Data Extraction for the Quantified Self

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Introduction

Measurement of human's indoor movements is useful for analyzing treatment progress of depressed people. It shows how actively person behaves, and gives objective view of his or her psychological condition.

Overview

1. Approach
2. Implementation
3. Experiments

1. Approach

Analysis of surrounding Wi-Fi networks to retrieve person's indoor position:

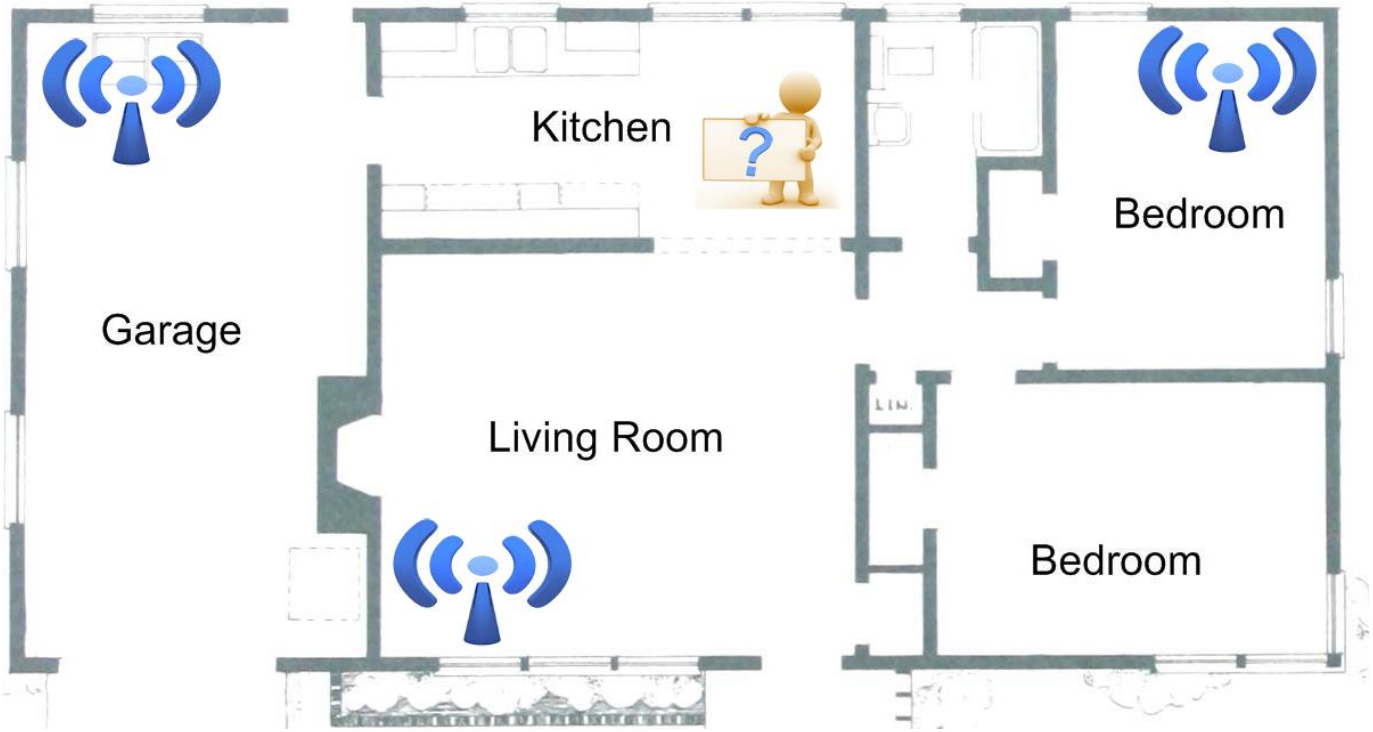
- signal strength of each network carries partial information about where smartphone is located at the moment;
- combining this information we infer person's position.

1. Approach

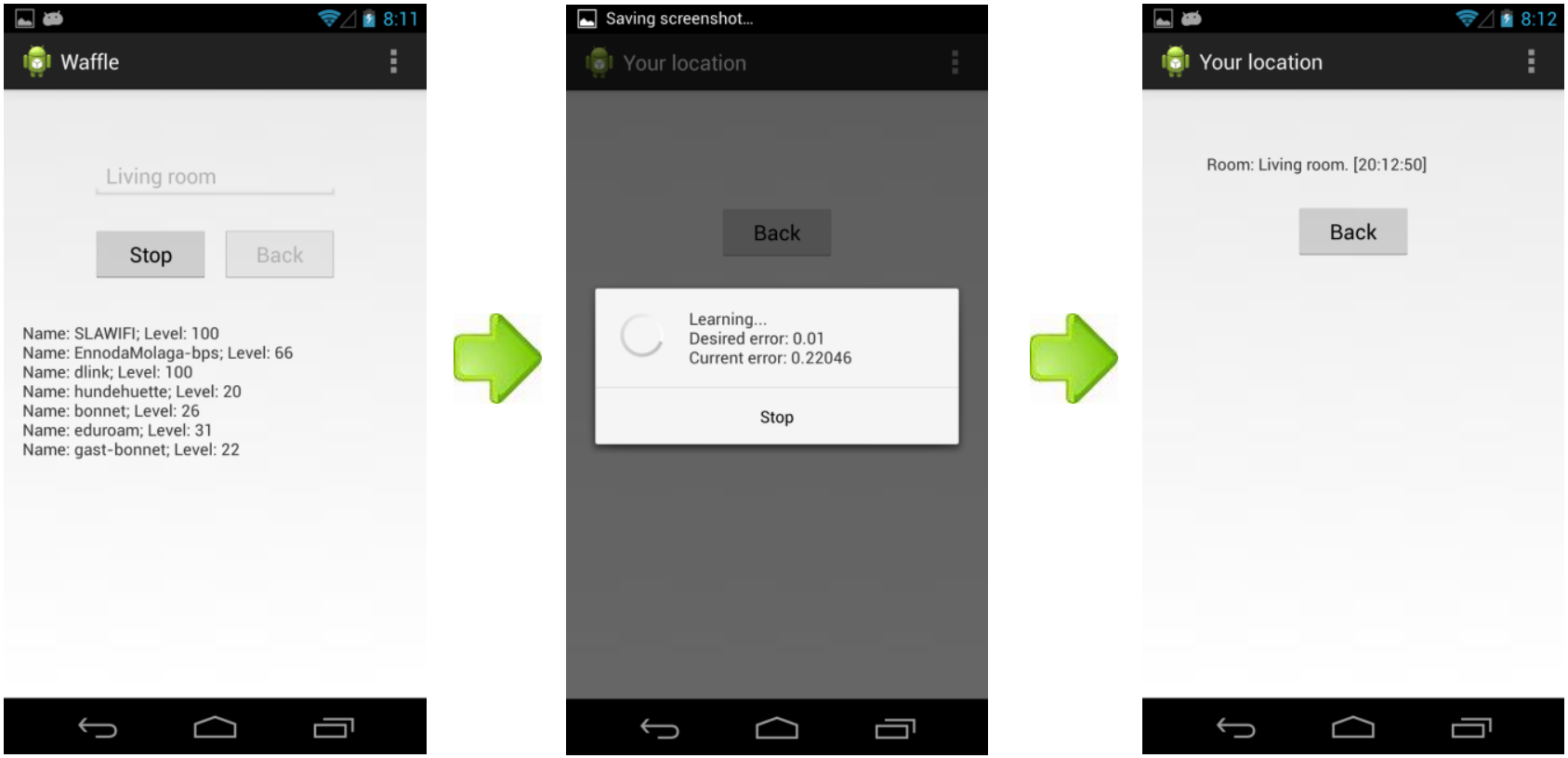
Machine learning techniques:

