

# Strategic Games: a Mini-course for Computer Scientists

**Problems to Solve** Deadline: 9:01, 28th June 2010

You can write your answers in English, Dutch, French or Polish.

1. Consider the location game from Example 8 on page 23 of my lecture notes at <http://homepages.cwi.nl/~apt/stra/stra10.pdf>.

Now, analyze its variant for three players, where the set of all possible locations (both for the vendors and the customers) forms a circle. So in this variant each of the three players (who are the vendors) has as the set of strategies the set of points on a given circle and attracts the customers who live closer. Compute the set of Nash equilibria in this game.

2. Study Chapter 5 of my lecture notes mentioned above.

(i) Compute the regret minimization strategies in the Battle of sexes game, that is the game

	$F$	$B$
$F$	2,1	0,0
$B$	0,0	1,2

(ii) Compute the security strategies in the Traveller's dilemma game of Chapter 1 of my lecture notes.

3. Consider the paper *Welfare Undominated Groves Mechanisms* by Krzysztof R. Apt, Vincent Conitzer, Mingyu Guo and Evangelos Markakis, available at <http://arxiv.org/pdf/0810.2865v1>. Prove Lemma 1 at the end of Section 3.

4. (More difficult). Consider again the location game from Example 8 on page 23 of my lecture notes, for 11 locations and 10 players. Compute all its Nash equilibria.