Algorithmic Game Theory - Syllabus (tentative)


Reading Material:
- Multi-agent systems by Shoham and Leyton-Brown, Sections 3.1, 3.2, 3.4.1 and 3.4.3.
- Game Theory, Part II: Two-Person Zero-Sum Games by Ferguson, Sections 1 and 2.
- Lecture Slides in Optimization by Peter Bro Miltersen, Lecture 5 and 6, Slides 1-9.

Week 2 - Non-cooperative Game Theory 2: Normal Form Games, pure and mixed Nash equilibria, Extensive Form Games, Conversion to normal form, Sub-game perfect equilibrium, Extensive Form Games of Imperfect Information, Behavioral Strategies, Perfect and Imperfect Recall.

Reading Material:
- Multi-agent systems by Shoham and Leyton-Brown, Sections 3.3.2, 3.3.3, 5.1, 5.2.1, 5.2.2.
- Game Theory, Part III: Two-Person General-Sum Games by Ferguson, Sections 1 and 2.
- Extensive Form Games (Lecture Notes) by Jonathan Levin, Sections 1-4.

Week 3 - Congestion Games: Congestion Games, Non-atomic Congestion Games, Selfish Routing, Price of Anarchy.

Reading Material:
- Multi-agent systems by Shoham and Leyton-Brown, Section 6.4.


Reading Material:
– Algorithmic Game Theory by Nisan, Roughgarden, Tardos and Vazirani. 9.1, 9.2, 10.1, 10.2.


**Reading Material**:
– Multi-agent systems by Shoham and Leyton-Brown. 10.4.1, 10.4.2, 10.4.3, 10.4.5, 10.5.1
– Algorithmic Game Theory by Nisan, Roughgarden, Tardos and Vazirani. 9.3, 9.5


**Reading Material**:
– Algorithmic Game Theory by Nisan, Roughgarden, Tardos and Vazirani. 13.1, 13.2
– Multi-agent systems by Shoham and Leyton-Brown. 11.1.8

**Week 7 - Coalitional Game Theory**: Coalitional Games, Classes of Coalitional Games, Properties of Payoffs, The Shapley Value, The Core, The ε-Core, The Least Core, The Nucleolus.

**Reading Material**:
– Multi-agent systems by Shoham and Leyton-Brown. 12.1, 12.2

**Week 8 - Student Presentation**: Some scientific paper related to the concepts we have covered over the course of the tutorial.