

Virtual Training on 3D printing and PCB design

Two-day Virtual Training on 3D Printing and PCB Design under CoE in Robotics and Industrial Automation

The Department of Electronics and Communication Engineering organized a two-day Virtual training on **3D Printing and PCB Design**. In this online training, students trained on **3D CAD modelling using 3D printer, CAD design for electronic circuits, and training on PCB prototype machine**. This training was conducted by **Mr. Bhanuteja G (AP/ECE)**, on 12th and 13th November 2020, using Microsoft teams Live-event platform. 170 students from various disciplines registered and participated in this training. The training began with an explanation about the importance of CAD modelling, and the difference between model, prototype, and products.

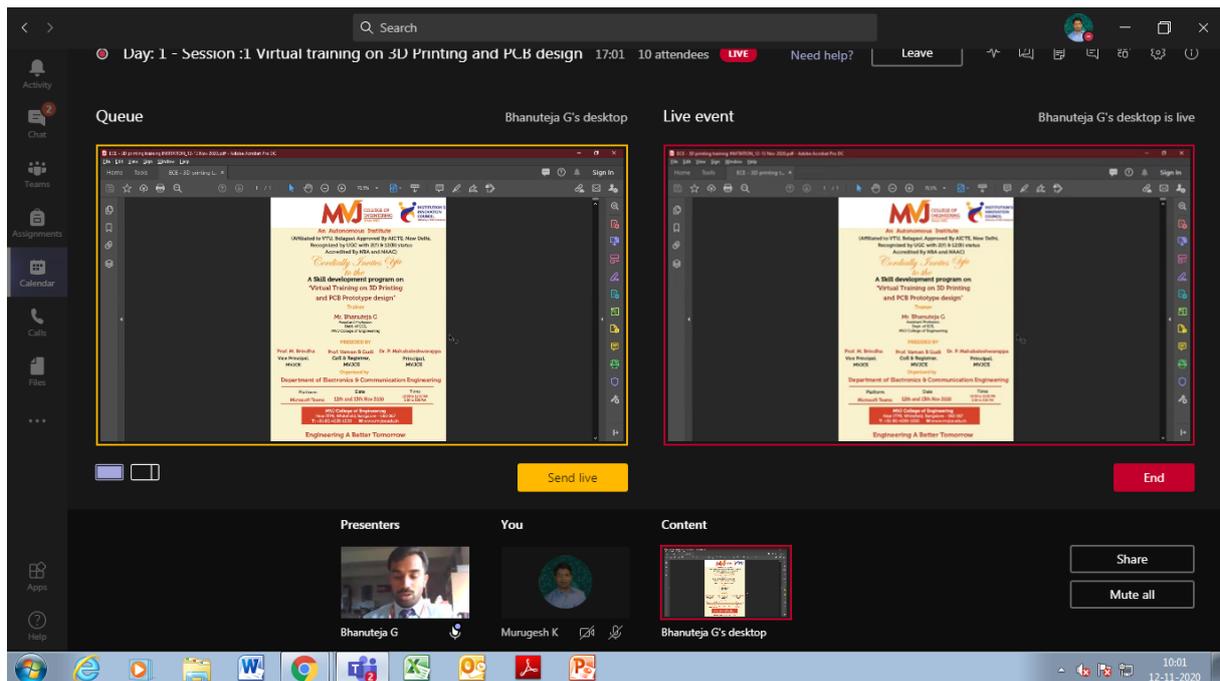


Image 1: Live image of virtual training conducted on 12th, 13th November, 2020

The training was divided into two sessions - in the first session, Mr. Bhanuteja G explained to the trainees the difference between subtractive manufacturing and additive manufacturing, the types of 3D printing, 3D printing materials and applications of 3D models.

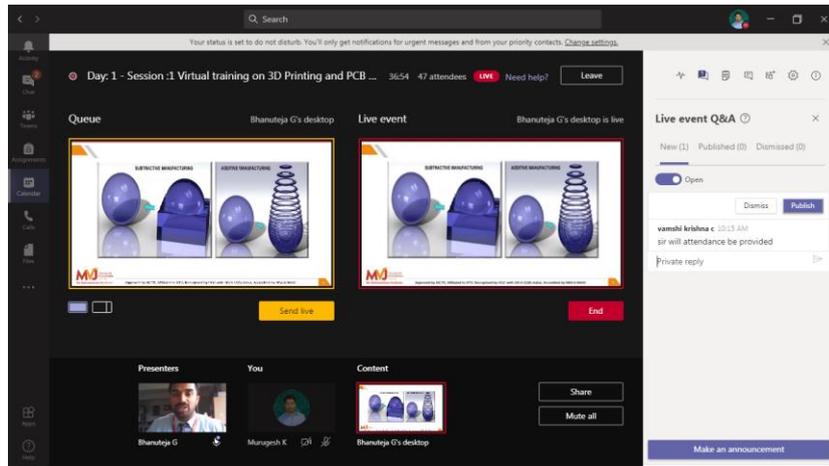


Image 2: Bhanuteja G (AP, ECE) explaining about difference between Additive and Subtractive Manufacturing

Then, he introduced the students to the TINKERCAD online platform, to design 3D model and generate .stl files. The students understood how a 3D model is designed and the significance of converting .stl to .gcode format.