- k nearest neighbors
- Neural network
- Cross validation

1. Approach



2. Implementation



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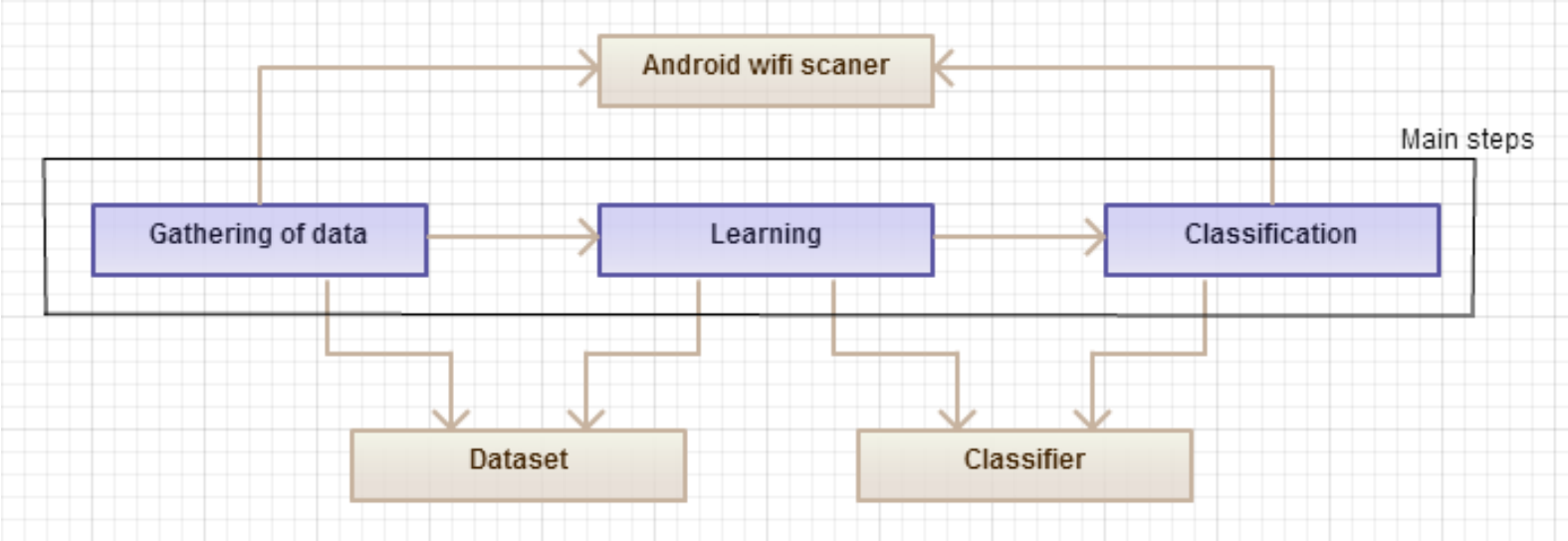
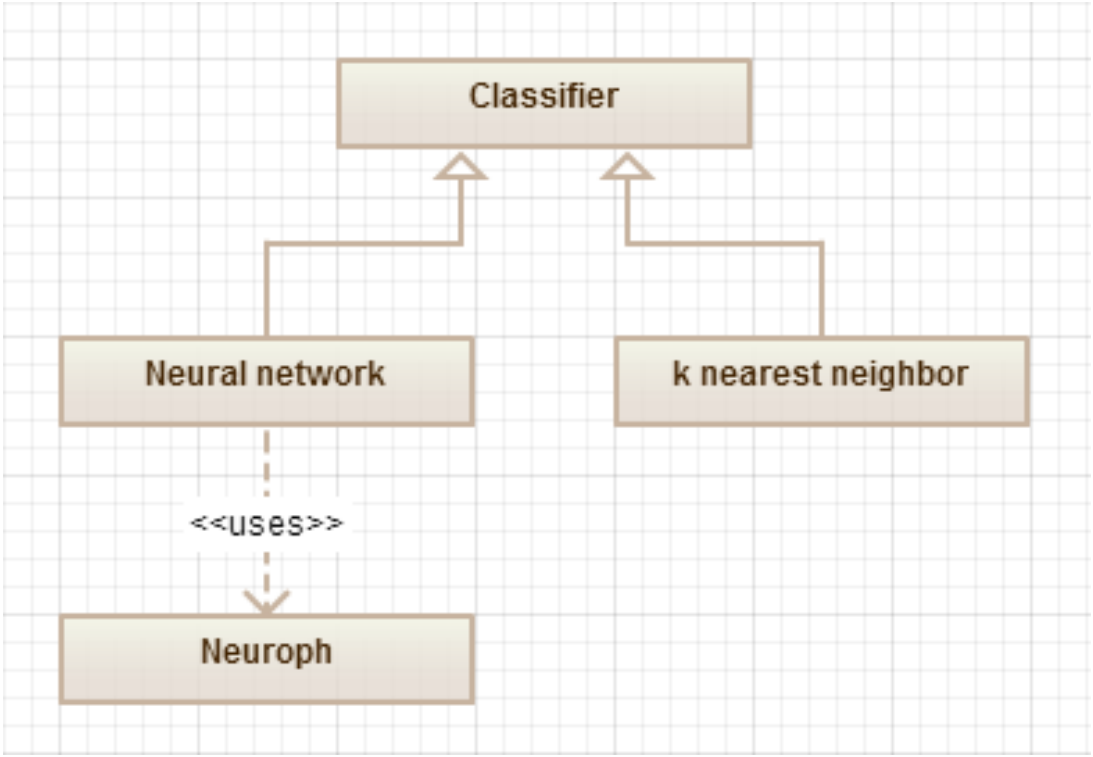


2. Implementation



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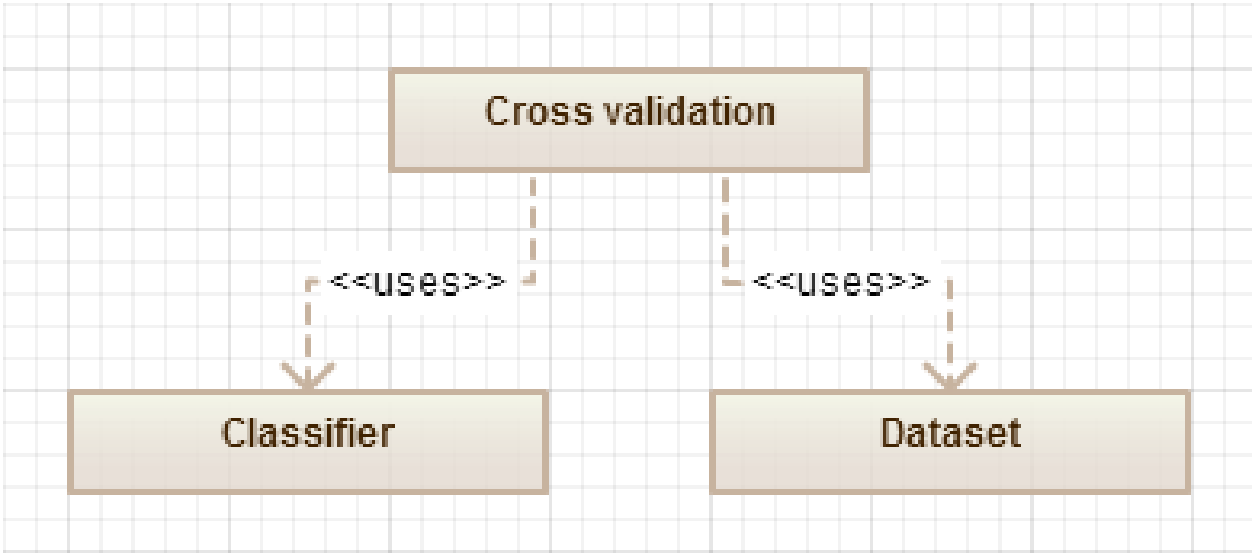
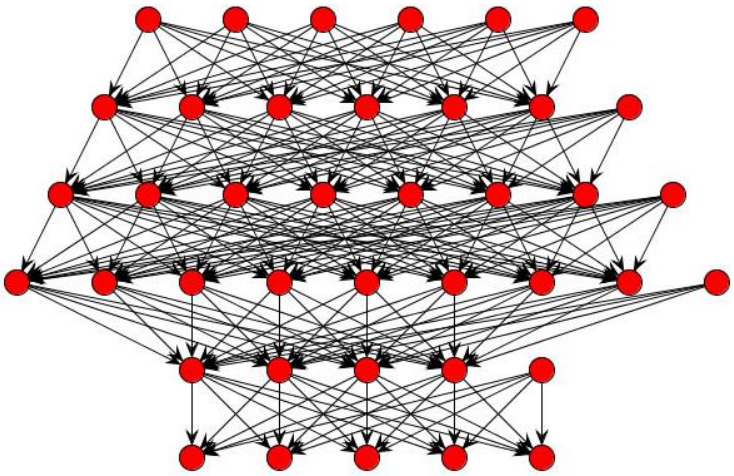


