
Messiah
Using AI to save the world
Team Sorcerers, BlockHack, GES 2019

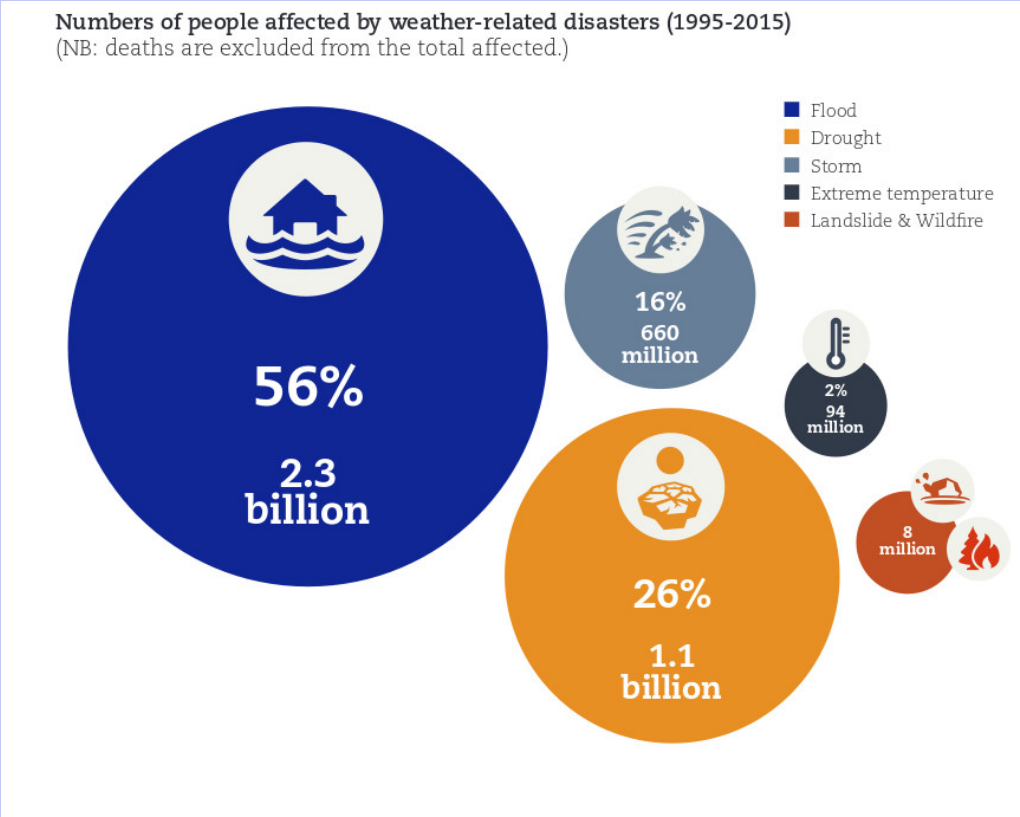
The Problem

Natural Disasters have been **one of the biggest reasons of misery of mankind**, since the inception of time.

We surely can't stop it.

But, can we be prepared for it, and reduce its effect to a much larger extent ?

Maybe it isn't as hard as it seems.



The Idea behind it

We are planning to build a service to help save lives and **prevent economic losses** through mechanisms to **predict, prevent, or manage** the impact of **natural disasters**, as accurately as possible and feasible using the dataset procurable.

We used **deep learning based models** to **predict** natural disasters, provide **personalised services** to people in need, and **assist them** in curbing the possible pitfalls.

What did we build ?

The service would:

1. **Predict (show probability) the possibility of a natural disaster**, in any given location, set by the user.

2. **Show data of previous natural disasters** of the area, and grossly present the damage done by them to property and life.

3. **Show a map interface** showing present location of the user (and plausible relief camp placements, and **the shortest route to the closest one** [WIP])

What did we build ?

4. **Provide the user with valuable precautions** which can be implemented well in advance based on the geography and topography of the location the user resides in. These tips will be such as "**build houses with x type of pillars to ensure sturdiness at times of earthquake**".

5. **Provide SMS services to help connect** with your family members at times of distress, even without internet.

6. **Provide personalised services to users**, to match the needy with the volunteers at the right places quickly.

Technical Stack Used

- **Python 3.6.5** with Pipenv
- **JavaScript**
- **HTML5 + CSS3**
- **GitHub** for hosting
- **Microsoft Azure Data Science Virtual Machine** for training models
- **Microsoft Azure Cloud** for deployment
- **Flask**
- **ElasticSearch** as a distributed RESTful search engine
- **Twilio SMS API**
- **Maps API**
- **Geocoding API** to search from OpenStreetMap data
- **SQL Database** as a service from Azure

How does it work ?

Step 1

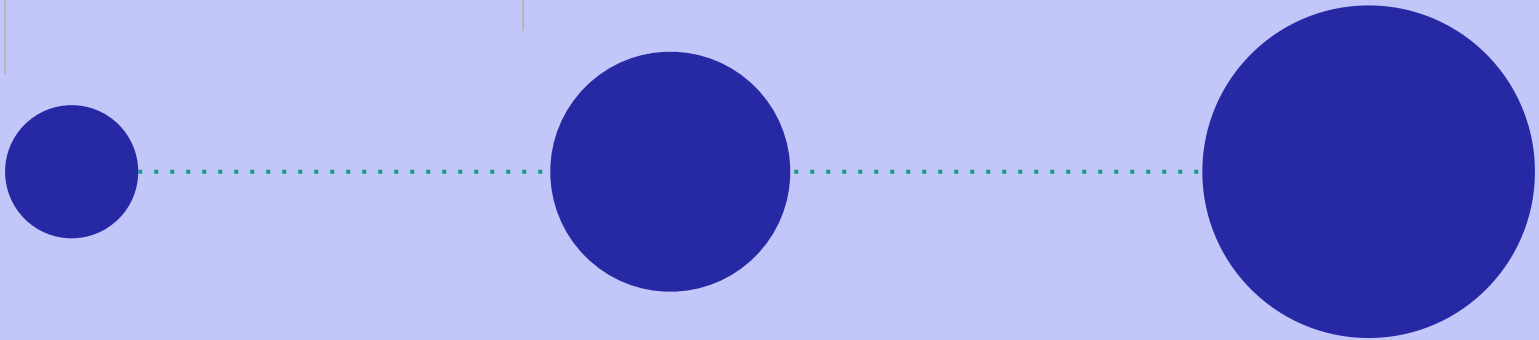
Data is procured from **MS Azure and NASA datasets**, and live location of user

