Disc Golf Flight Simulation - System Architecture

discs.json
(Disc Properties)

flight_plot.bmp
(Visualization)

main.rs
Orchestrates Simulation

read

disc_reader.rs

Launch Config
• speed
• spin
• angles
• height

Sim Controls
• dt (time step)
• max_time

call plot()

plotter.rs

Vec<Disc>

disc, launch, controls

renders

discs_from_filename()
Parse JSON disc data

path_simulator.rs - Core Physics Engine

plot()
Generate Visualization

deserialize

Vec<Ground>

uses

DiscJS
Serde Deserializer
→ Disc struct

simulate()
Iterative Physics Simulation

Plotters Library
ChartBuilder
LineSeries

uses

creates

Disc
• AeroProps
• Mass
• Diameter
• Moments of Inertia

SimStep
Per-frame state
(all coords)

updates
state

Coordinate Systems & Transforms

Coordinate
Transforms
gd, dg, ds, sd
sw, ws

Ground
Coords

Disc
Coords

Side-Slip
Coords

Wind
Coords

coordinate
conversions

Physics Calculations: Drag, Lift, Pitching Moment, Gravity

Legend:

- Module/Function
- Data Structure
- Coordinate System
- Algorithm
- External/Library

Key Flow:
1. Load disc data from JSON
2. Configure launch parameters
3. Run physics simulation
   (coordinate transforms)
4. Generate visualization