**Natural Disaster Intensity Analysis and Classification Using Artificial Intelligence**

**Proposed Solution Document**

**Presented by....**

R.Gokul Raja - 910819014001

K.Rajapandi - 910819104010

**Proposed Solution**

**Introduction:**

**Natural Disaster:**

Natural disasters are inevitable, and the occurrence of disasters drastically affects the economy, ecosystem and human life. Buildings collapse, ailments spread and sometimes natural disasters such as tsunamis, earthquakes, and forest fires can devastate nations. When earthquakes occur, millions of buildings collapse due to seismological effects [1]. Many machine learning approaches have been used for wildfire predictions since the 1990s. A recent study used a machine learning approach in Italy. This study used the random forest technique for susceptibility mapping of wildfire [2]. Floods are the most devastating natural disaster, damaging properties, human lives and infrastructures. To map flood susceptibility, an assembled machine learning technique based on random forest (RF), random subspace (RS) and support vector machine (SVM) was used [3]. As the population is growing rapidly, people need to acquire land to live on, and as a result the ecosystem is disturbed horrifically, which causes global warming and increases the number of natural disasters. Populations in underdeveloped countries cannot afford damages disasters cause to infrastructures. The aftermath of disasters leaves the humans in miserable situations, and sometimes the devastating effects cannot be detected; additionally, rescue operations cannot take place in most of the places and victims are unable to be identified due to geographical factors of the different areas. Disasters such as forest fires spread rapidly in dense areas, so firefighting is difficult to carry out; in this case, development of the strategy to predict such circumstances is crucial so that such disasters can be prevented beforehand.

As the technologies are continuously improving, aviation systems have begun adopting smart technologies to develop unmanned aerial vehicles (UAVs) equipped with cameras, which can reach distant areas to identify aftereffects of natural disasters on human life, infrastructure, and transmission lines by capturing images and videos. Data acquired from these UAVs helps to identify the facial expressions of victims, the intensity of their situation and their needs in a post disaster scenario. It helps to take actions and carry out necessary operations to tackle devastating scenarios. Raw images obtained from camera-equipped UAVs are processed and neural network-based feature extraction techniques are applied to analyse the intensity.

**Problem Statement:**

Vasu is a civilian and he is living in a seashore area. He is unaware about climatic and status of water level in seashore area.

So, Vasu using an artificial technology to know the current status of the climatic conditions at anywhere, any situations.

**Idea or Solution Description:**

* Vasu is search to gather information's in Internet.
* Vasu was use to know about the Climatic conditions in some available applications.
* He searches about the climatic status in social media.
* He is consult about with the weather researcher.
* Say and inform to friends and civilians.

**Novelty:**

* + AI can help response teams understand natural hazards, monitor events in real time, and anticipate specific risks in the face of impending or on-going disasters.
  + Among the natural disasters are earthquakes, volcanoes, hurricanes, floods, and fires. Among the man-made disasters are war, pollution, nuclear explosions, fires, hazardous materials exposures, explosions, and transportation accidents.

* + For example, AI-based algorithms can organize disaster data in the order of severity. It can identify climate patterns, at-risk areas and populations, and send early warnings for potentially disastrous weather events. AI can be used to foretell the economic and human impact of natural disasters.
  + Provides to translate in own languages.
  + You can upload your information with newsfeed.
  + Provides offline search results also.

**Social Impact:**

* Develop the knowledge about Natural disaster awareness in the general civilians.
* Being able to identify climatic conditions around us often leads to natural disaster.
* Build a communication medium between weather identifiers and normal civilians.

**Business Impact:**

* Premium access to the offline search results.
* Collaborations to the bio-diversity access information about to the natural disasters.
* Can make money through subscription based.
* Partnership with many scientists and weather researchers around the world.

**Scalability of Solution:**

* For instance, drones and robots have been used to locate survivors and transmit information to emergency teams.
* Thermal imaging techniques and satellite cameras can be used to detect heat around a volcano.
* Improve the dataset and add more scientific data about climatic conditions.
* We have a plan to release this application on Google play Store also.