Tournament design for a three-team first person shooter

Master's Thesis Proposal

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Brief

Fall Damage, a video games company based in Stockholm, is developing a competitive first-person-shooter game: ALARA Prime. The game will offer 4 vs. 4 vs. 4 play between humans. Fall Damage is interested in the development and evaluation of tournament formats suitable for a game with three-team matches.

Background

First-person shooter (FPS) is a combat-centered genre of games where players move in a three dimensional environment, equipped with firearms or other ranged weapons, with a first person perspective. Early influential titles in the genre are *Wolfenstein 3D (1992)*, *Doom (1993)*, and *Half-life (1998)*.

Monte Carlo methods are a set of algorithms where random sampling is used to draw conclusions about systems. It's used in a wide variety of fields, such as physics, biology and finance. Broadly speaking, the methods consist of the following steps

1. A definition of the input space, and a probability distribution over it.
2. Random sampling of inputs from the aforementioned distribution.
3. Deterministic computation of the inputs.
4. Aggregation of the results.

Project Proposal

The student would examine the existing family of tournament formats, and evaluate which are applicable to the three-team setting. Furthermore, the student would develop new formats, specifically designed for the three-team setting.

The proposed tournament systems would be evaluated via Monte Carlo simulation. Simulations would be evaluated by comparing generated (true) rankings against the tournament result using rank distance metrics, the number of matches played, and simplicity, amongst other things.

The three-team setting provides opportunities for two teams to cooperate against another. The effect of this on tournaments would also be modeled and evaluated using the simulations. This development would be driven by data from internal playtests.

Aim of Thesis

The goal of the project is to provide a set of recommendations for the organization of three-teams-per-match games. These recommendations may be used as a basis for future tournaments and events held for ALARA Prime.

Related Publications

Balázs R. Sziklai, Péter Biró and László Csató, *The efficacy of tournament designs* (2022)