IIIT-A
INFO COMMUNICATION
INCUBATION CENTRE
IIIT ALLAHABAD
DEVGHAT, JHALWA, ALLAHABAD - 211015

# BHACKS'20 Domains

## Track-2 : Startups for NewGen IEDC:

### A. Smart Education:

1. **Employability** - Higher education institutions do not ensure job opportunities or a job for their prospective graduate students, which lead to a greater amount of the working population unemployed. What can be done to overcome this? Hint: design a data-driven measurable system for the career development department of the institution.
2. **Implementing New Education Policy (NEP) 2020** - Creatively design a digital education system which implements the policies of NEP 2020 and deploy it on a mobile app or web app also with some of your additional features. Uninteresting methods of teaching in public institutions cause young students to be easily bored which leads to a decrease in participation of children in schools, especially boys (46% boys and 53% girls of the population eager to study) What is the solution, in your opinion, of uninteresting teaching methods in public schools?
3. **Improved Grammarly for everyone** - Build an app that will take a prose in your language and help with suggestions going beyond spell & grammar checking. The service needs to be made public and consumable by other apps as well. This definitely requires least but not limited to natural language processing, lexical word databases in that language, and native expertise in that language. Here's an example that covers the scope in a limited way: ref. Hint: This problem is for you if you like word-crunching string algorithms.

4. **Smart Tutor -** Smart tutors are becoming more popular. These are apps designed to help students in many problem areas. These include language, specific subjects such as math, and can even help better engage a student in school. Smart tutor apps are also designed for students of all ages.

Pre-K level smart tutor apps can help users learn new words and other core learning skills. These apps are designed to make learning fun for younger students, offering activities and puzzles.

For older students, tutor apps focus on improving specific skills, offering activities and quizzes to improve their understanding of different subjects.

As tech professionals, you can help create smart tutor apps, troubleshoot any issues, and collaborate on inventive ways to improve learning skills.

5. **Education Games and Quizzes** - Another fantastic thought is to construct instruction applications with various games and tests, which permits understudies of any age to play training related games and tests.

   Application tests and games can be on different subjects, for example, arithmetic, science, PC, English language structure questions, and so forth. This permits understudies to learn just to test their insight about the subject.

   Likewise, understudies ought to have the option to mess around and tests by separating various choices like age, classification, trouble, and so forth

6. **Career Pathways** - Due to a lack of proper guidance and mentoring, most of the students fail to choose the right subjects to finally build a career they want. By developing a career guidance app, you can help them select the right path. To make the app stand apart, you can have an expert advice section where students can consult to career experts or an option that will provide students to get guidance on the additional courses that can help them to build their dream career. Also it must have features like the best resources (free/paid) available on the internet for a path. Also List of upcoming competitions, and opportunities perfectly organized so that it helps a candidate to focus on studying and finding all the best resources in one place.

7. **Course and university finder** - Develop a robust mobile/web app that allows students to search for all the necessary information pertaining to the universities they desire, the courses they wish to learn, the admission processes, teacher profiles, alumni information, career paths, have partnered with the universities, and more. The app should have user-friendly filters to search for universities and courses based on a student's needs and requirements. Students should be able to chat with representatives of universities directly from the app and should be able to submit applications and save bookmarks of their favourite universities and courses.

8. **AI Based Student Evaluation** - Students in the university come from different environments. Every student has some strengths and weaknesses. Can you help the student in his overall development? Recommend or suggest him methods/ways to improve or work on his weaknesses. The input to the system can be students personal information, background that he comes from, things in which he is good at etc. The recommendations should be in terms of improvements required in communication skills, writing skills, technical skills, way of presentation etc. The solution should also generate an individual progress report.

9. **All in one University App** - All in one app where we can have complete smart services for university related to cleanliness, lost & found, canteen orders, event notifications, etc. You think standing in the queue for ordering food and then waiting for the food to get ready is wasting time? Yeah! Me too. How if we could just order the food after (after the lectures/before reaching the canteen) itself and the food gets ready before you get there. So, you've found an earphone and not sure where you're supposed to report it? Have an issue? Report it via app. Found dirt in your classroom and don't know the appropriate authority to report? Could we just directly report this in the app and the appropriate authority will take care of the situation.



10. **Prediction of Admission & Jobs in Engineering & Technology with respect to demographic locations** - Application Software to estimate/forecast employment potential of Graduates/Post Graduates in different branches/courses (for short term and long term basis) by correlating data from various sources.

11. **Deep learning model to check student's attention in class** - The problem is to identify whether a student is engaged in class or not. The effectiveness of an active learner should be determined on the basis of a combination of few activities like his movement, making notes, asking questions etc.

