Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	16 October 2022
Team ID	PNT2022TMID53546
Project Name	Project -**Emerging Methods for Early Detection of Forest Fires**
Maximum Marks	4 marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Installation of camera.	The user interacts with a web camera to read the video.
FR-2	Data Collection.	Collect the dataset or create the dataset. It is the actual data set used to train the model for performing various actions.
FR-3	Image Pre-processing.	• Import Image Data Generator Library. • ImageDataGenerator class. • Applying ImageDataGenerator on trainset and test set. The dataset images are to be pre-processed before giving it to the model.
FR-4	Model Building.	• Import the model building Libraries • Initializing the model • Adding CNN Layers • Adding Hidden Layer • Adding Output Layer • Configure the Learning Process • Training and testing the model • Optimize the Model • Save the Model At last, we compile the model with layers we added to complete the neural network structure
FR-5	Video Streaming and alerting	• OpenCV for video processing • Creating an account in Twilio service • Use Twilio API to send messages. If the fire is detected it is showcased on the console, and alerting sound will be generated and an alert message will be sent to the Authorities.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	It is easy to access the data, train the data and test the data. The software used is very simple to access.
NFR-2	**Security**	Using the python flask in connecting the cloud will provide security to the project.
NFR-3	**Reliability**	To make sure the image processing is doing correctly without any interference.
NFR-4	**Performance**	CNN and RNN will recognise all the input dataset and will give the 85%,90% and above.
NFR-5	**Availability**	It will be available in all time and all-weather condition. Sometimes it depends upon lifespan of the accessories used in the system.
NFR-6	**Scalability**	Used to increase the soil condition. Used to decrease the global warming and used to reduces the smoke emission. It increase the time to take the necessary steps during the forest fires.