

## **Table of contents**

1. INTRODUCTION	6
2. THEORETICAL BACKGROUND	7
2.1 Fuzzy logic	7
2.2 Genetic algorithm	10
2.3 Combination of approaches	16
3. EXAMPLES OF APPLICATION	17
3.1 Fuzzy logic in ablation rate analysis	17
3.2 Fuzzy logic in durability prediction	22
3.3 Fuzzy logic in crack localization	25
3.2 Genetic algorithm in evolutionary structural optimization	29
4. CONCLUSIONS	34
Literature	34
Curriculum vitae	36