

LEAF



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Internet of Things/Sensor Analytics for Climate Data using Trendalyze and Liverpool Environmental Application Framework (LEAF)

The majority of researchers, policy makers and businesses find the retrieval and analysis of environmental data to help their decision making processes extremely difficult. While the ability to access these data would be helpful, costly expert interpretation of the data is normally required to provide a meaningful answer to a business or policy question.

The LEAF project is a feasibility study to develop a cloud service that makes apps that use environmental Internet of Things (IoT)/sensor data, spatial data and open data easier to develop. An app that works on a mobile phone, tablet or within a website has two ends: a front and a back. The front-end is the images and controls that the user sees and interacts with. The back-end is a time series and spatial data analytics server that does the work, located in Trendalyze Spark cluster. And the two ends communicate over the internet via cloud APIs. When a new app is created for use within LEAF the back-end is easier to develop because the IoT/sensor data Trendalyze analytics framework provides a cloud service that does a lot of what the app needs to do, such as searching environmental data (e.g. historic solar data for particular locations) and application of algorithms is built in and the data is given to the app in a standard way.

The LEAF application provides a way for environmental experts to transfer their knowledge using applications, algorithms, IoT sensors and open data services to make it available to business. An IoT prototype with Microsoft Azure and Trendalyze that demonstrates the functionality of the LEAF framework by estimating solar micro-generation output using a combination of radiation data sourced from the Met. Office, IoT data sources, open data and an IoT enabled weather station at the University of Liverpool. LEAF will put this project in a good position to integrate into the Sensor City – University Enterprise Zone in Liverpool.

Applications for LEAF, Azure IoT Suite and Trendalyze can include Public Health, Local Authorities Smart Cities, Energy, Transport and Insurance commercial sectors. The identified global market for IoT environmental monitoring and analytics is in excess of \$4B. With a large potential in health application especially in polluted cities of North America, Europe and Asia. For example, ambient and imported air pollution in Malaysia; worldwide use of biomass fuels for cooking is bigger cause of COPD than tobacco smoking.