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Intelligent Planning with Machine Learning

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Planning is important in everyday life especially in business can plan based on the previous market history but if there is not a steady growth in the business, then then they have to leave the outdated planning approach and go for an intelligent planning approach through the machine learning algorithms. Intelligent Planning with machine learning helps the managers to give frequent updates on the next possible outcomes. The planning types are discussed here.

Planning is determining the sequence of action to achieve the goal Planning is the process of making correct decision to achieve the desired goal.

Planning in Business: In business plans has to change so quickly to survive in the present market condition. The main challenges the company faces is to change the plan frequently with respect to the real time environment. The distance between the planning and taking action should be zero in terms of months, days, and hours.

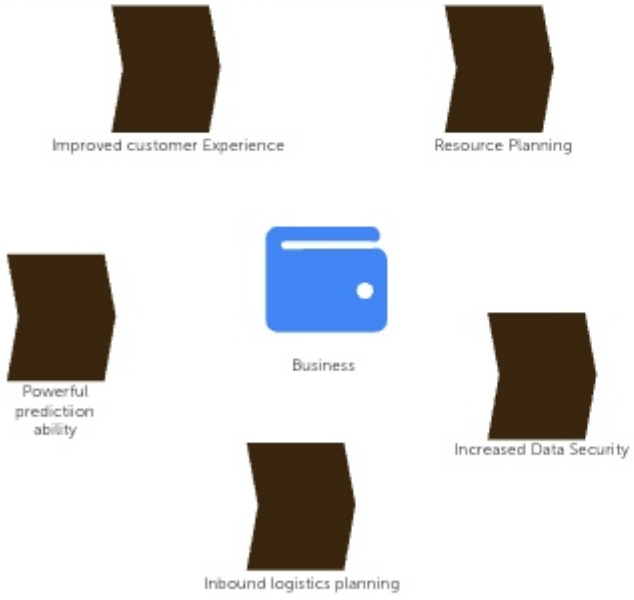

Fig. 1: Benefits of ML in Business

Some of the benefits of Machine Learning in Business is listed below

Logistics supply: This is supplying the right product to the right person. The time consumed for gathering the information and analysing the information is taken care by the machine-learning model. This can also help in recurring planning when and then needed by the organisation. It reduces the time for planning.

Resource Planning: It is the way of identifying the resources and their needs

Data Security: The problems faced in this digital transformation is the malware. The machine-learning model will help to predict the malware file. The ML algorithms can also report anomalies and helps to predict security breaches.

Improved Customer Experience: The ML technology will recognise the user's behaviour patterns. It keeps track of the routine work by analysis with more quickly and accurately than a human analyst.

Powerful prediction ability: Business will get a more accurate forecasting capability by incorporating the machine learning models into the data analytics.

Planning and Decision-making

Planning is the task of getting the sequence of action to achieve the goal. While decision-making is the sequence of action that sill transform the state in a step-by-step manner and satisfies the goal.

Planning can be classified as Offline and online planning as given in Figure 2.

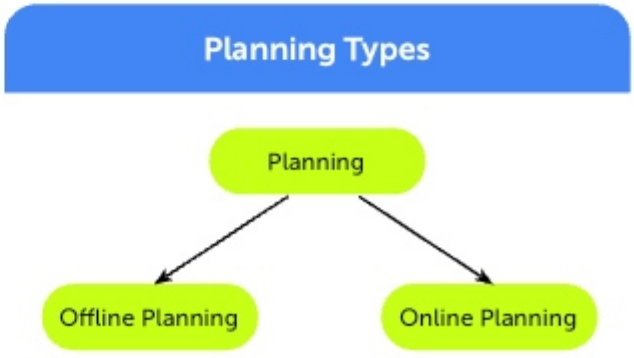

Fig. 2: Planning Types

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offline planning will not receive the feedback about the current state. Ex. Crane and Robot

The online planning needs the feedback about the execution status. Ex.Autonomous Vehicle

Planning with AI and RL through Robot

Artificial Intelligence (AI) Planning	Reinforcement Learning (RL) Planning
AI planning depends on decision making	RL planning depends on the previous knowledge by interacting with the real world
Allows robot to carry out the task in the same direction without acquiring knowledge	Allows robot to adapt to the environment with previous learning experience
Robot can take decision only by planning and decision	Robot can learn the behaviour and adapt to changes

Robot interacts with the surroundings using the above features listed in the Figure 3. sensing allows robot to collect the information. This can be achieved through the cameras, microphones etc., Perception allows the robot to perceived and reason about the surrounding environment. Cognition is the intelligent behaviour of a robot to learn and reason about the how to behave. By doing the action, the robot changes the state. The robot interact with the outside world.

The intelligent planning will help the business to do a forward-looking analytics and helps them to anticipate the business growth. Intelligent planning with machine learning provides guidance to the business managers about next possible solutions and outcomes.

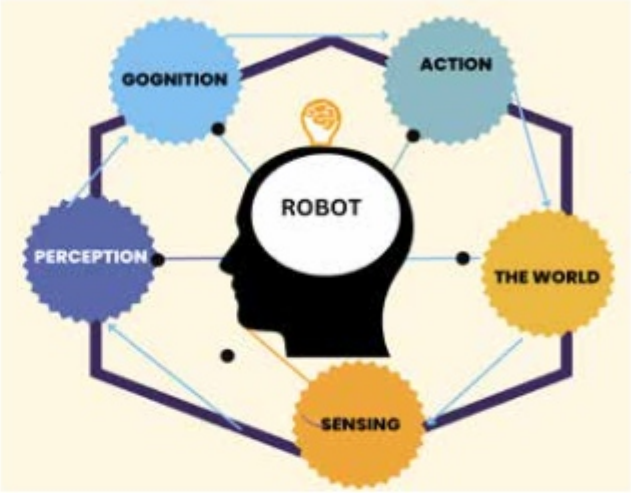

Fig. 3 : Robot interacting with surroundings

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About the Authors

Dr. P. Ranjana has been working as a Professor in Department of Computer Science and Engineering in Hindustan Institute of Technology and science, Completed M.E., Ph.D.in Computer Science and Engineering. Current research is focused on Artificial Intelligence and machine learning algorithms. Published nearly 60 research papers in refereed International Journals and Conferences.