2. Implementation

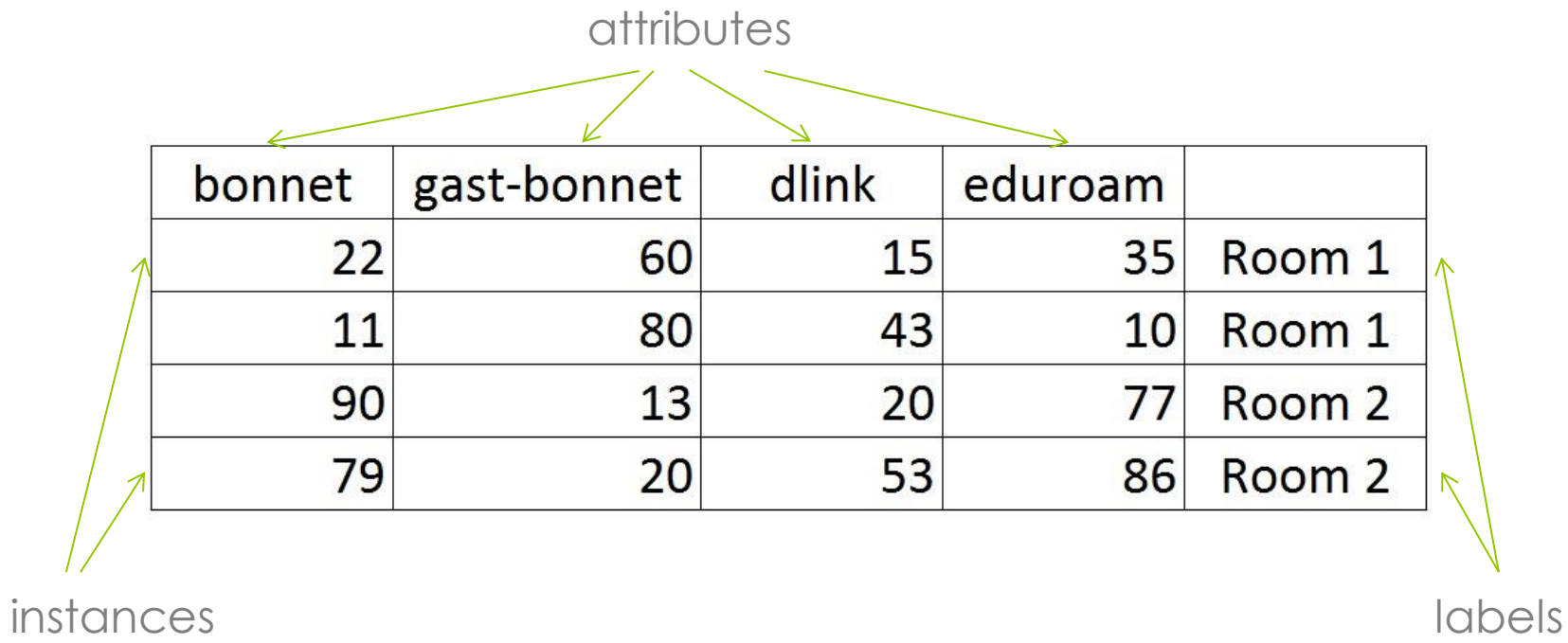
Neuroph is lightweight Java neural network framework to develop common neural network architectures.