12. **Personalized Learning Toolkit** - Your primary job is to create a personalized learning toolkit (resources) for learning any skill (in coding related technical fields). This will comprise ordered, personalized and latest resources, example courses from online learning platforms like Udemy, Coursera etc, YouTube, and even textual content available on open source books, communities and blogs. Your primary job is to create possible personalized learning pathways for an individual for learning appropriate skills and becoming job ready (in coding related technical fields). This should be based on suggesting what jobs one should target and what skills they should learn next. Also, to create a network of individuals/mentors who can guide the users as and when required. The main challenge here is to optimize the personalized experience of users, which means accurate recommendations for a mentor to a mentee. The users should be able to solve their general doubts (not academic) by connecting to the mentors in a network. The focus is on technical careers.

About data available: 1. Students profile/CV (containing education, experience, skills, certificates etc.); 2. Students activity on platform (career interests, courses purchased, jobs they are applying for etc.); 3. Student scores in Skill Tests that they are learning/learned; 4. External profiles of student, such as GitHub profile, hacker rank profile, codechef profile etc.; What you have to do? A. Come up with different resources already present in the market (online like textual, audio, video, workshops, events, courses, training etc.) You can provide to users in the career community; C. Select the methodology to personalize the recommendations to be given to the user for best learning resources for them, given you know the sub-topics where a user lacks D. Search for the relevant data sources, where you would be able to acquire enough data to

train the models for recommendations. Depending on the feasibility, cost, accessibility of acquiring that data, come up with the best data sources. (For example, scraping Linkedin Data for Jobs might not be easy and might cost more than compared to scraping job boards if we need job related data). E. Design a solution for providing these features to our users, for: a. Back End: for providing these features to our users using APIs, 60% weightage; b. Front End:using best visuals/designs so that users can understand/use features easily, 40% weightage

## B. FinTech:

1. **Cash flow management -** The idea is to help people view and study their overall spend analysis by developing a mobile app to analyse all the purchases made by scanning a receipt. Use optical character recognition (OCR) to simply click an image of a receipt and track payments. Using AI and machine learning, the app should be able to group items category-wise, for example, food, clothes, fuel, etc. The app should prompt users when they overspend or make repeat purchases.

## C.Social Good:

1. **Generation gap in technology usage**

   The older generation is not as easily adapted to technology as the younger generation, which leads to communication gaps between the two generations, as well as presenting itself as a social barrier. How can you make the older generation more engaged in the world of technology? Build a solution that provides most efficient methods to bridge the gap between the generations and make them familiar with the latest trends and technologies, so they can use them efficiently.

## D. Governance:

1. **1. Crowd-sourced election monitoring system** - Build an app that can support any types of elections in your neighbourhood during the election day. Allow

citizens to report any incidents, upload photos/videos, set severity and actionable attributes along with the GPS data which will allow you to prepare a report on the election afterwards. If you can present it as a valuable tool for transparency, you may get a good amount of exposure, however, the challenge lies in the sustainable part of it. How are you going to monetize such a tool?

2. **Propose a better digital traffic system** -Today's streets being completely devoid of traffic signals and traffic monitoring tools leads to an increase in traffic which thereby contribute to further air pollution. How would you use technology to resolve this alarming issue of unruly traffic in cities? How would you make the drivers respect your proposed system?

   Public transport lacks systematic routine and monitoring which results in an inconvenience to the locals as well as contributes to road dangers. What is your solution to solving this? Hint: IoT, online transportation tracking, SMS push-pull, solutions for citizens and the authority.

3. **Crime Alert / Monitoring System** : In times of danger or trouble, there is nowhere to seek help from, like the police or any force of authority that might help in the situation, how can these authorities be approached more swiftly and easily. Build an interface which monitors/helps to connect/inform to the nearest safety point. Hint : Open to your creativity.

## E. HealthCare:

1. **Virtual health assistant** - Develop a device that can help people living with chronic medical conditions to regularly monitor their health parameters and vitals in order to live a healthy life. The device should monitor health conditions like diabetes and should alert family members and relatives if the patient's health deteriorates. The device should also send timely reminders to the patient to take medication.

2. **Healthcare and Telemedicine -** Healthcare is undoubtedly one of the most significant sectors during the pandemic. Nevertheless, it is vital to deliver healthcare with modified procedures to prevent individuals from getting affected by the virus in clinics and hospitals.

   Telemedicine, as well as on-demand healthcare apps, will be the solutions for those patients who are not able to gain access to healthcare facilities right now. It will be possible for individuals suffering from mild illnesses to come in touch with the physicians on the phone by making use of telemedicine apps. This will particularly help in psychiatry as well as psychology treatments while it is not imperative for the physicians to physically examine the patients. Apart from this, telemedicine apps will also help to minimize repetitive medication refill prescription visits. In case any patient likes to talk to a physician for an issue that is not possible to be fixed on the email or phone, on-demand apps will enable him to choose the doctor depending on the reviews, and he should be able to book an appointment without any problem whatsoever.

