

A game theoretic approach to medal race sailing

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Background

This project is based on two previous master thesis projects:

1. A fleet race simulation master thesis by Sebastian Berg, where he wrote an agent based system in Python for a fleet of identical boats, but where each of the boats had a preset starting tactics. The system was run and the tactics distribution were evolved towards an evolutionary stable state.
2. A more recent master thesis project by David Lidström on a similar agent based set up but for two match racing boats where a Monte-Carlo tree search approach was used.

Description

The suggested master project will use the above two described systems as a starting point and will then expand taking into consideration the complex pay off of the standing (ranking) of the top 10 boats prior to the “Medal Race” i.e. the final race of the series. A medal race is the final race and the points count double to clearly define the gold, silver and bronze medal winners. Here the tactics will be a mix between fleet race and match racing. Co-supervisor of this project will be Dr Laura Marimon Giovannetti, who also is a coach of the Swedish Olympic Sailing Team, that will help with deep insights on the current state of the art sailing.

Links to the two earlier master thesis

[Berg's master thesis](#)

[Lidström's master thesis](#)

Possible application in the future

In the olympics, the sailing event ends with medal races which creates a rather unique and quite new situation where a novel strategy based on classic of fleet- and match racing tactics should be developed. Hopefully the thesis work, based on the two earlier, will help Dr Laura Marimon Giovannetti and the rest of the Swedish team to get an edge on the waters in the next olympics.