Step 2

DL model is applied on the data to predict, and **generic algorithms** are used to calculate real time **prevention tips** and **map**

Step 3

The live map shows all possible resources around you, prevention tips and past statistics for **data analysis**



What datasets are we using ?

- We've been testing data from **gisresources or emdat** on various scenarios.
- We have been looking at **Azure's Earth Science data from NASA** and **Azure's US Government Data** for viable datasets in aiding in our purpose.
- **Azure Cloud Resources** will be utilised in the process of assessment of various datasets and gauging their **accuracy**.

Feasibility of the product

The product was made to **give common people the utmost preference**. It is **very easy to start** using it and has **negligible set up issues**.

Intuitive navigation

No extra training

Works even without internet

Everything in one place

Platform independency

Personalised services

Scalability of the product

Messiah is **open for developers** to use our data. We offer a **RESTful API** to **scale** the app further by **Govt Agencies, NGOs, or programmers**. See documentation below:

PATH	ARGS	METHOD	USE
/history	City/Country	GET	Lists the history of past five random disasters in {ID, Date(dd/mm/yyyy), City, Country, Magnitude, Severity, Type}.
/history_full	City/Country	GET	Lists the history of all past disasters in {ID, Date(dd/mm/yyyy), City, Country, Magnitude, Severity, Type}.
/show_random_facts	-	GET	Show some random fact based on past year data static as in our homepage.
/random_facts	-	GET	Returns {Deaths, Year, Type} randomly in raw format.
/predict_eq_mag	Lattitude, Longitude, Depth, Date(optional)	GET	Returns magnitude(float64) of possible earthquake in current or given date.

Business Prospects

- In India, **NIDM allots around $3.37 billion dollars** on disaster management. Out of that, **1% is wasted from communication gap between volunteers and people, wrong lifestyle and panic.**

- **Messiah reduces that to almost negligible**, since **everything is online** and **it works even without internet**. Prevention tips also go a long way in avoiding possible pitfalls.

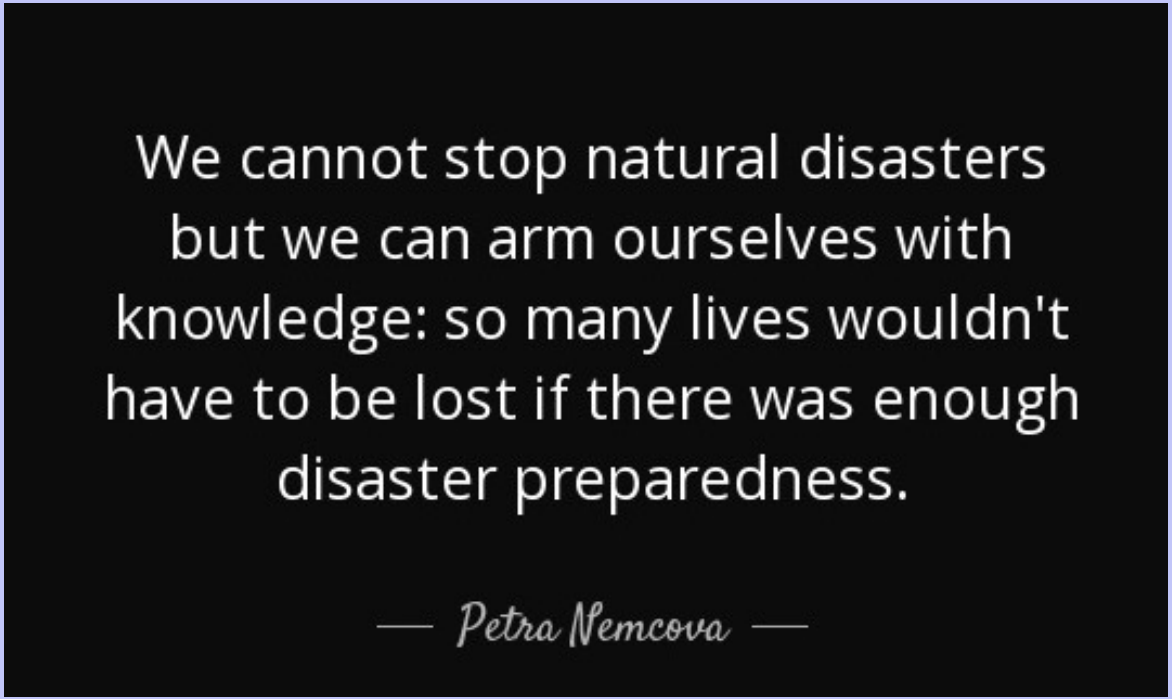
25000+ Relief Camps

$3.37 bn on disaster management

Saves 1% of total cost

230 Cr+ revenue

Thank You


We cannot stop natural disasters but we can arm ourselves with knowledge: so many lives wouldn't have to be lost if there was enough disaster preparedness.
— Petra Nemcova —