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Vellore Institute of Technology, India and Binghamton University, USA
Joint Webinar Series on Artificial Intelligence and Machine Learning

Date: 8th October 2020

Time: 6:30 pm to 7:30 pm (IST)

Zoom Meeting Link:

<https://chennai-vit.zoom.us/j/99832492738?pwd=M3U5OE9STTYrcDZNT0lMc3R4Zz09>

Meeting ID: 998 3249 2738

Passcode: 826160

Topic: *Knowledge Management and Decision Support Systems for Agriculture*

Abstract: The backbone of India has been agriculture among other industries. Soil and water are the two most important but mismanaged resource around the world, especially in India. Soil and water resource management is a challenge due to issues faced in integrating the dispersed data. Many times the knowledge to manage these resources is tacit and is distributed among several departments. Decision makers have no way to integrate the knowledge in a way to make holistic solutions. We are discussing two different AI paradigms we have incorporated to tackle some of the issues.

The various factors affecting the harvest are soil fertility, availability of water, diseases, pests and climate. Repeated farming and lack of crop recycling leads to decreased output leading to waste of time and human resources. We have developed an application based on image processing and Case Based Reasoning which can be utilized by fertilizer companies to assess the health of soil and suggest fertilizers. Chromotograms are images obtained by processing soil which are very helpful in classifying and understanding soil. Suitable crops that would give maximum yield for the soil condition would be suggested based on the past data.

We are now in a world where sustainability and quality of life have become more important rather than a drive towards short term growth. As a result we are improving our tools and approach towards soil management focusing on the entire lifecycle of the soil. Incorporating natural ways to enrich the soil through better management of compost and other minerals available locally leads to creating sustainable agroforests. Our focus now is to enrich our

knowledge base with soil chromatogram data from soil samples procured from agroforest during various stages of compost formation and crop harvesting.

The second application that we have implemented is a decision support system which helps in diagnosing and managing the water resources in a locality. Currently we are using constraint satisfaction based algorithms in a decision support framework to identify the various processes that could lead to an observation. This is very useful to diagnose problems related to water management which involve both natural phenomena and human activity. We currently are trying to solve ecological problems like lake eutrophication and drinking water supply to a locality.

Biography:

Dr. B. Radhika Selvamani completed her Ph.D. in 2009 from Indian Institute of technology Chennai. Subsequently, she spent 1 year at Indian Institute of Technology Delhi as senior project scientist. She worked as Associate Professor of Computer Science Department at Vellammal Engineering College, Chennai, India for an year till 2011. She joined Samsung Research India Bangalore, India and worked as Chief Engineer till 2014. She published a patent on serendipitous search on mobile data. She worked as Specialist in Kone Elevator India Chennai for 5 years since 2019 participating in research and development of AI related approaches in handling vertical traffic flow in buildings. She has been working as Assistant Professor in the department of Computer Science and Engineering, Vellore Institute of Technology Chennai since 2019. She has published in several International journals and top AI conferences. She has visited Norway and UK to present papers.

******All are cordially invited******