Fall Semester 2020-‘21

CSE3999 Technical Answers to Real World Problems || Assessment-1

Submitted by,

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Title: IoT-aided Smart City for Energy Efficiency

Problem Statement:

1. Using models of machine learning and statistics to visualize energy consumption of buildings in an urban setup.
2. Developing a computer-aided benchmark and baseline for energy efficiency of buildings in cities.
3. Aiding in the implementation of the following UNDP goals:
    - Goal 7: Affordable and Clean Energy;
    - Goal 8: Decent Economic Growth;
    - Goal 11:Sustainable Cities and Communities;
    - Goal 12: Responsible Consumption and Production; and
    - Goal 13: Climate Action

Motivation:

The 17 UNDP goals enlist the strong need for humanity to move towards safer, equitable and sustainable living standards. One of the greatest challenges in the same is the pattern of energy consumption and supply that involves a massive amount of emission of greenhouse gases and heat despite numerous conventions like the Kyoto, Montreal and Paris accords.

Cities alone produce 60-80 percent of the total greenhouse gas emissions globally and are responsible for the consumption of 80 percent of the global energy. This involves heating, ventilation, air conditioning, lighting, and major appliances.

City officials and governments across the planet have struggled so far to effectively analyze, visualize, and translate data from thousands of buildings into policy and program recommendations – partly due to the issue in logistics, partially due to economic and political constraints. Computers, however, provide not only with tools that can be used to benchmark consumption and supply but also to develop models that can compare and demonstrate impacts of energy-efficiency based improvements on the same.

This project thus aims to study modern patterns of energy consumption and related costs and to further suggest IOT based solutions to improvise upon the same.

Project Outcome:

The aim is to develop a visualization that supports the report that shall be submitted and eventually a research paper based on the same.