Assignment 1.1

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Shortly define Machine Learning and give two example applications! When should Machine Learning potentially be not employed? Provide two scenarios!

Definition:

- Machine Learning is the improvement at some task by gaining experience by using a computer program.
- A computer program is said to learn from experience E wrt to set of tasks T and performance measure P, if its performance at tasks in T, as measured by P, improves with experience E.

Application areas:

A. Email Spam classification.

   T - To classify emails as spam/ not spam
   P - proportion of correctly classified emails
   E - Manually, labelled spam/not spam

B. Playing Checkers game

   T - To play checkers
   P - proportion/percentage of games won
   E - Opportunity to play against self

When not to use:

Ideally, should not be employed if you can model the problem with the precision needed to solve it within a short amount of time.

Scenarios:

1. If the amount of data (email) by which the model is trained and if the spammers compose emails in new patterns using new keywords or word structure then the underlying model can fail and fall poorly to generalize (high uncertainty).
2. If the amount of data is to be generated or to be processed (checkers) if it is finite and within a few steps. Then training a model is not required.