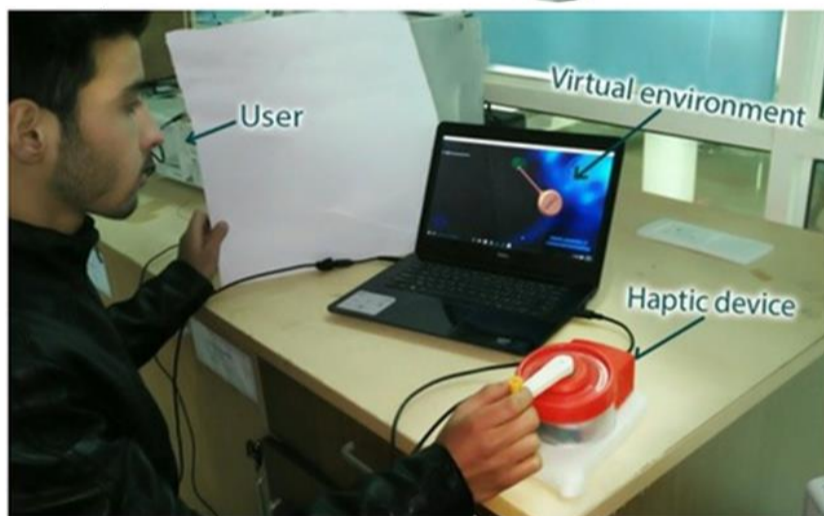
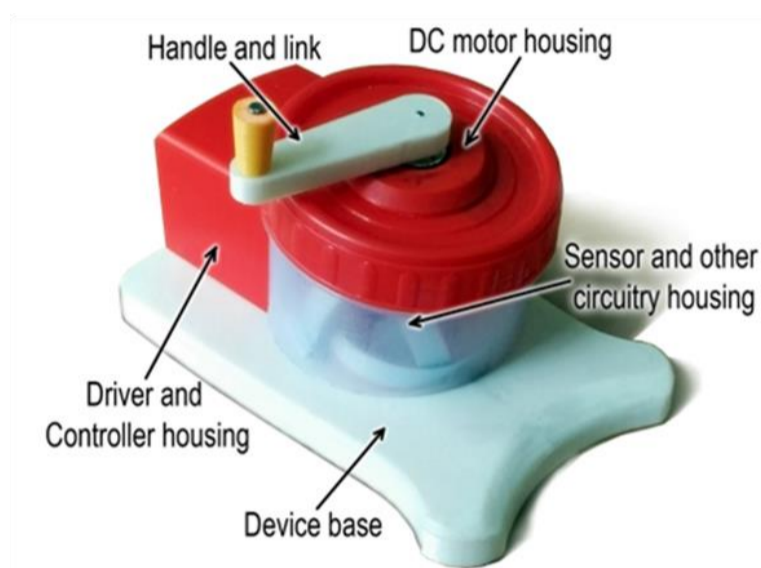


## An indicative list of innovative projects completed at DIC

Since inception more than 60 innovative projects at DIC premises have been funded/facilitated, an indicative list with a brief description is given below:

### 1. IU-HaK - Islamic University Haptic Kit

The user holds the mechanical link of the haptic handle and manipulates as per the virtual environment. Appropriate forces/torques are rendered to the user enabling him to physically feel the objects/forces in the virtual environment. Patent has been filed under application number 201911024652 at India Patent Office. Design registration was also filed for this product and the design has been accepted and published in journal No 41/2019 dated 11/10/2019 at India Patent Office. The design number is 308948.



### 2. SAAHI – Situational Awareness & Alarming system for the Hearing Impaired

SAAHI can be used by the completely deaf to stay cognizant of their environment. The circuitry was kept small enough so as to fit onto the wrist of the user. The band is in its testing phase and further work is being carried out on it. Patent has been filed under application number 201911019834 at India Patent Office. The patent for this product has been published on 14/01/2022.



### 3. Tameer - Low-Cost Energy Saving Kashmiri Hypocaust (Underfloor Heating System)

Focused on making Hamaam affordable and efficient in its working. The results obtained were highly satisfactory. Use of these tiles will result in reducing the construction costs by about 50%. Patent has been filed in 2019 under application number 202011034532 at India Patent Office.



