

# Keen: Kotlin Genetic Algorithms Framework

*Thesis for the degrees of  
Civil Engineer in Computer Science  
and  
Master of Science in Computing*



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## Abstract

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# Chapter 1

## Theoretical Background

### 1.1 Evolutionary Algorithms

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### 1.2 Genetic Algorithms

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## Chapter 2

# Relevant Work (State of the Art)

### 2.1 Agile Artificial Intelligence in Pharo

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### 2.2 *DEAP*

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## 2.4 *ECJ*

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## 2.5 *GeneticSharp*

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# Chapter 3

## Introduction

### 3.1 Motivation

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### 3.2 Hyphotesis and Research Questions

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### 3.4 Methodology

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### 3.5 Structure

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## Chapter 4

# Keen: Kotlin Evolutionary Algorithms Framework

### 4.1 Introduction

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## 4.2 Architecture

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## 4.3 Genetic Algorithms

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## 4.4 Genetic Programming

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## 4.5 Parallelism

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## 4.7 Conclusion

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## Chapter 5

# Case Study: OneMax

### 5.1 Introduction

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### 5.2 Problem Description

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## 5.4 Results

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## 5.5 Conclusion

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## Chapter 6

# Case Study: Knapsack Problem

### 6.1 Introduction

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### 6.2 Problem Description

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## 6.4 Results

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## 6.5 Conclusion

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## Chapter 7

# Case Study: Crash Reproduction

### 7.1 Introduction

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### 7.2 Problem Description

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## 7.4 Results

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## 7.5 Conclusion

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## Chapter 8

# Conclusions

### 8.1 Summary

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