

An Approach for Network Selection Based on Artificial Neural Networks in Heterogeneous Wireless Environments

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What will be covered

- 1 Introduction
- 2 Related Works
- 3 Proposal
- 4 Materials and Methods
- 5 Expected Results
- 6 Schedule

Now...

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- 2 Related Works
- 3 Proposal
- 4 Materials and Methods
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- 6 Schedule

Introduction

The concept of Always Best Connected (ABC) is a demand today, and algorithms that come on mobile devices cannot provide that.

During a handover process there are two big parts. They are network selection and the handover itself. Both of them are important once you need to select a network to do the handover, and there is no sense in selecting the best network if you cannot do the handover.

In this work, we shall investigate an approach for network selection using Neural Networks to classify networks.

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- 3 Proposal
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Related Works

Network Selection is subject of study in several research groups. To solve the network selection problem, support techniques and strategies for decision are found in the literature, such as fuzzy logic, genetic algorithms and MADM (Multiple Attribute Decision Making) methods [RIOS 2012].

Now...

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Proposal

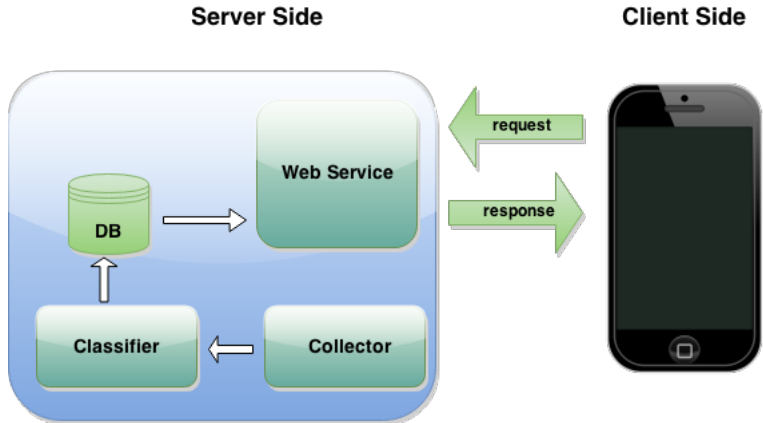
This work aims to suggest a solution for network selection, this solution must have low computing cost and guarantee an efficient mobility management, and to accomplish that we have chosen a client-server architecture which gathers most of processing on the server side, as can be seen on slide 10, and the classification process uses an approach based on Neural Networks.

Proposal

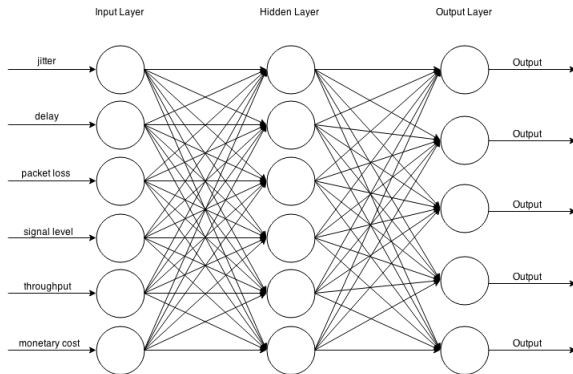
We will work on building and training a Neural Network for a classification problem.

The topology of the proposed NN can be seen on slide 11. This network will handle 6 inputs: jitter, delay, packet loss, signal level, throughput, and cost (monetary), and it is expected to return as result a MOS value between 1 and 5 (1 is the worst possible result, and 5 is the best one) for each wireless network in its range, as can be seen on slide 12.

System Architecture



Topology of the proposed NN



MOS/Classification values

MOS value	Classification
1	Bad
2	Insufficient
3	Regular
4	Good
5	Excellent

Now...

- 1 Introduction
- 2 Related Works
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- 5 Expected Results
- 6 Schedule

Materials



Now...

- 1 Introduction
- 2 Related Works
- 3 Proposal
- 4 Materials and Methods
- 5 Expected Results**
- 6 Schedule

Expected Results

We have as target the handover process, we intend to offer a feasible solution for network selection which can be integrated into a mobility management environment and used in a real environment.

Now...

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Schedule

	Activities	March	April	May	June	July
1	Literature review	X	X	X	X	
2	Problem identification		X			
3	Solution modeling		X			
4	Solution implementation			X		
5	Testbed mounting			X		
6	Solution validation				X	X
7	Result reporting					X
8	Paper presentation					X

References

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- SILVA, Fábio Lima da; MONTEIRO, Claudio de Castro; BONI, Mauro Henrique Lima de e TOLENTINO, Carlos Henrique. (2014). “Arquitetura de Seleção de Redes com Baixo Consumo de Recursos Computacionais para Dispositivos Móveis”. ENComplF - II Encontro Nacional de Computação dos Institutos Federais: 764-767.

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