Homo sapiens constantly desire more healthy and longer life and for that reason, Homo sapiens' life expectancy has been doubled in the last 200 years. The evolution in the future will manifest via an intelligent design wherein Homo sapiens will update their organic organs with Artificial Organs and could improve their abilities. Artificial organs have already been created but they're now no longer too superior however scientists are getting to know their advancement.

Every year more than 17 million humans die due to coronary heart-associated sicknesses however the artificial heart will clear up this issue. Artificial Heart has already been created and Craig Lewis turned into the primary individual to receive 70cc TAH (Total Artificial Heart), this heart isn't absolutely useful due to the fact an affected person can live on most effective for five years via this heart. Scientists are working on absolutely useful TAH whose survival time maybe even extra than the natural heart. Artificial Exoskeleton, Arm, leg, and eye have already been created. Artificial Exoskeleton makes humans movement possible. Victoria Modesta is the first cyborg singer with bionic legs. Scientists have already discovered neural-linked bionic arms, exoskeleton, and leg. Nevertheless, in the future, artificial organs may be even more powerful like the organs of superheroes. An artificial eye is another tremendous invention for humanity. Rays had exceeded eight years of his life in the entire darkness and after eight years he receives the artificial eye and finally, he turned into capable of seeing the world. The modern artificial eye forms black and white pictures but scientists are working on a more effective artificial eye. Artificial organs will be a blessing for humanity due to the fact in the future, instead of taking lifetime tablets, human beings get more healthy and effective liver and other organs via robot surgical procedure which will be more efficient and much less painful.

Biomedical nanotechnology and neural engineering are different rising disciplines of Biomedical Engineering. Scientists are operating to create Nano robots whose length may be no extra than 10 nanometres. These Nano-robots will be injected insides the human frame and they may combat viruses and cell damage which will slow down the human aging process. On the alternative hand, scientists also are working to make the human mind power and to upload the human mind on computers and robots, which will make humanity immortal.

It might always be tough to predict the exact future however the development in Biomedical Engineering indicates that human beings in the future may be different from us and they may experience a quality of health with powerful abilities.



Obsession is directly proportional to creativity. Be obsessed with yourselves, be obsessed with your life. Be obsessed with your skin, color, hairs, feet, hands, eyes, your mind, soul, spirit. Adore your flash, kiss your scars, caress your imperfections. Some it comes easy to, others take time. Trust your own journey, happiness is in front of you. eliminate comparison. Your life wasn't designed to be lived wishing it was someone's else. Live every day to its fullest potential.

By – Shehzeen Fatima (Semester VI, BE Biomedical Engineering)