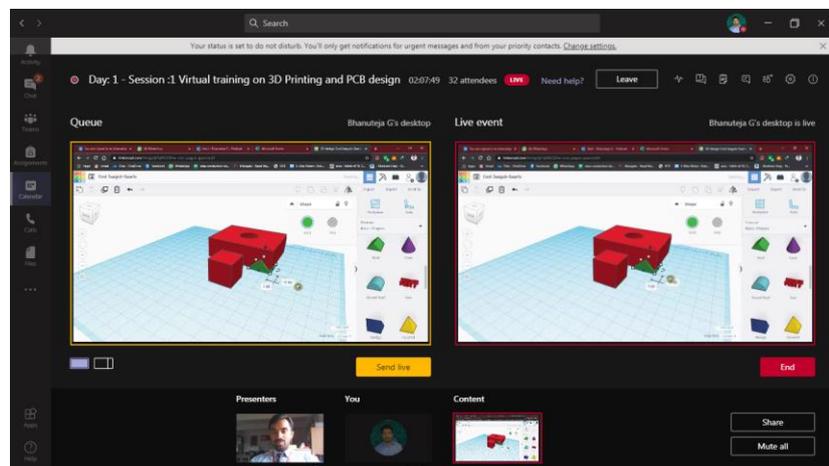


Image 3: Bhanuteja G (AP, ECE) showing how to utilize TinkerCAD platform

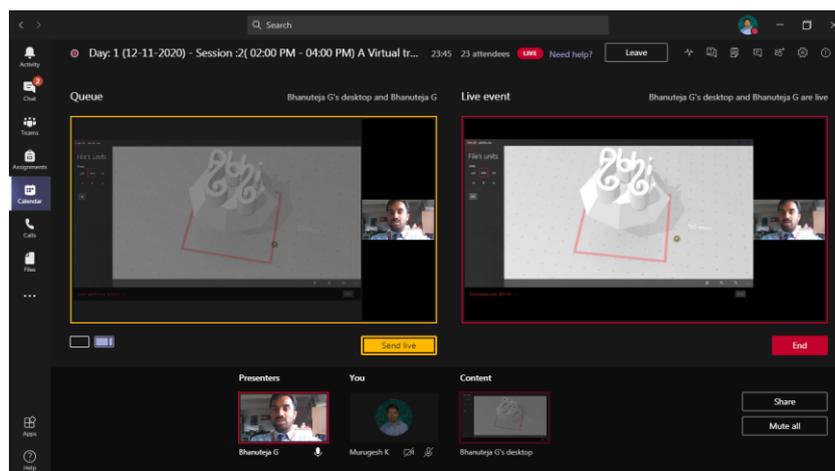


Image 4: 3D models designed by students during the virtual training

At the end of the session, a model designed by students was 3D printed.

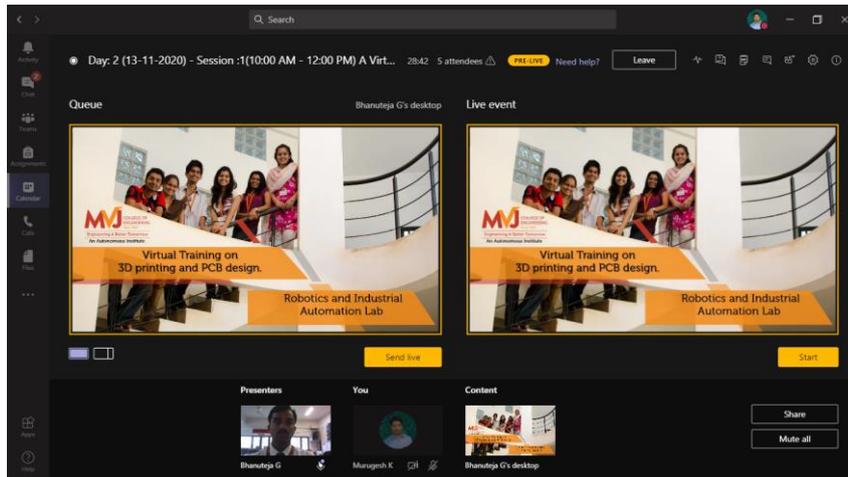


Image 5: Virtual training on 3D printing and PCB design

The second session of the training was on designing a PCB for mobile charger circuit. During the morning session, Mr. Bhanuteja G explained to the students about the design of circuit and performing analysis using CAD software. Once the circuit analysis was done, students learnt how to convert a circuit to PCB layout and generate gerber files.

