MIT-WPU | Faculty of Engineering and Technology

Assignment 2 (10 marks)

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Panel: A

Roll No. 53

Q 1: Monsoons are approaching soon and so is your term end exam. Have you planned any activities that you can undertake in monsoon vacation for conservation of natural resources like water, soil, biodiversity etc.? Explain your Plan of Action and justify the cause. (5 marks)

Ans:

- Planting trees in the month of rainy season during the vacations doesn't seem like a bad idea. Planting the trees on deforested areas or on barren lands will nurture the growth of those saplings and also as they grow, they will hold the soil and bigger they grow more and more will be the soil handling capacity. This little effort might help in afforestation and also will eradicate soil erosion.
- As it's rainy season, decreasing the usage of water or conserving the amount of water will also help us. Conserving the energy resources will also work. Instead of driving, talking a walk, ride or carpool will prove to be healthier for you as well as the environment. Who wouldn't want to witness the beauty of the monsoon season anyway? This will help you to reduce the air pollution and also save the energy and natural resources.
- There is higher possibility of the sewage lines and the water pipelines to get choked during the monsoons and this is the main cause why Mumbai floods occur and the city faces lot of problems during the wet season. We can take initiatives in campaigns that strive to clean the areas.
- use of biodegradable materials and making manure from them and then using it for the growth of saplings is also what we can do. People generally crave for tea during monsoons. Instead of throwing those tea bags we can use them in compost. They are a great way to reuse them in our gardens. Instead of using highly chemicalized pesticides and fertilizers this method will greatly help you to eradicate soil pollution as leaching is already rendering the soil unfertilized slowly.
- We can educate people to help, grow and nurture the environment and become environment friendly. We can ask them to save water, energy resources, plant trees, love the nature and spend time observing the cycle of nature. This will surely make people aware and spread a good consciousness.

Q2: Describe in details which engineering tool of your stream/branch you would use in resolving any environmental issue. Mention the problem, Material and methods to solve it and Expected outcomes (5 marks)

Ans: I am from CSE and I feel that the most innovative and progressive technology that is **Artificial Intelligence** can help us to solve environmental issues. AI has the potential to accelerate global efforts to protect the environment and conserve resources. Below mentioned are examples of how AI provides means to tackle the most pressing environmental challenges.

Climate Change

- Use of machine learning to optimize energy generation and demand in real-time; better grid systems with increased predictability and increased efficiency, and use of renewable energy.
- Smart sensors and meters can be deployed within buildings to collect data and monitoring, analysing, and optimizing energy usage in buildings.
- AI is already being used in smart transport eg: google maps and Waze, where Machine learning algorithms are used to optimize navigation; increase safety and provide information regarding traffic flows and congestion (e.g. Nexar).

Biodiversity and Conservation

- When combined with satellite imagery, AI can detect changes in land use, vegetation, forest cover, and the fallout of natural disasters.
- Invasive species can be monitored, identified and tracked using the technology above, identifying and tracking their presence, and eliminating them is all done using machine learning and computer vision. A company called Blue River Technology is using AI to detect the presence of invasive species and other biodiversity changes.
- Predictive softwares have been deployed to help anti-poaching units plan their patrol routes

Ocean Health

- AI can gather data from ocean locations that are hard or impossible to reach and thus, help protect species and habitats. Illegal fishing can also be tracked using AI.
- AI-powered robots can be used to monitor ocean conditions such as pollution levels, temperature and PH.

Water Issues

- AI is widely used by water scientists to project water usage in a particular geographical area and make weather forecasts to make informed policy decisions.
- AI along with satellite data can help to forecast weather, soil and subsurface water conditions and predict droughts.

Healthy Air

- Air purifiers with AI can record air quality and environmental data in real-time and adapt the filtration efficiency.
- AI-powered simulations can send warnings to people living in urban areas about the pollution levels of their areas. There are tools that can detect the pollution sources quickly and accurately.
- Using data from vehicles, radar sensors and cameras AI can help improve air pollution.

Weather forecast and Disaster resiliency

- AI-powered predictive analytics along with drones, advanced sensor platforms and similar tools can monitor tremors, floods, windstorms, sea-level changes, and other possible natural hazards. This technology can help government and concerned agencies to take timely actions and the availability of such information in real-time with automated triggers can enable early evacuations when needed.
- Various meteorological companies, tech companies like IBM, Palantir, and insurance companies are combining AI with traditional physics-based modelling methods to model the impact of extreme weather events on infrastructure and on their other systems to advise the disaster risk management strategies.