

Counting People Using a PIR Sensor

Martin Beneš

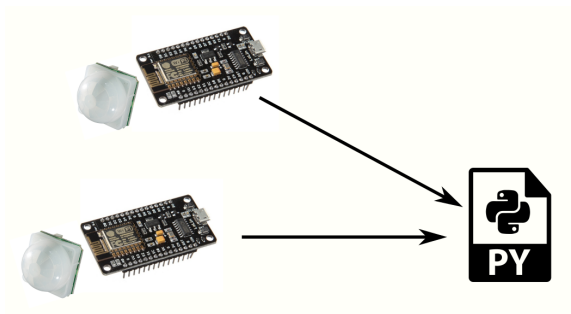
Brno University of Technology, Faculty of Information Technology
Božetěchova 1/2. 612 66 Brno - Královo Pole
xbenes49@stud.fit.vutbr.cz

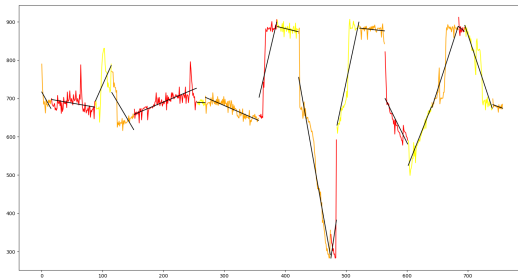
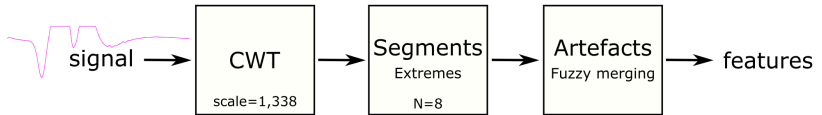


August 13, 2019

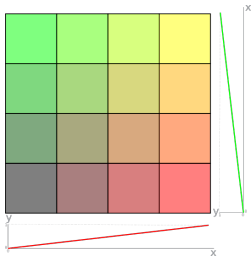
- Study the topic.
- Design a theoretical system, that could:
 - Localize a person.
 - Estimate a count of people.
- Implement and test the approach.
- Summarize.

- Sensor device
 - PIR STD
 - NodeMCU (C++/Arduino)
- Classification server

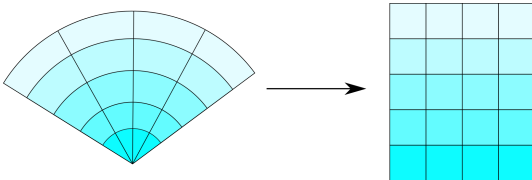




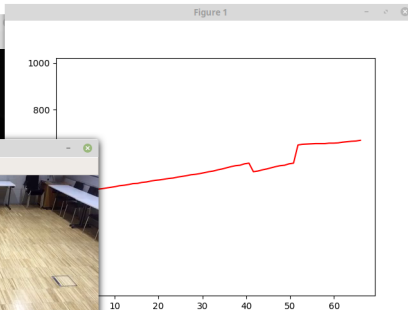
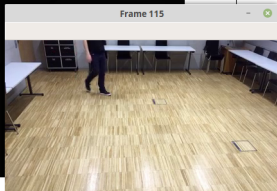
- Based on set of linear regression classifiers.



- Spatial model of sensed area.



```
martin@LeopardMintVM: ~/bc/monitor
File Edit View Search Terminal Help
(env) martin@LeopardMintVM:~/bc/monitor$ make label
Current directory is "/home/martin/bc/monitor".
Label >> dBF_LR_1
Is the person present? No.
Is the person present? Yes.
Is the person close the center? No.
Is the person on the left? Yes.
Is the person close? No.
Is the person present? Yes.
Is the person close the center? No.
Is the person on the left? Yes.
Is the person close? No.
Is the person present? ☐
```



- For **localization** cluster analysis is used.
 - K-means
 - Medoids (PAM)
- **Count of people** by minimal within-cluster sum of squares.

Thank You For Your Attention !