

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

Date	15 October 2022
Team ID	PNT2022TMID46941
Project Name	Natural Disasters Intensity Analysis and Classification using Artificial Intelligence
Maximum Marks	4 Marks

Functional Requirements:

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Video feed from camera	The camera can predict the tsunami by comparing images of before disaster and after disaster from satellites.
FR-2	Evolution	Predict and change the Deep Learning algorithm
FR-3	Deep Learning	Siamese Networks: Now, we'll move on to the best image comparison algorithm nowadays that uses Siamese Networks. A Siamese Network is a neural network that consists of two identical subnetworks meaning that they contain exactly the same parameters and weights
FR-4	Data Processing	It gives image data and test data for evolution. Artificial Intelligence (AI) techniques and approaches, like data mining, machine learning, and deep learning, can assist in disasters predictions.
FR-5	Artificial Intelligence	The natural disasters like hurricanes are out of the reach of humans, artificial intelligence comes into the picture that can help in a potential manner to save huge amount of lives. AI can make the efforts of the rescue team more efficient..
FR-6	Satellite Imagery	Satellite imagery provides enormous information to the emergency crews and also officials of disaster management. It helps to assess, analyse and monitor natural disasters such as earthquakes, floods and hurricane

Non-functional Requirements:

FR No.	Non-Functional Requirement	Description
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NFR-1	Usability	Artificial intelligence (AI), in particular machine learning (ML), is playing an increasingly important role in disaster risk reduction (DRR) – from the forecasting of extreme events and the development of hazard maps to the detection of events in real time, the provision of situational awareness and decision support.
NFR-2	Security	High-quality data are the foundation for understanding natural hazards and underlying mechanisms providing ground truth, calibration data and building reliable AI-based algorithms.
NFR-3	Reliability	Artificial intelligence has been helping us in various applications such as customer service, trading and healthcare. And now, researchers have found that AI can be used to predict natural disasters. With enormous amounts of good quality datasets, AI can predict the occurrence of numerous natural disasters, which can be the difference between life and death for thousands of people.
NFR-4	Performance	AI refers to technologies that mimic or even outperform human intelligence when performing certain tasks. ML, which is a subset of AI that includes supervised (e.g., random forest or decision trees), unsupervised (e.g., K-means) or reinforcement (e.g., Markov decision process) learning, can be simplified as parsing data into algorithms that learn from data to make classifications or predictions.
NFR-5	Availability	Concerted efforts are being made to address the many challenges when using AI for DRR and to facilitate its use. These efforts support greater data availability, provide tools and packages to assist with AI development, enhance model explainability, offer new applications for AI-based methods (i.e., digital twins), and contribute to the development of standards.
NFR-6	Scalability	<p>Already, natural disasters occur four times as often as they did in 1970. According to estimates, such events could grow in frequency and ferocity with the effects of climate change.</p> <p>Artificial intelligence has potential to alleviate the damage by marshalling relief resources more efficiently and effectively. It can accelerate the delivery of aid and sharpen the decisions of relief workers on the front lines.</p>

