

Title:

mySense - AI and Big Data for agroforestry applications

Keywords:

Internet of Things in agriculture, BigData, Data analytics, Artificial Intelligence, Decision support engines, Precision Agriculture, Agroforestry sustainability

Abstract:

mySense is a framework designed to support data integration from distributed IoT (Internet of Things) devices applied to agroforestry sector. It is therefore an innovative platform since there are very few other platforms that apply the IoT concept to the agroforestry sector and are specifically developed for this. Most of these applications focus on smart homes, smart cities and industry.

In a modular perspective, the mySense incorporates multiple processing modules in order to support interaction with acquired data, feeding decision support engines, fundamental in the context of disease detection, continuous and advanced monitoring of agricultural processes, agroforestry management and smart irrigation applications.

Being a framework specifically designed in context of ecological, environmental and agroforestry sustainability, incorporates multiple interfaces and accesses that allow differentiated roles (public and private users, manager, etc), multiplatform, taking into account the specificities of these sectors. Associated to the UTAD's data center and cloud computing resources, mySense is intended to provide a BigData support and perform data analytics in order to obtain more knowledge about multitemporal dynamics, as well as being part of the precision agriculture concept, where knowledge supports better management decisions. This framework is evolving in the context of decision support incorporating artificial intelligence strategies (e.g., machine learning). The main innovation that mySense provides is that it is a system that allows to build predictive models based on multiple data and eventually from multiple owners who share information that is useless when used alone.

One of the applications that uses mySense, manages data acquired by 40 meteorological stations, belonging to a governmental agency, in the northern region of Portugal in the last 4 years and aiming the recognition and correlations with disease predictions and climate changes modelling.

Biography:

Jorge Miguel Ferreira da Silva Mendes graduated in Electrical and Computer Engineering at the University of Trás-os-Montes e Alto Douro (UTAD), Portugal, in 2014 and a Master's degree in Electrical and Computer Engineering obtained from the UTAD in 2016. He is currently an integrated member of the Centre for Robotics and Intelligent Systems in Institute for Systems and Computer Engineering, Technology and Science (INESC TEC) and PhD student in Electrical and Computer Engineering at UTAD. His research focuses on Internet of Things and robotic in the context of precision agriculture/viticulture, namely, sensing, monitoring, visual perception and robotic navigation.