WASML: Nd-array, Classification and Regression

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Abstract

In today's day and age, machine learning has become increasingly an integral part of our businesses and lives. However, the current machine learning landscape is dominated by Python and its ML ecosystem consisting of Numpy, Pandas, Matplotlib and Sklearn. The most common way we interface with machine learning is through our browsers. Every time Facebook correctly tags someone in the photos we upload, or how YouTube decides to recommend us videos a machine learning model is running behind the scenes to make those predictions. The traditional way to do this is to use a server that takes in all the data and produces the output and sends it back. For complex models, this makes a lot of sense but for simple predictions, it is quite a bit of overhead when the calculation can be done on the device itself. The problem with using python for this is that they need a python runtime on the system which is not available on browsers. The aim of this project is to build a machine learning library that runs in the browser powered by WebAssembly. This paper will focus on building of the nd-array implementation and classification and regression models for the WASML project.