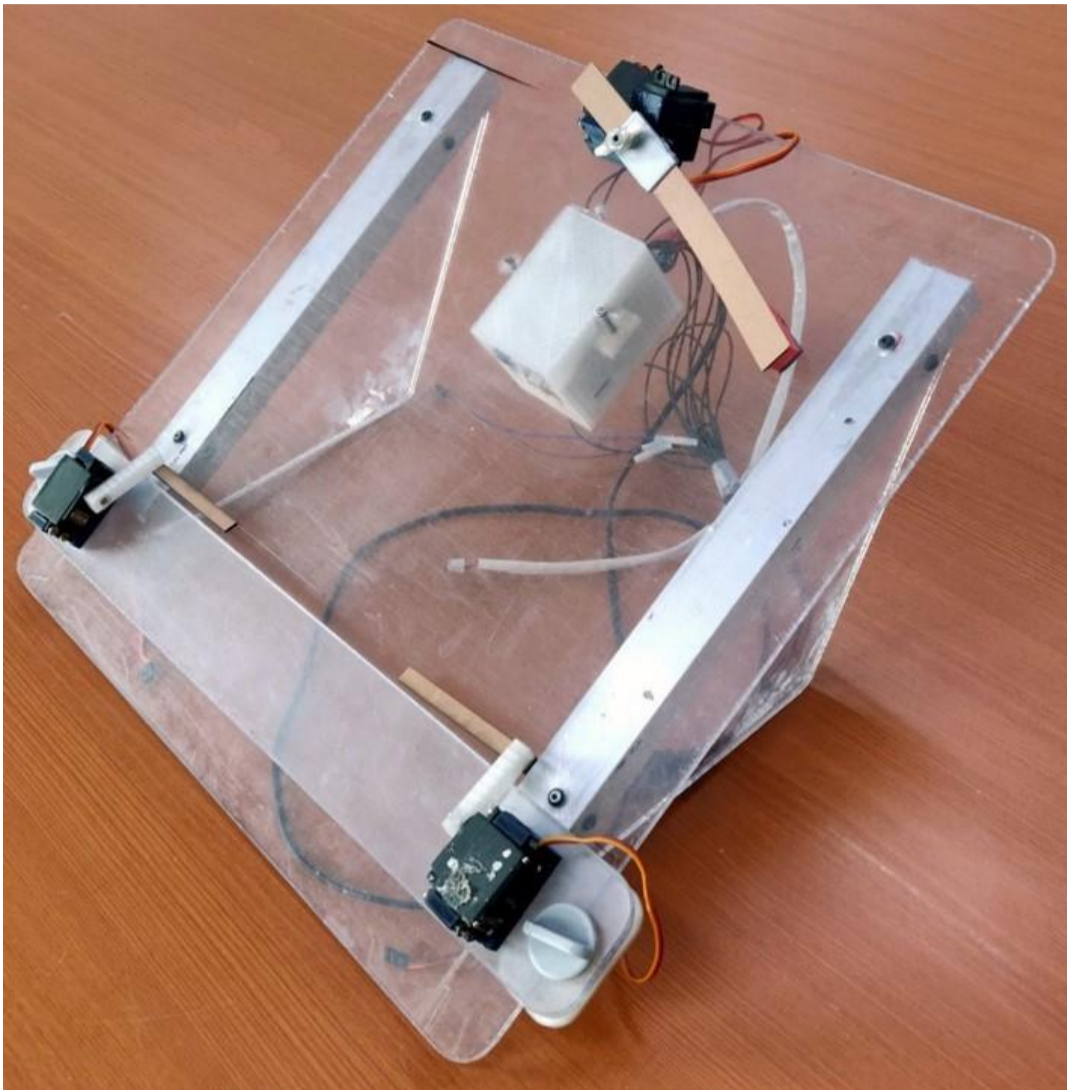
### 4. Hapkid

HAPKID is a device for reclaiming precision or fine motor skills. Normally patients work with occupational therapists to develop the muscle memory required for performing such tasks as writing, grasping, drawing basic geometric shapes, etc. Despite the success of occupational therapy, it is expensive and requires constant presence of the therapist. Children and other sufferers of loss of motor skills feel a dependence on their therapist. As an alternative, robot assisted training like that provided by HAPKID has great potential for rehabilitation and refining of motor skills. Robotic training provided by HAPKID has the advantage of being highly accurate, can be sustained for very long periods of time, can measure progress automatically and can produce a wide range of forces or motion. Patent for HAPKID was filed under application number 201911024652 at India Patent Office and has been published on 03/09/2021.



## 5. Magic Flip - Automatic Page Flipping Mechanism for Neck Down Disabled People

MAGICFLIP is a device to help neck-down-disabled people to turn book pages. Such people can easily read books and turn pages using voice control. Design Registration of this product has been filed under application number 337122-001 at India Patent Office.



