**Cadmium Model Data Form**

Title: Football Player Interaction Model

Type: Cell-DEVS Model

Acronym/Short name: FPI

Purpose for which Developed: To model and simulate football player interactions within a defined grid space, focusing on actions such as short passing, long passing, and dribbling. The model captures player decision-making, movement, and ball control through a discrete-event simulation approach.

Other Applications for which it is Suitable: sports strategy simulations, football analysis

Date Developed/Implemented: March 2025

Domain: Sports Simulation

URL: <https://github.com/yelfaram/Cadmium-Cell-DEVS-Football-Player-Interaction>

Description (including characteristics): The Football Player Interaction Model (FPI) is a Cell-DEVS-based simulation designed to replicate football player interactions in a discrete space. Players operate within a structured grid environment, making decisions based on their state variables, including possession, mental state, fatigue, and movement direction. The model supports various football actions such as short passing, long passing, and dribbling. Player state variables include has\_player, has\_ball, mental, fatigue, action, direction, and inactive\_time. The model enables dynamic decision-making through a rule-based approach and is configurable via JSON files to simulate various scenarios.

Links to Related Documents

Short Title: Football Player Interaction

URL: [https://docs.google.com/document/d/1-SfbLqPhrevOlU38r\_rQaabJztOIdFOBPMzdCi3Arpo](https://docs.google.com/document/d/1-SfbLqPhrevOlU38r_rQaabJztOIdFOBPMzdCi3Arpo/edit?usp=sharing)

Description: This document provides an in-depth analysis of the Football Player Interaction Model, including its structure, implementation details, testing strategies, and execution results. It also outlines the simulation configurations used to model different football interactions.

Keywords: Cell-DEVS, Sports Simulation, Football, Player Interaction

Developer:

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| Name: Youssef Elfaramawy | Student Number: 101366514 |
| Address 1: | [e-mail]: youssefelfaramawy@cmail.carleton.ca |
| Address 2: |  |
| City: Ottawa | Province/State-Country: ON/CA |
| Zip - | Phone : - - |

Comments: