Counting People Using a PIR Sensor

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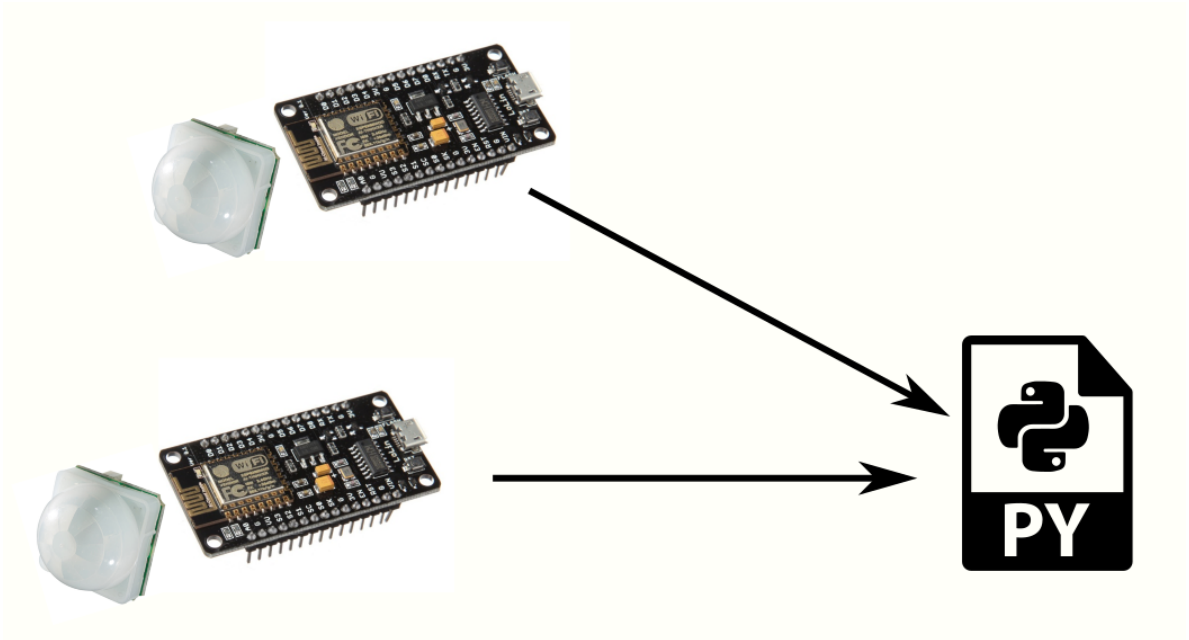
The aim

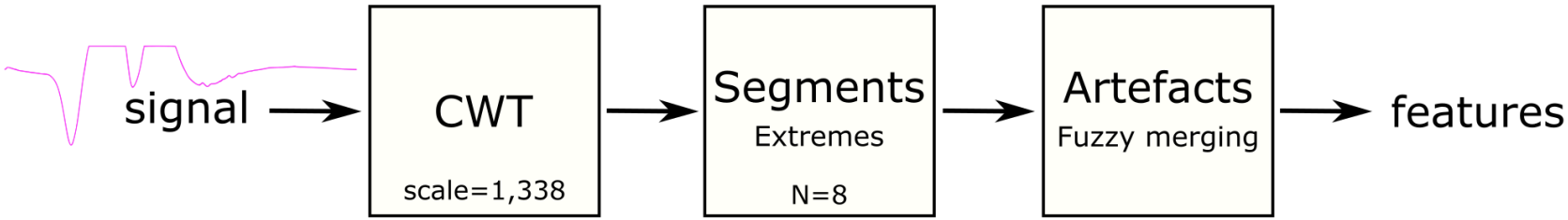
- Study the topic.
- Design a theoretical system, that could:
  - Localize a person.
  - Estimate a count of people.
- Implement and test the approach.
- Summarize.