3. Experiments

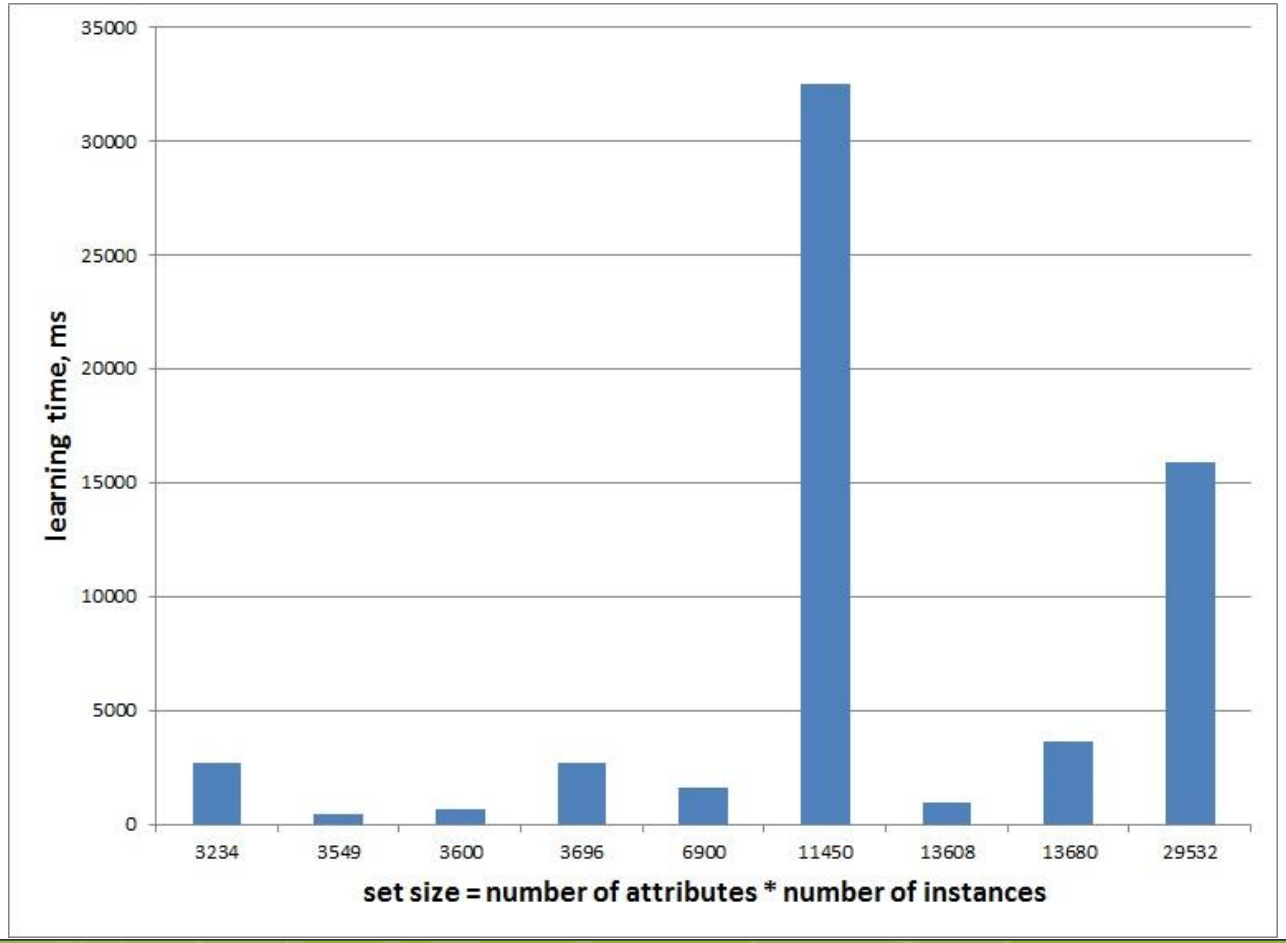
- Cross-validation technique to analyze accuracy of obtained classifier.
- Desktop application for executing cross-validation on different datasets.