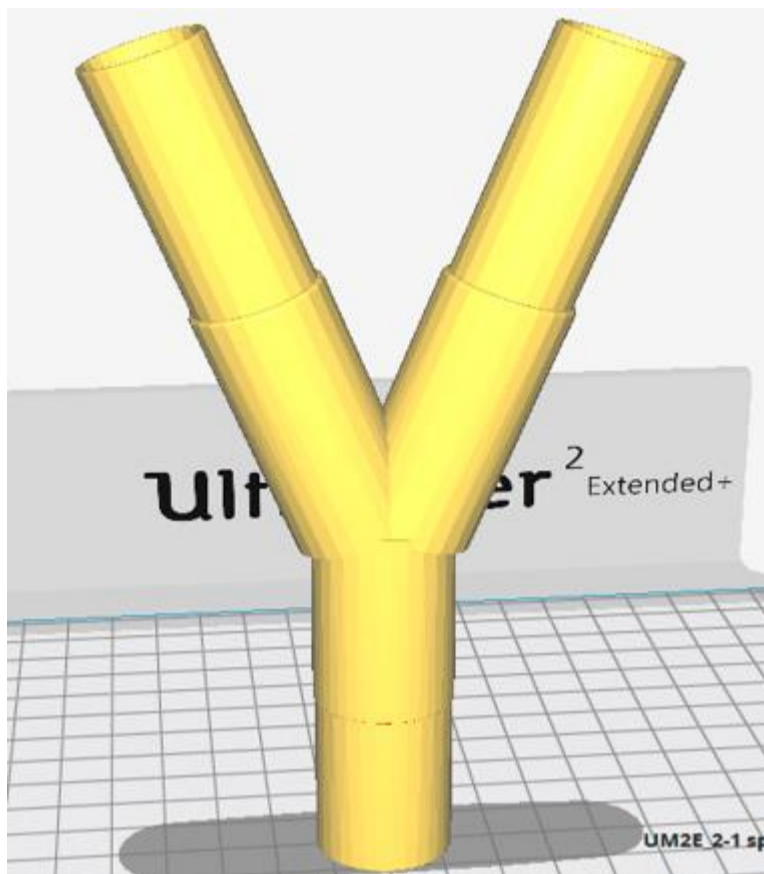
## 6. Face Splash Guard – Face Shield

Low Cost, easy to use Face Splash Guards made from locally available materials for medical and health workers facing the COVID-19 situation were made during the height of the COVID-19 pandemic. Around 1000 such shields were distributed free of cost to hospitals across the valley on the requests of doctors and medical staff. The design was made open source and a video demonstration was made available. Jawaaz Ahmad, Design Fellow, DIC secured 2nd position in Open Innovation Challenge-2020 in Splash Guards/PPE's category during the COVID'19 crisis for this product. Design registration was also filed for this product and the design has been accepted and published in journal No 02/2022 dated 14/01/2022 at India Patent Office. The design number is 3337123-001.



## 7. Ventilator and Oxygen Splitters for the super-speciality hospital SKIMS

Designed at DIC-IUST and tested at a leading super- speciality govt. hospital (SKIMS) in the valley. Splitters are simple 3D printed designs that have one input and multiple outputs to connect one ventilator to multiple patients at the same time. They have been used in many countries to cope with the shortage of ventilators in view of the huge patient influx.



## 8. Ruhdaar 1.0 Frugal Ventilator

RUHDAAR 1.0, a low cost mechanical ventilator was developed in-house at DIC@IUST. The ventilator was primarily developed to assist hospitals in the ongoing pandemic, COVID-19. The developed ventilator provides sufficient control on the necessary parameters, viz. Tidal Volume (TV), Breaths Per Minute (BPM) and Inspiration Expiration (IE) Ratio, required by the medical practitioners. The ventilator has been developed for use in emergency situations (COVID-19) only and is not intended to replace the commercial and medical grade ventilators typically used in the hospitals. Design registration was also filed for this product and the design has been accepted and published in journal No 50/2021 dated 10/12/2021 at India Patent Office. The design number is 337125-001.



## 9. AirVac 400 Negative Pressure Chamber

Amid COVID'19 spread, a fully functional Class N Negative Pressure Chamber (NPC) named AirVac 400 was completely developed in-house at DIC@IUST. A negative pressure chamber, also known as an isolation chamber, is a type of hospital chamber that keeps patients with infectious diseases away from other patients and healthcare workers. It includes ventilation that creates a negative pressure (pressure lower than ambient pressure) to allow air to flow into the isolation chamber but not escape from the chamber. This technique is used to isolate patients with airborne infectious diseases such as tuberculosis, measles, chickenpox, severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS) and COVID. Patent has been filed in 2019 under application number 202111000579 at India Patent Office.



## 10. AirVac 40 + Negative Pressure Chamber

After a rigorous testing of Airvac 400 and discussion with various doctors, following modifications were implemented in AirVac 40+: The size of the chamber was reduced. Higher ACH value and Negative Pressure values were achieved. Better Air Filtration design implemented. Design registration was also filed for this product and the design has been accepted and published in journal No 29/2021 dated 16/07/2021 at India Patent Office. The design number is 335076-001.