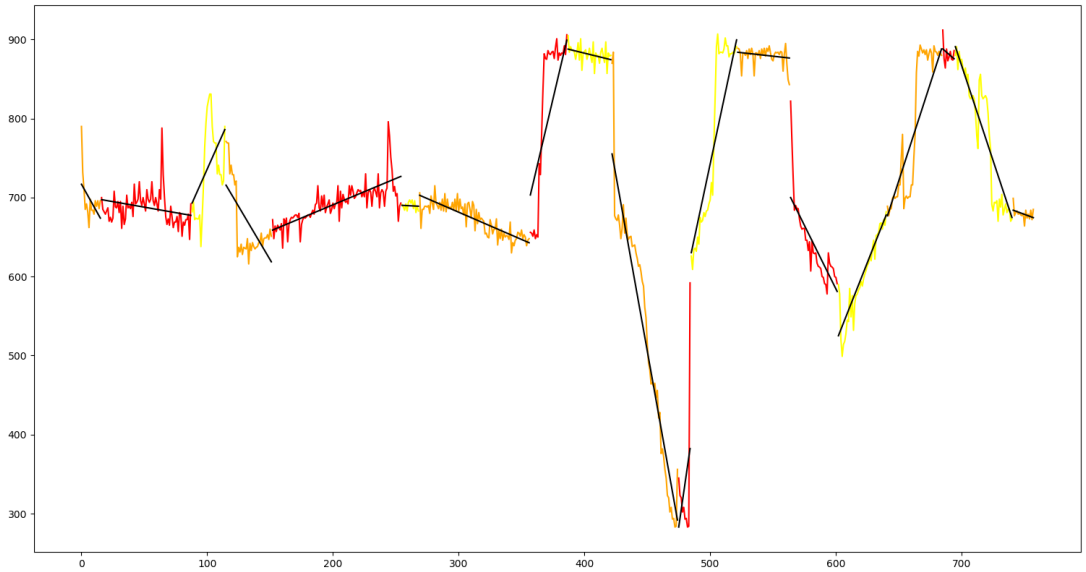
The design

- Sensor device (PIR STD, NodeMCU)
  - Sampling
- Classification server (Python, NumPy)
  - Classification
  - Fusion



