

Barnabás Nagy

EIT Digital Budapest DTC

PhD topic: Internet of Things (IoT) future areas of technology application

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'The Doctoral School is an excellent professional opportunity. It presents a great environment for networking and launching international projects. The milieu and quality standards provided by EIT Digital greatly facilitates the realization of my projects.'

Achievements & further plans

Barnabás started his PhD studies in September 2015 at Eötvös Loránd University PhD School of Computer Science. The title of his doctoral research is Internet of Things (IoT) future areas of technology application, and the scope of it is IoT-WSN (**Internet of Things based Wireless Sensor Network**) dealing with **real-time artificial intelligence (AI)** data analysis. Currently, he is focusing on conducting literature review and deepening his understanding of the area, and he is investigating the application possibilities of the Google TensorFlow deep learning framework that he intends to implement for acquiring data for the IoT devices dataset. The acquired data facilitates the development of predictive algorithms.



One of the outputs of my work is a framework for testing the effectiveness of Machine Learning algorithms, that are effective but not only for IoT data input. Thus, the product itself has a strong market potential, since it is an ML model whose proper task fit selection and parameterization can be a major business advantage.

Educational status at Spring semester of 2016:



RA



OR



BMD



GH



Mobility



BDExp.

Research topic

Using wireless sensor networks consisting of large numbers of IoT sensors with the help of corresponding data analysis procedures not only allows access to a unit's current environmental condition and the information from this data, but might as well provide insight into the entire inducing process. It ensures a system-wide view, which is of considerable value in understanding the entire process.

During the research activities of this process, he would like to test several areas using the advantages of the IoT-WSN technology realized with real-time method. His desired result in the selected areas is to anticipate events as fast as possible, ideally, right after the last sample of the dataset is registered by the network. In order to achieve this, he applies both the learning and the recognition process in parallel.

The further objective of the research is to identify any potential areas of use where the combination of Internet of Things technology and learning algorithms results in the most significant practical benefits. Given that the measurable output data range differs in each field, only domain-specific implementation can provide a good solution. As a result, the best applied prediction algorithm can be different with regard to the field of application.