



Akademia Górniczo-Hutnicza im. Stanisława Staszica w
Krakowie

Wydział Informatyki

PRACA DYPLOMOWA

Planar segment-based global localization for autonomous agents

Globalna lokalizacja agenta w oparciu o segmenty płaszczyzn

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dr hab. inż. Bogdanowi Kwolek za życzliwość, wszechstronne
wsparcie, cierpliwość, cenne uwagi merytoryczne oraz poświę-
cony czas.*

Streszczenie

Niniejsza praca bada obecne rozwiązania i architektury sieci neuronowych pod kątem lokalizacji agenta w oparciu o rozpoznawanie segmentów płaszczyzn z zdjęciach RGB. W ramach pracy wybrano oraz sprawdzono zastosowanie kilku najnowszych technologii opartych o sieci neuronowe w radzeniu sobie z rozpoznawaniem segmentów płaszczyzn w różnych warunkach życia codziennego.

Abstract

This thesis examines current neural network solutions and architectures in terms of agent localization based on recognition of plane segments from RGB images. The work selects and tests the application of several state-of-the-art technologies based on neural networks in dealing with the recognition of plane segments in various everyday conditions.

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1. Preface

1.1. Motivation

We live in the era of automation. Everywhere robots are taking over the jobs, which require repetitive or similar actions. In this environment, there are more and more machines that are

1.2. Content of this work

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

The chapter[1] 2 provides the requirements for the project, and as well formulates the sample problem of shallow water simulation. The chapter 3 outlines the tools and methods necessary for approaching the problems. In the chapter 4 I thoroughly document the software I developed to accomplish the research goals. I discuss the obtained results in the chapter 5 and sum up the thesis in chapter 6.

1.3. State of the art

1.3.1. Technology 1

A lot of bibliography citations here...

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1.3.2. Technology 2

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1.4. Main thesis of this work

The main thesis of this work may be expressed as follows:

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2. Problem formulation

Describe what each section contains...

2.1. Issues to be addressed in this work

2.1.1. (e.g.) Algorithmic challenges

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2.1.2. (e.g.) Parallelization challenges

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2.2. Functional requirements

1. Core functionalities

a) ...

b) ...

c) ...

2. Adaptation strategies

a) ...

b) ...

3. Visualization and profiling

a) ...

b) ...

c) ...

d) ...

2.3. Non-functional requirements

1. Performance and complexity

a) ...

b) ...

c) ...

2. Development requirements

a) ...

b) ...

3. Solution methodology

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

3.1. Method 1

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

3.2. Method 2

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3.3. Method 3

4. Project documentation

5. Evaluation of the results

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5.1. e.g. Convergence analysis

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5.2. e.g. Complexity analysis

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5.3. e.g. Flood simulation results

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6. Conclusions and future works

6.1. Achieved goals and observations

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6.2. Areas for development

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