

Spiele in der Informatik

9. Oktober 2023

Themen

Folgende Themen können im Seminar "Spiele in der Informatik" im WS 2023/24 vergeben werden. Jede Zeile beinhaltet den Titel des Themas, Referenzen zu möglichen Quellen und eine grobe Einschätzung zur Schwierigkeit des Themas. Ein ★-Thema ist einfacher als ein ★★★-Thema. Die Termine der entsprechenden Vorträge richten sich im groben nach der Sortierung der Themen.

- Einführung in die Spieltheorie
 1. Das Nash-Equilibrium [14]. ★
 2. Lösen von Matrix-Spielen mittels linearer Programmierung [14]. ★★
 3. Der Minimax-Algorithmus und Alpha-Beta pruning [14, 16]. ★★
- Fixpunkttheorie und Zwei-Spieler-Spiele
 4. Vollständige Verbände und Bisimulation [17, 20]. ★★
 5. Paritätsspiele [1]. ★★★
 6. Energy Games [8, 4]. ★★
 7. Stochastische Spiele [5, 21]. ★★
- Weitere Themen
 8. "Cops and Robbers" auf Graphen [13]. ★★
 9. Nebenläufige Erreichbarkeitsspiele [7]. ★★
 10. Zero-Knowledge Protokolle [11, 9, 15]. ★★
 11. Auktionstheorie [2, 22]. ★★
 12. AlphaGo [18, 19]. ★★★
- Komplexität von Spielen
 13. Minesweeper ist NP-vollständig [12]. ★★
 14. Rush hour ist PSPACE-vollständig [10]. ★★
 15. Tetris ist NP-vollständig [3]. ★★★

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