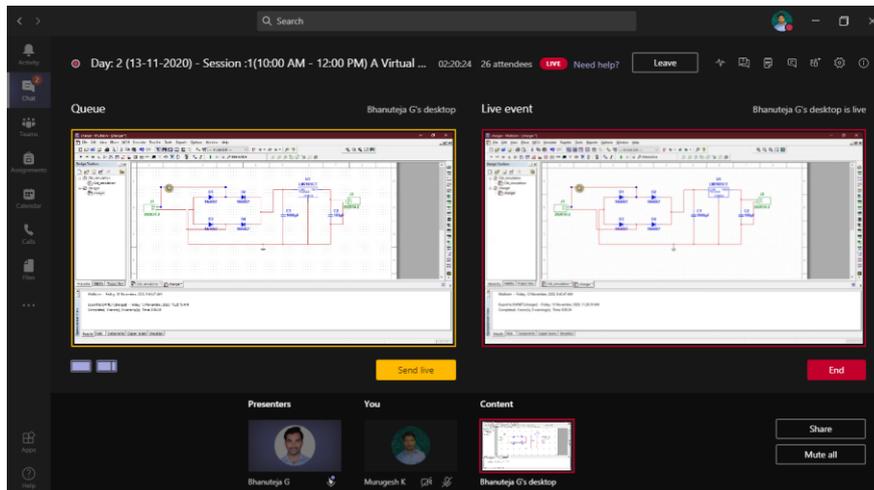


Image 6: Designing mobile charger circuit using CAD tool

Later, Mr. Bhanuteja explained why gerber files need to be converted to .nc formats. He also listed out the PCB design steps, using Nvis 72 PCB prototype machine.

