

# Virtual Quidditch: A Challenge Problem for Automatically Programmed Software Agents

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# Overview

No results, rather an announcement/invitation.

Goal: explore evolution of control and adaptation in dynamic, heterogeneous environments.

Vehicle: a game adapted from J. K. Rowling's best-selling *Harry Potter* books.

Status: Implementation of simulator is underway.

# Motivations

Most virtual worlds explored using GEC are simple and/or static and/or homogeneous and/or boring.

RoboCup Simulator League is grand, but simultaneously too hard (irrelevant simulator overhead) and too easy (fixed, constrained).

# Virtual Quidditch features

**Richly heterogeneous**—player roles, balls themselves are active/intelligent.

**Richly 3-dimensional**—flying game, full use of the third dimension.

**Extensible**—rules not uniquely determined by the Rowling books; physics based on magic spells so the sky is the limit!

**Beyond human experience**—unlike soccer, few intuitions about strategy to bias methods.

**Like real-time, only faster**—model *some* aspects of real-time but design for rapid fitness tests.

# Rules

two teams

large oval field

3 goal hoops per team

flying broomsticks, bats

3 kinds of balls

4 kinds of players

# Quidditch Balls

Quaffle (1)—used for scoring, 12" diameter, leather, enspelled for one-hand holding, not affected by gravity.

Bludgers (2)—autonomous, attempt to hit players, 10" diameter, iron.

Golden Snitch (1)—autonomous, avoids capture with great speed and maneuverability, can vanish and reappear at random, walnut-sized with two silver wings.

# Quidditch Players

Keeper (1/team)—protects the goal

Chasers (3/team)—scores with the quaffle

Beaters (2/team)—hits bludgers with bats

Seekers (1/team)—catches golden snitch

# Fouls

*Quidditch Through the Ages* (Rowling and Whisp, 2001) describes several fouls and alludes to others (not specified because players ``might get ideas").

**Blagging**—Seizing another player's broom or any part of another player's anatomy.

**Snitchnip**—Any player other than a seeker touching the golden snitch.

**Stooging**—More than one chaser in scoring area.

**Keeper Bumping**—Deflecting a bludger towards a keeper when the quaffle is inside the scoring area.

# More details in paper

The field (pitch)

Starting the game

Scoring

Turnovers

Winning the game

Strategy

Penalties

Referees

Server mechanics and protocols

Many details still being worked out

# Virtual Quidditch

