Machine Learning,ML

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Lecture 10
Tutorial for week02

So welcome to the fifth and last lecture of the second week of this course in machine learning, as normal the last lecture of every week is more or less an introduction to the applications to the assignments that I have assembled for that week. So I have two comments at this point, the first comment regarding the character of the assignment, so our two objectives with the assignment so
apart from the first being the vehicle for C assessment for you my intention is that the assignments should be a way for me to re-emphasize a few of the items and that I've been that I touched during the lectures of the week this goes more or less for both groups of questions as you already seen the first groups are our questions that more or less relate to material directly given in the lectures, while secondary group of questions relate to material provided by some of the suggested readings. So the second comment I want to give at this point is actually that I want to encourage you to also look out Winer with respect to a number of the items or concepts that I touch it's so easy today to Google on anything, sometimes you can think that whatever you say people will Google on it and actually I really want and to encourage you to do so, because the what I try to do with the course just to give you an overview, I hope I will be able to systemize things in this area in a good way for you and but of course there is an endless amount of material that you can find on any of the key topics that I touched and it's probably very advantageous to look around a little and extend your readings on any of the subjects except subtopics that I have touched so please do. So let's turn to the questions then and as always there are two groups, one with questions based on the video lectures and group two with questions based on some extra material so let's now immediately turn to Group one. So actually the questions themselves I will let them stand for themselves, so what I will do at this point I will take the chance to mention or highlight the sub topics that I treated in the lectures and just make a short comment on them. So the first question relate to this discussion I actually had more or less in lecture two, about the importance or have a clear understanding of what an object is, what your feature is, what establish an object space, what establish a hypothesis space and what characteristics these kinds of spaces have which is a central topic for this week. The next question number two relate actually to lecture three the lectures on feature engineering and which is of course important and obviously I think so because I've given it a separate lecture, so this is a question that highlights feature in engineering, actually there is a fourth another question question four that also partially relates to the selection of Features as you may remember that

feature extraction or selection or anything related to feature in the learning has a really a big impact on the forthcoming learning process when there is the risk for having phenomena like over fitting. And as you may remember earlier from the lectures and I also made a distinction between regression and classification, and actually we we've been delving mostly on classification so by question three I was want to highlight again and the importance of the concept of regression. Finally question 5 is there to put some limelight on the discussions I've had during primarily lecture lecture 2 on the conceptual hierarchy which means by which is meant looking at concepts on various abstraction levels. So let's turn now to questions in group 2 and actually the questionnaire I given you relates very closely to the five different articles or papers that I recommended for further reading, and so actually the reason for including reference one is that there are many traditional techniques in applied mathematics that has a long history but are still very valid and very useful in machine learning and actually dynamic program is one of those techniques, it's a pretty broad concept but is as a wide range of applicability. And I want to include that to highlight the importance of this technique but also in general the importance of bringing forward another traditional mathematical looking into machine learning. So the second reference here is more related to the discussions I've had on conceptual structures, and in particularly conceptual hierarchies and how one looks at those and how one can distribute features in different ways in those conceptual hierarchies. The third reference is I would say an Outlier if you remember that concept so it's an Outlier on this week because we haven't really talked much about it but obviously there is a need in all areas not much in learning is not exception for more theoretical work for more theoretical frameworks for understand what it actually means to learn in various contexts. And there are some work of that and this is a reference to one of the more well-known contributions to that area. And the fourth reference relates to the item brought up in lecture four, so actually it's there to highlight that in practical work and these concepts as was touched in lecture four our often used and referred to so this is a work about Near Misses and how Near misses can be used in a learning process. Finally the last reference and is a reference to a specific technique actually support vector machine and it's a technique that we will come back to, yeah it's put here because it's a representative for one of the techniques or issues brought up in lecture 4 that is instance based learning. So let's please see that as an example of instance based learning on simulated based learning which was one of the topics of lecture 4. So this was the end of the last lecture so thank you very much for your attention, the next week of the course will have the following theme forms of representation. So this means that for the coming week we will leave for a little while the central issues of learning and look more in detail in the various forms of Representation used traditionally in artificial intelligence of course we will I will relate here and there all the time to the use of these Representations in the machine learning situations so thank you for this week and good bye