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Elevator Pitch: Train a long short-term memory (LSTM) model to predict a powerlifter's performance in future competitions based on their previous results

Context: For powerlifting, performance is denoted by the weight the competitor successfully lifted and dots or wilk scores. A competitor is able to successfully complete a challenge with within a set of categories as well as combinations of those categories: squat, bench, and deadlift. Dots and wilk scores refer to the ratio of bodyweight and weight successfully lifted.

Methods: We will use a LSTM and various feature-based regression. While we have not determined the specific kind of LSTMs, we will explore classic LSTMs, bidirectional LSTMs, gated recurrent units, and LSTMs with attention.

Existing resources:

- Training Data & Testing Data
    - https://www.openpowerlifting.org/
    - https://openpowerlifting.gitlab.io/opl-csv/introduction.html

What's new: A new dataset will be collected from BU Powerlifting Club. The data is not on the official website and will be collected from a mock competition hosted by BUPL and WPL.

Plan:

1. Collection all the historical competition data
2. Do an initial analysis and cleaning of the data to understand the trend and other metrics
3. Start initial LSTM and regression models
4. Refine the models

Proposed demonstration or evaluation: We will use the upcoming weekly national or local competitions to determine the accuracy of our predictions.

Variation:

1. LSTM hidden layers
2. Different features in regression models
3. Data augmentation
4. Model comparison between LSTM and regression models