**Week 1 - Module Intro**

0:01  
Hi everyone, and you're very welcome to this machine learning module on the HDIP in Data Analytics.

0:07  
So my name is Brian McGinley and I've encountered some of you before in this short video.

0:12  
I'm just going to give a brief introduction to the module.

0:19  
So the learning outcomes of this module is that on completion we should be able to source documentation to use machine learning libraries and packages and computer programmes.

0:30  
So we'll be using tools we've seen before and some new tools, psychic learn, etcetera, mostly through Python.

0:38  
Preprocess a data set for use in a machine learning context.

0:42  
Select an appropriate mathematical model of a real world problem.

0:45  
That's in order to be able to do some sort of regression model or a classification.

0:49  
Select an appropriate cost function for a given machine learning task.

0:54  
Apply an optimization technique to figure out or to tune the parameters of a model and to use a trained model to predict or to make a prediction.

1:03  
So a lot like most of this won't be familiar to you at this point in time, but as we go through the course and as even we go through the content for this week, some of this will become a bit more clear.

1:14  
One just note I have here is that it's a 10 credit module.

1:17  
So it's twice the weight similar to your other ten credit modules or twice the weight of your five credit modules.

1:24  
In terms of the syllabus, at this point of time, this is what I'm planning, but it is subject to changes.

1:29  
We're going to cover some general machine learning stuff, starting with supervised and unsupervised algorithms.

1:35  
We'll look at classification regression, which you may have seen a little bit of before.

1:39  
We'll look at generalisation and under fitting over fitting models, bias variance training, test sets, test sets, loss functions, cross validation, gradient descent, regularisation.

1:51  
Again, this will not be familiar to most of you at this point in time, but we will be covering this throughout the module.

1:59  
In terms of the algorithms and models, we're going to use K nearest neighbour you may have seen before, Bayes models, support vector machines, neural networks and PCA or principal components analysis.

2:09  
We might have a look at that as well.

2:11  
And the applications that you find for machine learning are wide and varied, everything from natural language processing, computer vision, and we'll look at some of the things you know.

2:21  
So machine learning is being used in so many different areas at the moment.

2:26  
In terms of the assessment for the course, it hasn't been fully decided yet in terms of the dates, but I anticipate there be two Moodle MCQS roughly mid semester, maybe week 7, and another one in at the very end of the semester.

2:39  
There'll also be a project that will be due for submission at the end of the semester, and I'll give more clarity on the dates in the coming weeks on exactly when these will be, but roughly mid semester, end of semester, and then end of semester for the project.

2:55  
Books for this.

2:56  
So there's tonnes of books on machine learning out there and I've just given some examples, but most of the content of this course, in fact all of it is going to be covered within the module.

3:05  
You don't need to go off, but if you are interested in learning a bit more, you can do some deep learning with Keras Data Science from Scratch, which contains elements of machine learning, Elements of Statistical Learning, which is again data mining is all quite linked to machine learning.

3:20  
And then hands on machine learning with Psychic Learn and Tensorflow.

3:23  
We'll have a look at these libraries through the course.

3:28  
OK, so that's just a very brief introduction to the module.

3:32  
In the next lecture, I'm going to give a bit more of a detailed introduction to machine learning itself.

3:36  
I'll leave it there.

3:37  
Oh yeah.

3:38  
One other thing is that we will do a handful of live sessions throughout the semester.

3:44  
We might do one in a couple of weeks, you know, a few weeks after that.

3:47  
So every few weeks we'll do a live session where we can check in, ask questions.

3:51  
Also, there'll be a course forum where you can ask questions on the forum as well.

3:56  
But yeah, we will be having some live sessions as we've done on some other modules.