Elements of Artificial Intelligence
Faculty of Physics, Mathematics and Informatics
Cracow Technical University
Autumn 2017/2018

Assignment

Lecturer	:	**Andrzej Bargiela**
Due Date	:	**13/12/2017 (Part II)**
Percentage	:	**10%**
Length (words/pages)	:	**N/A**
Type (Individual/group)	:	**Individual**

Instructions:

1. **Submission of Coursework**
All coursework should be handed in by email sent to the tutor before 4.30pm by the due date stipulated herein.

2. **Deadlines**
Coursework deadlines must be strictly adhered to. There are penalties for late submission of work. The penalty is a reduction of 5% for each working day that the work is late.

3. **Layout**
Coursework should be word-processed. All pages must be numbered. All pages must be fastened securely by comb binding or staples. Your coursework should include and arrange according to this sequence: (1) Coursework Cover page; (2) Table of Contents; followed by the content of your coursework.

4. **Plagiarism**
When undertaking coursework essays, it is inevitable that you will make use of other people's work. It is essential that you make clear that the work in question is someone else's, since the intentional submission of another person's work as if it were one's own constitutes the academic offence of plagiarism, which is potentially a very serious matter indeed. It may result in the award of a mark of 0 for the piece of work in question, the withholding of credits, the imposition of a fine, or ultimately, suspension or exclusion from the University.

Assignment (10%)

Part II: Genetic optimization (10 Marks)

Travelling salesmen problem concerns minimizing the length of the journey between N cities without repeated visits to any city. Table below provides distances between 10 cities. Please note that for some inter-city connections the distances depend on the direction of travel (this represents connections by one-way streets). Your task is to design and implement a genetic optimization program that solves the travelling salesman problem for the case specified below.

Cities	A	B	C	D	E	F	G	H	I	J
A	xxx	5	4	7	6	5	7	4	2	9
B	6	xxx	5	6	4	8	5	4	3	8
C	3	5	xxx	3	5	6	9	8	7	6
D	7	5	4	xxx	3	5	7	9	8	3
E	5	4	5	3	xxx	4	6	7	8	7
F	5	6	5	5	4	xxx	5	4	3	2
G	6	7	9	7	6	6	xxx	5	7	9
H	5	4	8	7	6	4	4	xxx	6	5
I	2	3	6	9	8	3	7	5	xxx	7
J	9	7	5	4	8	3	9	5	7	xxx

Deadline:13/12/17