

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR



BIOMEDICAL ENGINEERING

ASSIGNMENT

Solutions to Covid-19 Provided By Biomedical Engineers

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Introduction

During the Covid-19 Pandemic Biomedical Engineers played a huge role in fighting the pandemic, still they were unsung. Biomedical advancements in healthcare have improved the quality of monitoring the health of coronavirus patients. Different devices made by Biomedical engineers were used to treat the patients of Coronavirus.

1 Smart Personal Protective Equipment (PPE)

- **PPE-** PPE Kit is playing a very vital role in the fight against this pandemic. It is contributing to minimizing the spread of the highly contagious COVID-19 virus from one person to another.
- **Parts-** FaceShield, Gloves, Goggles, Headcover, Mask, Footwear, Testing kit
- **Use-** There are possibilities that our surroundings may be infected from the virus, a PPE kit protects our body parts from getting exposed to the contaminated surrounding.

2 Priority Medical Equipment

- **Equipment-** Priority Medical equipment plays a vital role in hospitals, and also the equipment will help in the treatment of different medical conditions including Covid-19.
- **Parts-** Ventilator, ECG, Ultrasound, Oxygen Cylinders, CT Scan, X-Ray scan, Infrared thermometer, Digital thermometer, Pulse oximeter, Antigen, RTPCR test, Patient monitor basic – for non-invasive blood pressure (NIBP) and oxygen saturation (SpO2) etc.
- **Use-** All the medical equipment is designed to offer treatment and safety to the patient.

3 IoT and Sensors

- **IoT-** During the ongoing COVID-19 crisis, IoT has played a pivotal part in properly monitoring patients who are virus-infected through

devices and intertwined network.

- **Devices**-wireless sensor to detect COVID-19 early symptoms,Smart Mobiles, smart watches to measure blood oxygen saturation,fitness trackers to monitor vital parameters.
- **Use**-These can be used to monitor and track own health system and further can be used to control it

4 Telemedicine

- **Telehealth**-During times of Covid when there were restrictions to go outside home,telehealth played a huge role by delivering healthcare services via telecommunications infrastructure.
- **Parts**-Smart phones and Laptops to communicate to doctors,Pulse oximeters,Smart devices like smartwatch to track the vital parameters.
- **Use**-Telemonitoring allows patients to be monitored in their homes using mobile devices that collect data about temperature, blood sugar levels, blood pressure or other vital signs and to take genuine advice from doctors.

5 Analytics, Data Science and Statistics applied in COVID-19

- **DATA**-Data science played a huge role in covid including estimation,monitoring,analysis,,risk assessment and drug development.
- **Tools**-Smart Computers,Apps like AAROGYA SETU,Machine learning,Data analysis Softwares.
- **Use**-The use of health data analytics allows for improvements to patient care, faster and more accurate diagnoses, preventive measures, more personalized treatment and more informed decision-making