### Template Based approach for Augmenting Image Descriptions

**About:** In this project, we are working on a template based approach for augmenting textual description / caption provided in the textbook for experimental setup diagram, which is ono of the profound category of diagrams found in STEM textbooks. This approach requires image processing to detect objects and their positionings, which can help in understanding the interaction among the objects. Further, Natural language processing techniques will be used to generate the precise description of the diagram.  
**Students:** Akshansh Chahal **(BTP 2017)**

### Description of Geometrical Diagrams

**About:** In this project, we are working on generating textual description for the geometry diagrams, which is one of the most commonly found diagram in mathematics textbooks. The objective involves to come up with a precise description which can lead to exact replication of the diagram. Further analysis will be done to make the description contextual dependent and least verbose. Image processing techniques are used for finding primitive shapes along with its properties and associated labels. Then the natural language processing techniques will be explored to generate the desired textual description.  
**Students:** Jyoti, Sruti Goyal, Tuhina Verma (MiniP 2018)

### PDF to ePub converter

**About:** Project focuses on analysis and recognition of the PDF documents containing textual content like paragraphs, list items, various heading levels, header, and footer, and non-textual content like tables, mathematics, and diagrams, which are most common scenario in STEM ebooks. Further, this analysis will be used to generate corresponding fully-accessible ePub files.  
**Students:** Chrystle Myrna Lobo (MiniP 2018), Mickle Gill (BTP 2018), Abhilash Ramteke (COP315 2018)

### Unicode converter

**About:** Project focuses on conversion of Non-Unicode content to Unicode for Devanagari Script files using Javascript in InDesign. This includes extracting non-Unicode text portions from the file followed by their conversion to Unicode using existing/improved font-converters. Working directly on InDesign files, instead of converting their ePub exports, reduces publisher effort and also allows generation of EPUB books from the same source as the print books.   
**Students:** Sankalan Pal Chowdhury, Prakhar Agrawal, Sukriti Gupta **(COP315 2018)**

Aditya Jain, Akshay Patel, Mani Karan Soni (NDN, 2017)

Rakshak Satsangi, Abhishek Kumar Barnwal (BTP, 2017)

### Adapting tesseract for mathematical content

**About:** Project focuses on adaptation of tesseract (Open source OCR from Google Inc) for recognizing the mathematical equations. This projects assumes that the input image contains only mathematical equation, any other type of textual or non-textual content is not available.

**Students:** Saurabh Sharma (MTP, 2017)

### Enhancing Audio Tactile Support with Gestures and Cloud Sourcing

**About:**Projects is for enhancing audio tactile support with gestures and cloud sourcing, which helped to build an application enabling visually impaired users to understand a tactile diagram as they move their fingers on it. The application reads out the information corresponding to the pointed region by detecting the finger position and after getting the information from the web (e.g. wikipedia). The app also provide gesture support for navigation through the information like skip over some section or rewind the content, etc.

**Students:** Chandan Yadav, Sumit Kumar (BTP, 2017)

### Table navigation on Android

**About:** Project helped to enhance tables (Standard and Non-Standard) accessibility with screen reader like Google TalkBack on Android platform. It focused on table navigation in electronic documents for improving navigation (moving up, down, left and right) using touch based gestures, which would greatly ease the navigation for the visually impaired.

**Students:** Nikhil Pratap, Nanavath Bharath (BTP, 2017)

### ePub to PEF converter

**About:** This project is focused on development of a converter which can convert an ePub file into PEF (Portable Embosser Format), which can be directly passed to any braille embosser.

**Students:** Prem Ranjan, Anoop Kumar (BTP, 2017)