

Seminar in Automata and Computability

Weekly hours: 3
Credit points: 3
Prerequisites: 61759 Automata and computability, 61746 Logic
Lecturer: Sarai Sheinvald, sarai@braude.ac.il

Course Description:

The seminar deals with advanced topics in Automata. The goal is to learn several related aspects that are a continuation of the topics learned in the introductory course on automata. The topics that will be covered in the seminar are (1) Learning algorithm for regular languages (2) Infinite words and different types of automata for them, as well as their connection to logic (3) Automata over trees, and finally (4) Examples of using automata for modeling and verification algorithms.

Course topics (along with the number of weeks for each topic)

1. The L^* learning algorithm for regular languages (2)
2. Alternating automata (1)
3. Automata over infinite words (3)
4. Temporal logic (2)
5. Tree automata (1)
6. Additional subject according to time limitations.

Literature

1. Relevant academic papers.

The final grade will consist of:

1. Final exam 25%
2. Project (oral presentation on course topics) 75%

Learning products:

1. A more complete picture of regular automata
2. The students will get to know various different models of computation
3. The students will get to know the relation between these models and types of logic
4. The students will be introduced to the application of such models in real-life algorithms.