## F. Miscellaneous:

1. **Tourist guide Mobile App** (Category : Travel & Tourism)
   - Creating an App for online tourist guide that will have the facility of customized tourist package selection, one stop solution for transport facilities - road, air, ferry, shipping services. It will also have information about upcoming local tourist attractions and unexplored facts about the islands.

2. **E- marketplace for tribals** (Category : E-Commerce)
   E –Marketplace (Like Amazon, Flipkart) wherein tribals can promote, market and sell tribal produce such as handicrafts, arts, paintings, minor forest products etc. online with provision of delivery and e-payment and promotional discounts and bidding.

3. **One-Stop Shop** (Category : E-Commerce) - Build an e- commerce mobile app that shows you the rate of the particular product of Amazon, Flipkart, eBay, etc. and compares their rates and provides you the better deal.

4. **Woman Safety Cabs** (Category : Safety)

Build a mobile app that serves taxi booking facility in which only ladies drivers can register themselves using Aadhaar card or national identity to prove that they are lady similarly for customer registration now the booking of taxi and prices according to the area that would be provided to the customer.

5. **E-Book Decentralized App** - This application shall aim to let simple users search for e-books, download various e-books (PDF, Epub), rate these e-books, and put reviews about those e-books. Whereas also let these users upload e-book PDFs or epubs that aren't available and the admin will either approve or reject whether the book needs to be uploaded or not. This is a similar App version of a large repo like **libgen**.

6. **Virtual Interior Design** - Use the power of AR/VR to select the furniture needed for your home or office and also alter the colour of walls and apply various variations based on the suggestions provided.

7. **Vehicle maintenance** - Build a mobile app that allows the owner of the vehicle to fill in timely information about the services done. Based on the input received, the app should detect what other parameters need service, when the next service is due, what parts need replacement, and so on. Furthermore, the app can also use augmented reality (AR) to help owners understand the functionality of their vehicle by simply hovering their phone camera over the different various buttons of the interior or the parts in the engine bay.

8. **Covid19 Data Analysis**
    - Bing Coronavirus
        - Classify Bing Queries as either specific (e.g. about a specific location) or generic. You might have to figure out a more exact definition of specific or generic though
        - Dataset: BingCoronavirusQuerySet
    - Covid Clinical Data
        - Rank and sort high risk patients using clinical data. Pick an interpretable approach if you can.
        - Dataset: CovidClinicalData

If you haven't already, check out Kaggle's Covid19 Section as well. It has datasets and ideas both.

You can develop a Real time Face Mask detection system, use live stream of CCTV of malls, streets etc, create an end-to-end solution for this problem.

9. **Smart Parking system for campus-** An infotainment system that tells the faculty/students/ employees of IIIT Allahabad where to find a vehicle parking space at every building parking area. A gamified display system showing faculty/ students/ employees which slots are vacant for each building's parking slots.

10. **Airbnb for Cars App -** There's always been a solution for short-distance travelling in the form of Uber, Lyft, Didi, and Grab. But people often found trouble when it came to long-distance travelling. People need to rely on traditional car rental companies but it isn't easy. There were lots of challenges with traditional car rental agencies like confusing pricing and add-ons, no confirmation of the specific car to be delivered, and limited pick-up locations. Design an app that solves all these issues and provides a peer-to-peer car-sharing service.

IIIT-A
INFO COMMUNICATION
INCUBATION CENTRE

IIIT ALLAHABAD
DEVGHAT, JHALWA, ALLAHABAD - 211015

# Track - 2 Guidelines

1. **This track will be carried out in 3 stages:**

- *1st Stage - Product Development Stage (8-10 Dec 2020)*

  Evaluation Metrics -

  1. The product/service/idea
  2. The technology behind the product/service
  3. Possible innovation at a later stage
  4. Scalability
  5. The market (the size of the market and its growth potential)
  6. Pitch (Presentation)

  **Mentors will be assigned to each qualifying team advancing to the 2nd stage.**

- *2nd Stage - Customer Discovery and Product Testing (10-24 Dec 2020)*

  In this stage, mentorship assistance will provide startups will have to find their potential customers and connect to the larger consumer base.

  Evaluation Metrics -

  1. No. of Customer Reached
  2. Suggested Customer Feedbacks and Improvements

- *3rd Stage - Downloads, Reviews, and Feedbacks (24 Dec 2020 - 8 Jan 2021)*

  Evaluation Metrics -

1. No. of downloads / current users of service
2. Improvements made on Stage-2 feedbacks.

**2. Teams Qualifying 3rd stage will be eligible to register their projects under NewGen IEDC.**