

LITERATURE SURVEY

TITLE : Natural Disaster -AI

Team members

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OBJECTIVES

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, .**

Case study I

AI - THE NATURAL DISASTER

Author- Jeff Catlin

project descriptions

Fortunately, we have tools at our disposal that we can leverage to our advantage. Among them is AI, which you can implement to support and extend the capabilities of existing systems and personnel at every stage in the disaster life cycle.

Case study II

AI can monitor disasters in the making

Author- Jeff Catlin

project description

➡ A global disaster often begins at a hyperlocal hot spot. AI models that look for a spike of mentions or events across a set of identified domains and then cross-reference these against related data points can notify us about potential disasters before they strike.

Case study III

TITLE

AI - NATURAL DISASTER

-BRAIN DAVISON

Brian D. Davison teaches courses on data science, data mining, web search engines, networking, system administration, C and UNIX programming. His research is in web search and mining, focusing on the integration of text and link analysis applied to search and classification problems on the Web. Dr. Davison's interests additionally include information retrieval, social networking, data mining, network infrastructure for the WWW, and the analysis of trust and authority in information networks.

Case study IV

TITLE AI- NATURAL DISASTER

Wenjuan Sun¹ · Paolo Bocchini¹ · Brian D. Davison²

Abstract

Natural hazards have the potential to cause catastrophic damage and significant socioeconomic loss. The actual damage and loss observed in the recent decades has shown an increasing trend. As a result, disaster managers need to take a growing responsibility to proactively protect their communities by developing efficient management strategies. A number of research studies apply artificial intelligence (AI) techniques to process disaster-related data for supporting informed disaster management. This study provides an overview of current applications of AI in disaster management during its four phases: mitigation, preparedness, response, and recovery. It presents example applications of different AI techniques and their benefits for supporting disaster management at different phases, as well as some practical AI-based decision support tools. We find that the majority of AI applications focus on the disaster response phase. This study also identifies challenges to inspire the professional community to advance AI techniques for addressing them in future research.

REFERENCES

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. AI methods offer new opportunities related to applications in, for instance, observational data pre-processing as well as forecast model output post-processing. The methodological potential is strengthened by novel processor technologies that allow heavy-duty, parallel data processing.

THANK

YOU