Course **Artificial Intelligence Techniques (IN4010)**
Part *Automated Negotiation*
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Exercise Sheet **Tutorial 3: Automated Negotiation**
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Tutorial 3: Automated Negotiation

Exercise 1. Assume that you are negotiating with your friends on your holiday. The table below shows the negotiation issues and their possible values.

Issue	**Possible values**
Location	Antalya, Barcelona, Milan
Duration	one week, two weeks
Hotel Quality	Hostel, 3 star hotel, 5 star hotel

Agent A's preferences:

Wlocation= 0.5 Wduration= 0.2 Whotel-quality=0.3
Evaluation values: 1, 1, 0.4 for Antalya, Barcelona and Milan respectively
Evaluation values: 0.3, 1 for one week and two weeks respectively
Evaluation values: 1, 0.4, 0.6 for hostel, 3 star hotel and 5 star hotel respectively

Agent B's preferences:

Wlocation= 0.5 Wduration= 0.4 Whotel-quality=0.1
Evaluation values: 0.6, 0.4, 1 for Antalya, Barcelona and Milan respectively
Evaluation values: 0.7, 1 for one week and two weeks respectively
Evaluation values: 0.8, 0.8, 1 for hostel, 3 star hotel and 5 star hotel respectively

(a) Compute the Nash Point outcome.

(b) Assume that your opponent (Agent B) offers are as follows:

(Milan, 2 weeks, 5 star hotel), (Milan, 2 weeks, 3 star hotel), (Barcelona, 2 weeks, hostel), (Antalya, 1 week, 3 star hotel), (Antalya, 1 week, hostel), (Milan, 2 weeks, 5 star hotel).

Agent A would like to model Agent B's preferences by employing "frequency analysis". What is the estimated preference profile (weights and evaluation values) after receiving the Agent B's bids above? Please take n = 0.1 in your estimation.

(c) Classify all negotiation steps by Agent B.

(d) Compute the sensitivity of Agent B to Agent As preferences.

(e) If Agent A accepts the offer (Antalya, 1 week, hostel), would it be a Pareto optimal outcome?