3. Experiments



bonnet	gast-bonnet	dlink	eduroam	
22	60	15	35	Room 1
11	80	43	10	Room 1
90	13	20	77	Room 2
79	20	53	86	Room 2

3. Experiments



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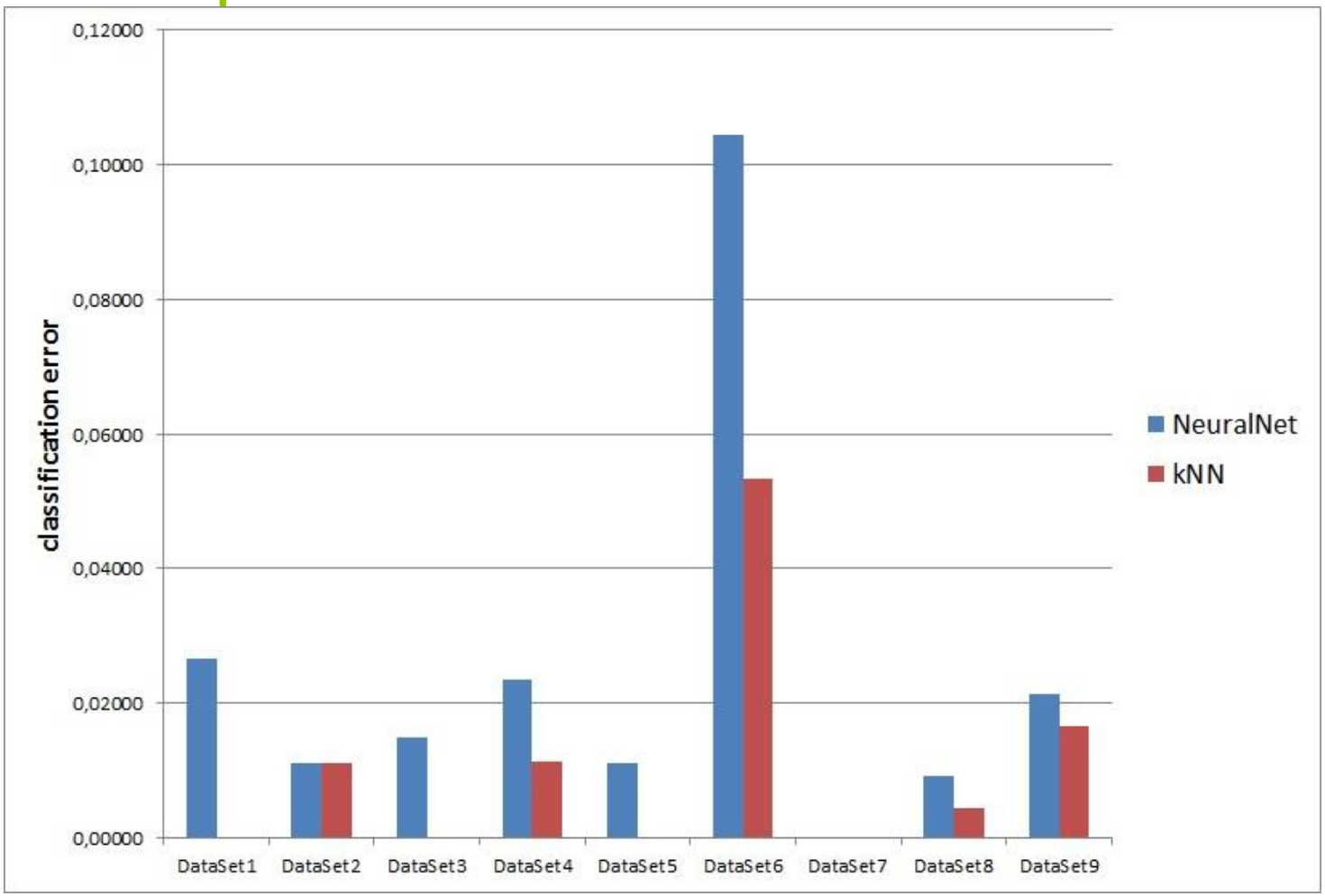

Conclusion

- Stable working Android application
- Reliable classification results
- Reasonable working time
- Can be used in the future for psychological research

Thank you for attention