Institut für Systemtheorie
und Regelungstechnik
Universität Stuttgart

Open Thesis (BA)

A systems theoretical analysis of ELO systems

Description:

In many competitive sports, ELO systems are used for tracking players' skill levels and for fair matchmaking. One prominent example is chess.

In this thesis, existing ELO systems should be analyzed from a systems theoretical point of view, and the gained insights should be used to develop new mechanisms with convergence guarantees.

Furthermore, while many ELO-systems are well-established for 1vs1 competitions, their applicability to team-sports ratings, e.g., 2vs2, is not well researched. Therefore, we aim to understand how single players' ratings can be best combined to gain meaningful team ratings.

For the validation of the developed schemes, at the IST, we are tracking the outcomes of 2vs2 foosball games. During the thesis, more data should be collected, and the prediction accuracy of different schemes should be examined empirically.

Prerequisites:

- Lectures: ERT
- Fun with theoretical work
- Basics of probability theory

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Area:

System analysis
Observer design

Properties:

Type: **BA**

20% literature
50% theory
30% validation

Beginning:

anytime

Further information: http://www.ist.uni-stuttgart.de/teaching/bama