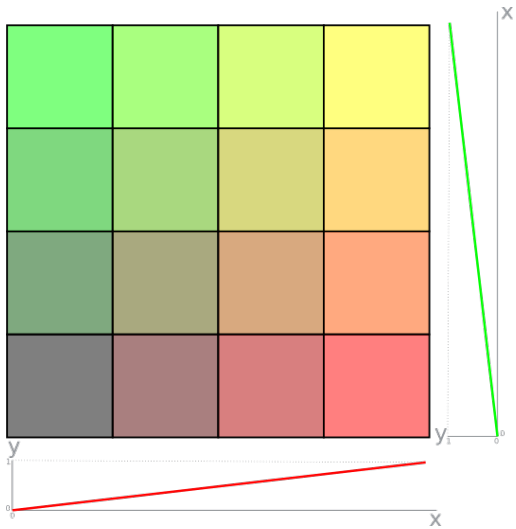
Classification: feature extraction



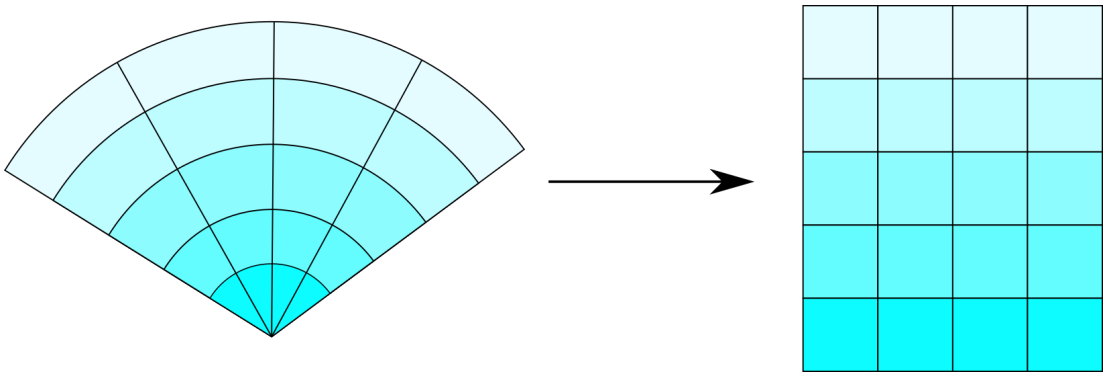


Classification: classifier

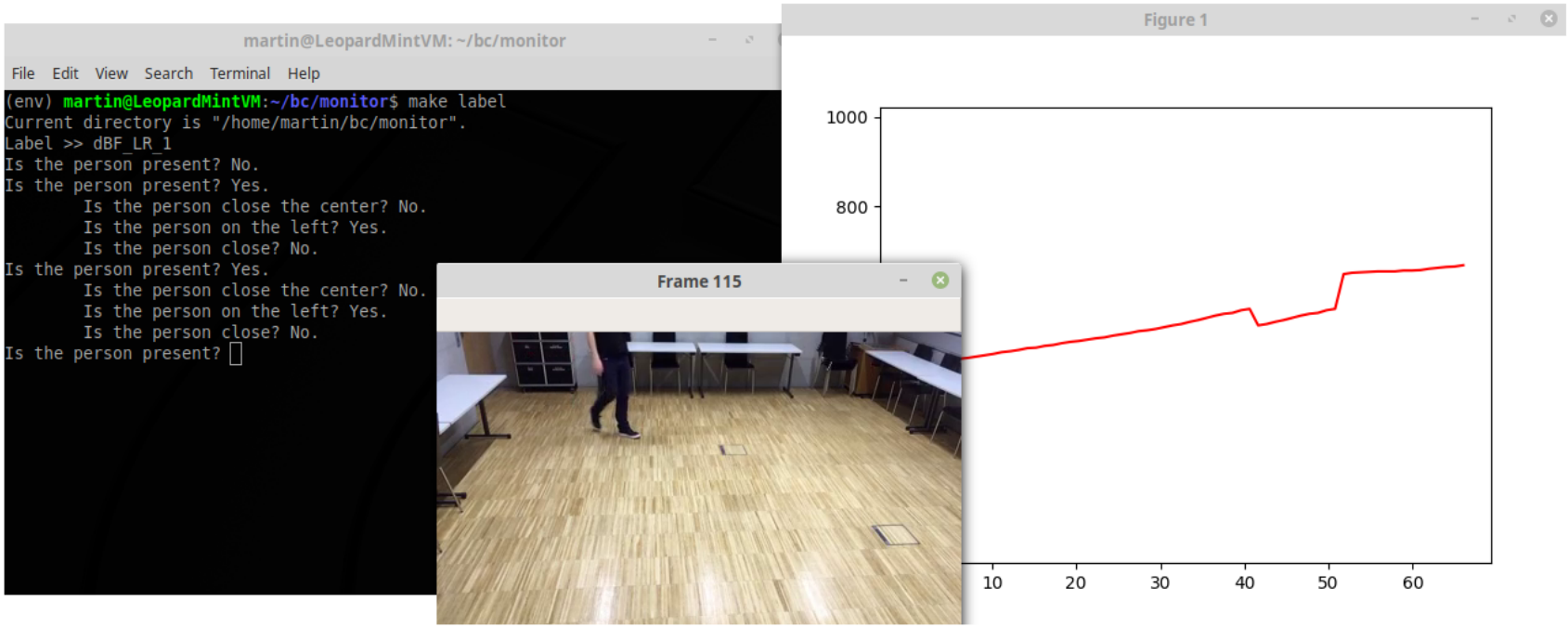
- Based on set of linear regression classifiers.



- Spatial model of sensed area.



Classification: training



Classification: postprocessing

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

- Posterior probability (%)

Aspect	Presence	Distance	Center	Left
Positive rate	75.972	75.785	63.725	49.263
Negative rate	86.542	69.793	53.436	59.327

- Possible improvements
  - Labelling
  - Multiple sensors

Thank You For Your Attention !