



7<sup>TH</sup> INTER IIT TECH MEET 2018  
IIT BOMBAY



# BETiC Medical Innovation Challenge

7th Inter IIT Tech Meet, IIT Bombay

## Preamble

An engineer is one who solves the problem by trying various approaches and confronting the problem with a fresh and brand new perspective. Engineers can take an idea from imagination and transform it to become a reality. A reality that can impact the lives of many. In this era where we are surrounded with the large number of healthcare issues, applying the engineering knowledge and skills into the medical science can help bring changes in the lives of many patients. So, this is the right time for engineers to come forward and showcase their talents of problem-solving, creativity, and determination.

## Problem Statements

Team has to select one of the following problems and propose working prototype for that particular problem:

### **Problem Statement 1: A non invasive device for rapid screening of diabetic patient.**

The test for diabetes is cumbersome and invasive because of the needles, the cost of the needle replacement is also involved. Blood glucose Monitoring becomes a skilled activity for elderly patients and not all can find it easy to manually puncture the finger using lancet in single attempt. The lives of millions of diabetic patients around the world would be improved if they will be able to measure the blood glucose levels without pricking their finger. Pain free measurement will encourage the patients to check their sugar levels regularly, leading to better management of diabetes.

The teams are supposed to build a device that can measure the glucose concentration non-invasively. The device should be user friendly, portable and provide accurate results.



### **Problem Statement 2: Ergonomic Crutches**

Disabled patients are highly dependent on crutches or other similar aids for stability and mobility. During their use, traditional crutches are incapable to evenly disperse the load on the body, resulting in huge strain being placed on the shoulder, neck and back. Their continuous long term use can sometimes lead to a condition known as crutch paralysis, or crutch palsy, which arises from the pressure put on nerves in the armpit, or axilla. Also, there is difficulty in carrying crutches for disabled patients. Current crutches are heavy and bulky to carry.

The teams are supposed to build a simple, light weight, easy to use, patient friendly device that can bear patient's load and assist walking/activities.

### **Problem Statement 3: Parkinson Tremor Management**

Parkinson's disease (PD) is a common neurodegenerative disease, characterized by symptoms that make daily life of a patient challenging. As the disease progresses, the motor symptoms such as tremor or shaking, stiffness, slow movements, and unsteady balance can make it difficult to accomplish everyday tasks.

The teams are supposed to design a device which can help patient afflicted with Parkinson's disease to do routine activities such as grasping and writing (signature). Though, the teams are encouraged to come up with the solution that can help these patients perform majority of daily life task, but the teams are allowed to choose a particular task, say grasping or writing or any other routine task, and develop a device for that specific task.

## **Judging Criteria**

- Final decision will be taken after mid-term and final evaluation
- For mid-term evaluation, teams are required to send the pdf containing the following information about their proposed solution:
  - Previous literature or work already done
  - Methodology of work
  - Components/ Elements of the system
  - Work done towards the aim till dateMid-term report shall contain a maximum of 3 pages
- For final evaluation, teams will need to do a presentation explaining their proposed solution in detail and present the demo of the working of their solution
  - Each team will get 10 minutes (max) to present, followed by 5-10 minutes of Q&A



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- The criteria of final judgement:
  - o NEED: Relevance or clinical need of the solution developed
  - o NOVELTY: How innovative is the proposed concept / idea
  - o EFFORT: Quality of the proof-of-concept and its presentation
  - o VALUE: Commercial potential (worth developing further)
- The mid-term review will contribute 20% of overall points and rest will be contributed by final evaluation. The event is categorised as **High Prep** and shall yield a maximum of **400 points** towards overall tally
- Minimum Qualifying score : 150 points out of 400 ( after scaling up)
- Timeline :
  - o Submission of Mid-term report : 1st November 2018
  - o Feedback on Mid-term report : 20th November 2018
  - o Final presentation : 20th December 2018

## Rules and Regulations

- A maximum of 10 participants shall be awarded participation/merit certificate. A maximum of 4 student from team will be allowed to present during tech meet. An Interdisciplinary team of people from different backgrounds is preferred
- Team has to select one of the mentioned problems
- The team is required to submit their mid-term review through the respective Contingent Leader/General Secretary Technical Affairs or Equivalent to [interiit.tech@iitb.ac.in](mailto:interiit.tech@iitb.ac.in) with the subject 'BETiC\_IITX\_Midterm\_2018', by **1st November 2018**. Eg. IIT B will send with subject : 'BETiC\_IITB\_Midterm\_2018'. Submissions after 1st November 23:59 PM will entail zero points
- The decision of the judges shall be final