# Machine Learning,ML

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## Lecture 17
## Tutorial for week03

Welcome to this last lecture of the third week of this course on machine learning as always the last lecture is an introduction to the assignments for the week. So this week the lectures has focused on five specific sub teams which constitutes combination of specific representations and computational models, and we have looked at decision trees we have looked at Bayesian networks, we have looked at neural networks, we have looked at genetic algorithms and we finally looked at logic programming. So the assignments for this week will be strictly structured according to these five themes, so we will find five questions in each of the groups, questions primarily based on the video lectures and then you'll find five other questions also directly mapping to these five sub themes, but where you also may need to look into the extra material suggested. So I will comment shortly on these five questions Group one so one crucial issue for decision tree learning is as you may remember from the lecture to understand in which order to use features to build the tree from and actually one way of handling the problem is to create multiple trees, so the question is what is the general term for the methods that take that approach. Question two then relates to not decision trees but to bayesian networks, so one issue if you are not a very experienced statistician or probability theorist is to keep track of all the various terms regarding probabilities. So the question here and tries to brush up your mind and your memory on the various kinds of probabilities that come into play in this context. So the third question for artificial neural networks as I hope you remember from the lectures one important sub functionality with the neural network is a kind of activation function employed in the output of the unit in a network, so the question to you here is exactly what is the name of this this kind of activation function?

So question four as you remember from that lecture when new generations of populations in a genetic algorithm is composed, there is a few core operations needed and the question is what

is this particular kind of operation called? Finally in what is programming logic programming is implemented through certain kind of theory probing and actually question is what is the name of that kind of theorem programming that is employed in logic program?

So a few comments on the additional material recommended this week so there is one article on each of the subjects and actually the first article is one of the classical ones describing work back window once I mean in a early work on induction of these decision trees. The next article is an example of how to apply Bayesian networks in some sector and the third is actually also a classical paper so this is one of some papers published by Rumelhart and associates in 1985 which describes the one of the first approaches is to learn neural network parameters by backward propagation of feedback based on the output of the network results.

The fourth paper, the fourth material is essentially a more an overview material on genetic algorithms while the fifth paper is a pretty late paper actually on an inductive logic programming as the most important paradigm for learning in a logic programming framework.

So there is also a second group of questions related to the five sub-areas most of them need at least some research into the suggested additional readings, now the first question would relates to inductive analysis and hopefully mainly due to look a little into the different categories of algorithm produced in the induction of decision trees. The second question relates to Bayesian Network essentially about how learning can take place in such networks. The third question have to do with this central mechanism for giving credit or blame to artificial neural networks based on feedback given by the environment as a response to actions taken based on neural network output. And the fourth question it's just a basic question about the terminology genetic algorithm, well the last question have to do with one of the types of learning that can take place within the framework of inductive logic program. So this was the end of the last lecture for this week the next week we will continue with the following team and that team is inductive learning based on symbolic representations and weak theories thank you very much for this week bye.