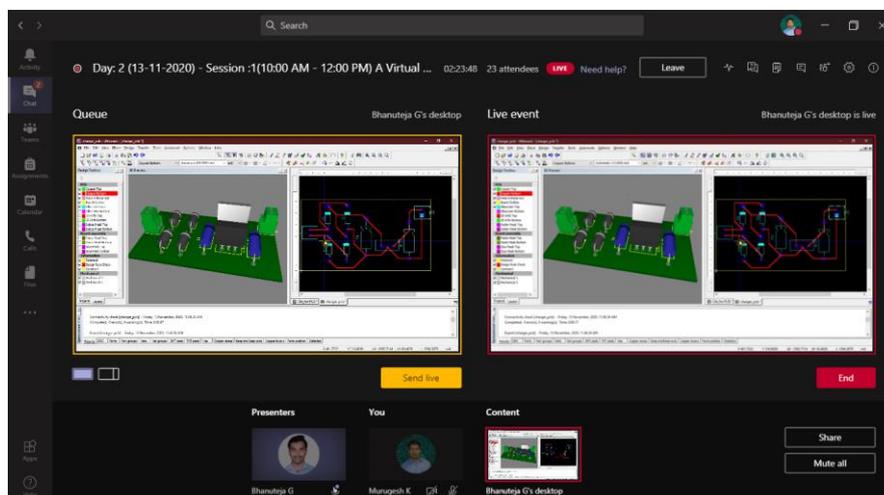


Image 7: PCB layout designed for mobile charger circuit schematic

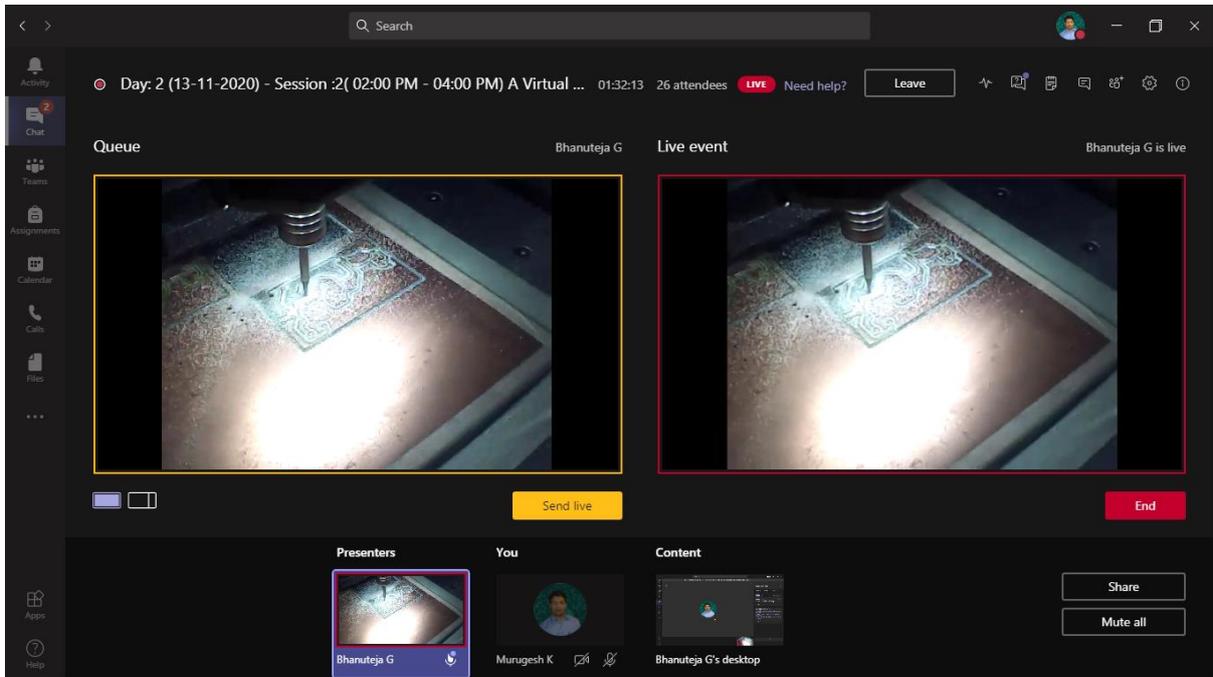


Image 8: Live coverage of PCB fabrication process in ROBOLAB

Outcome

- Students understood the basics of CAD design for 3D modelling and PCB design.
- They learnt the usage of 3D printer, importance of modelling, PCB design and circuit analysis.
- They got clarity on the difference between subtractive manufacturing and additive manufacturing.
- They learnt about the design rules to be followed for designing any circuit, and how to place components in PCB.

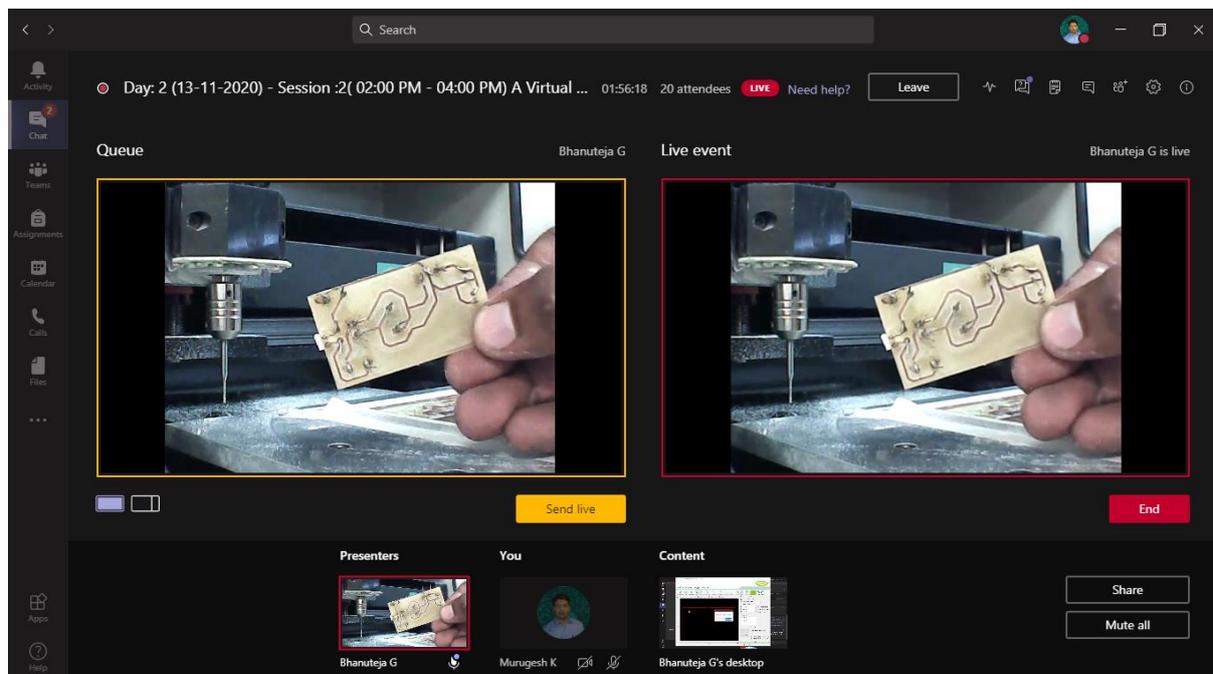


Image 9: Bhanuteja G (AP, ECE) showing the designed PCB during live event