100 XP

Introduction

2 minutes

Not all models are simple mathematical equations that can be plotted as a line. Instead, some complex models are easier thought of more like flow charts or traditional programming structures. Such models usually have extra levels of customization available, which can make them more powerful, though also trickier to work with. Throughout these exercises, we'll explore this by manipulating how models work and are trained. Although we'll focus on one type of model, the general principles taught here apply to many other model types as well.

Scenario: Predicting Olympic results using machine learning

Throughout this module, we'll refer to the following example scenario as we explain concepts surrounding model architecture and hyperparameters. This scenario is designed to appear complex at first but as the exercises progress we'll see how it can be tackled using a little critical thinking and experimentation.

The Olympics games' motto consists of three Latin words: Citius - Altius - Fortius. These words mean Faster - Higher - Stronger. Since this motto was established, the variety of games at the Olympics has grown enormously to include shooting, sailing, and team sports. We would like to explore the role that basic physical features still play in predicting who wins a medal at one of the most prestigious sporting events on the planet. To this end, we'll explore rhythmic gymnastics: a modern addition to the games that combines dance, gymnastics, and calisthenics. One might expect that basic characteristics of age, height, and weight play only a limited role, given the need for agility, flexibility, dexterity, and coordination. Let's use some more advanced machine learning models to see how critical these basic factors really are.

Prerequisites

- Familiarity with machine learning models

Learning objectives

- Discover new model types– decision trees and random forests.
- Learn how model architecture can affect performance

- Practice working with hyperparameters to improve training effectiveness

Next unit: Decision trees and model architecture

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