CS-772, Probabilistic Machine Learning

PROJECT PROPSAL

Gesture Recognition System

24th Jan, 2015

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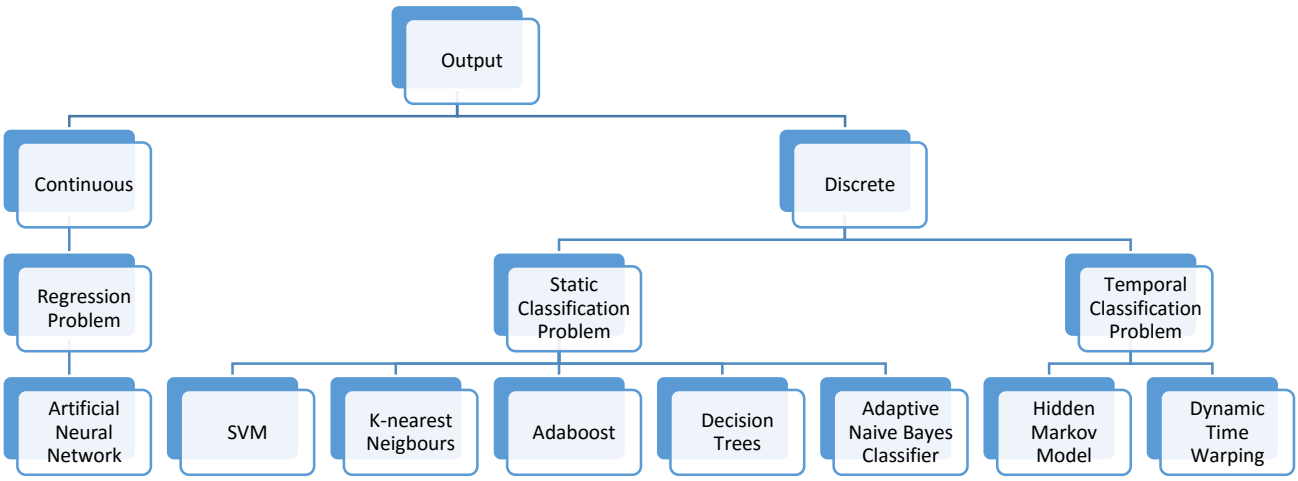
This project will design and build a man-machine interface using a camera to interpret gestures. Using the concept of gesture recognition, it is possible to point a finger at the computer screen so that the cursor will move accordingly. Gesture recognition can be conducted with techniques from computer vision, image processing and machine learning. Many approaches have already been made and a lot of algorithms are available for particular tasks in hand.

There are wide applications of this system but at the heart of every application lies the basics. So first we would like to review recent advances in this field by carrying out experiments with various evaluation criteria to understand how these algorithms perform. We would like to proceed in the following sequential manner:



By analysing them, we would like to build a comparative model so that we can identify effective approaches for robust performance and choose the right algorithm to address our problem.

Using this we would like to take it further by building up a **user-customizable gesture recognition system.** We would like to address this online gesture recognition problem with appearance based model based on two phases – training phase and real time prediction phase. Both phases will involve pre-processing of input data and feature extraction for the particular problem in hand. Training phase will then use algorithms (based on our analysis) to build a model for predicting gesture label.