Introduction to ThunderSVM: A Fast SVM Library on GPUs and CPUs

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And how to run it on Google Colab …
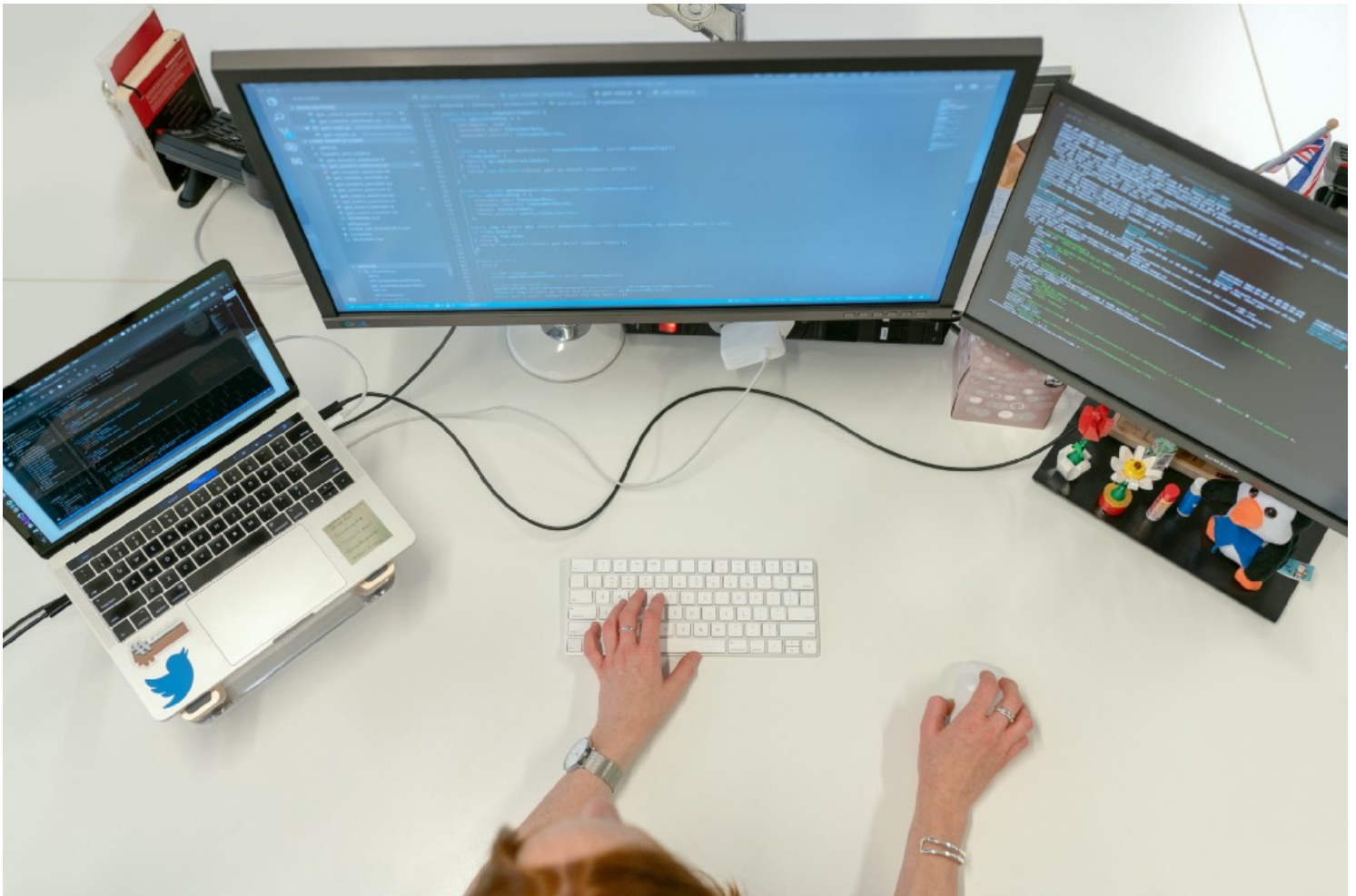

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Support Vector Machine(SVM) is a machine learning algorithm used for classification

and regression. It is one of the most basic ML algorithms which can be used to classify points in high dimensional space and to predict real numbers from a set of given features. If you want to know more in-depth about SVM, feel free to read the following:

SVM in Classification

- Chapter 2 : SVM (Support Vector Machine) — Theory

- Support Vector Machines(SVM) — An Overview

- Support Vector Machine — Simply Explained

SVM in Regression

- An Introduction to Support Vector Regression (SVR)

- Support Vector Regression Tutorial for Machine Learning

In this article, we will get to see how to install and run ThunderSVM in Google Colab. Let's see what thundersvm is first…

ThunderSVM

ThunderSVM is an open-source library which leverages GPUs and multi-core CPUs in applying SVM to solve problems in a much faster way with high efficiency. The speedup increase using *thundersvm* compared to *scikit-learn svm* in classification increases proportionally with the amount of data. By changing just one line of code, you can speed up your algorithm by about 70 times!

In using thundersvm, first you have to install it following the steps below.

Installation

To fully utilize both cpu and gpu, use the gpu runtime in google colab. First, open colab and click *Runtime >> Change runtime type* from the Menubar. Next, click *GPU* in the *Hardware Accelerator* dropdown menu. This will activate a gpu backend for your google colab script.

CUDA Toolkit 9.0 is required to run thundersvm. We'll install this first.

Now, execute the following lines of code one after another in the order shown below: