Artificial Intelligence and Sports: 1 pager

Overview

Artificial Intelligence (AI) is rapidly becoming a part of our daily lives, and rapidly growing as a field of work in which young people can build careers. One of the ways in which AI is being applied with growing value is in sports. With that in mind, we wish to build an Action Learning Lab for young people in high school in which they can learn about AI, Machine Vision, Data Analysis and Ethics through hands-on learning in the context of games and sports. This lab will take place over the course of 50-60 hours of learning.

Learning goals

- Build familiarity with AI algorithms, and how to apply them to data
- Build an understanding of data collection methodology
- Develop a mindfulness of ethics and social impact as it applies to data collection and algorithm construction
- Create a personally meaningful project
- Engage in a creative learning process that introduces new ways of problem solving and ideation

In addition to these general goals, students will also have goals that relate more directly to the projects they choose to work on. The curriculum will be designed to give students an opportunity to focus their work in a couple of areas, which will lead to young people being familiarized with at least one or two of the following skills: machine vision, sports statistics, embedded electronics.

Curriculum Overview

- **Introduction to AI (5 hours)**
    - What AI is, how it works in a general sense, how it's similar/different from the ways we see it presented in pop culture
    - What data collection looks like, what the implications are of incomplete data sets
    - How AI shows up in our lives, how can be used in sports
- **Survey of AI in sports (20-25 hours)**
    - Project 1: Shot predictor – given a dataset of where Basketball shots were taken by certain players, predict where they'll shoot from next
    - Project 2: What makes a good team? – given a choice of datasets on successful teams in a variety of sports, can you build an algorithm to predict who will be successful in the next year?
    - Project 3a: See the ball – using Raspberry Pi, cameras, motors and sensors, build a robot that move and analyze its camera data

    - Project 3b: Be the ball – build an AI algorithm to detect a ball moving through the camera's view.
    - Project 4: Visualizing Success – building data visualizations of successful performances in sports
- **Group Projects (25-30 hours)**
    - Groups brainstorm projects that they'd like to build, research they'd like to do within the space of sports, games and AI
    - Inspiration points for groups who are looking for help thinking of projects:
        - What kind of new game could you make up with an AI-seeing mini-robot?
        - How can you use machine vision to help you grow and improve in a sport/game you enjoy playing?
        - What's one thing about sports that mystifies you, that you want to know more about?