Proposals for IDPs

#IoT #CloudComputing #AWS #C++ #EmbeddedC #MQTT #SmartParking

Evaluate AWS IoT Core vs. ParkHere's On-Premis-IoT-Backend regarding the system's scalability, maintainability and cost efficiency.

Motivation:

Maintaining and scaling a Backend is expensive and hard. In this thesis we want to evaluate if outsourcing this task to AWS Cloud or similar can minimize cost and grant scalability with equal or even higher reliability.
Furthermore, switching cost can be predict and contrasted with future advantages.

Milestones:

1) Understand the status quo of ParkHere System architecture
2) Create a concept for a matching AWS (or similar) architecture
3) Implement the concepted Service Infrastructure on AWS (or similar) including evaluation algorithms REST-API to customers and notification
4) Implement MQTT (instead of custom protocol) on ParkHere´s IoT Gateway to connect it to AWS IOT Core.
5) Evaluate latencies and scalability of the implemented architecture
6) Compare scalability maintainability and cost efficiency of the two architectures

Your profile:

● Solid Knowledge in C, C++, ideally experience in Embedded C programming and Qt
● Very good knowledge of SQL
● Experience and interest in Amazon Web Services (AWS) or similar cloud service
● Experience in IoT
● Experience with git and working in teams

Contact us:

career@park-here.eu

Proposals for IDPs

#MachineLearning #OpenCV #Python #VideoAnalyzation #SmartParking

Development of a video-based data annotation tool for supervised machine learning methods for park event classification.

Motivation:

Modern supervised machine learning algorithms need a large amount of labeled data for their training. Thus, the first step for the development of supervised machine learning algorithms for park event classification is to annotate parking events in videos. This labeling task should be straight-forward, highly automated and easily distributable e.g. on Amazon Mechanical Turk.

Milestones:

1) Understand the data generation for parking events.
2) Create a concept for a graphical user interface.
3) Implement the labeling tool in Python (e.g. OpenCV, PyQT).
4) Generate an automated labeling process for video coverage.
5) Showcase the efficiency of the process in terms of labeling speed and accuracy.

What you should know

- Solid knowledge of Python or Matlab, idealy already experience with OpenCV and PyQT
- Experience in the area of supervised machine learning
- Experience with git and working in teams

If you are interested, please contact us for more information:

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Proposals for IDPs

#MachineLearning #Algorithms #ArtificialIntelligence #Classification #SmartParking

Conception, implementation and testing of classification algorithms for parking events based on decision trees and/or machine learning.

Motivation:

The ParkHere sensor generates raw data that has to be analysed and used to classify the type of parking event. This shall be achieved using artificial intelligence like neural networks or other types of algorithms.

Milestones:

1) Setup an infrastructure for different algorithms in a publisher/subscriber structure.
2) Have an existing algorithm running productive in this structure.
3) Develop a concept of a machine learning algorithm.
4) Prepare labeled sensor data of parking events.
5) Build a prototype of the algorithm.
6) Train and test until we reach better performance than the old algorithm.
7) Replace the old algorithm by your new algorithm.

What you should know

- Solid knowledge of Python, ideally experience with machine learning tools
- Experience in the area of supervised machine learning
- Experience with git and working in teams

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