ML Assignment 3

Q1) machine learns and understands data through generalization and minimizing losses. Predicting demand for products and classifying customers are two applications in business world. Ethical concerns arise regarding privacy of data, categorizing individuals, on what self driving cars’ decisions should be based on etc.

Q2) under supervision, humans learn from experts and also take guidance from them. With assistance in indirect manner, humans take mostly guidance. In self education, humans are most self reliant and use their own thinking and knowledge to guide themselves.

Q3) classification – classifying birds and reptiles, regression – predicting monthly bills, clustering – separating similar customer queries.

Q4) supervised (by humans), unsupervised and reinforcement learning (based on rewards and punishments).

Q5) well posed learning problem has three traits – task, performance measure, experience.

Q6) machine learning’s problem solving is limited by technology and algorithms, accuracy, requirement of human intelligence, complexities in problem etc.

Q7) developing artificial neurons, creating loss functions, developing mew models etc. artificial neurons are required for machines to learn themselves based on experience.

Loss functions are required to properly understand data and be accurate.

Q8) classification – classifying birds and reptiles, regression – predicting monthly bills.

Q9) supervised learning requires human supervision while unsupervised learning doesn’t require much human supervision. Example, classification requires labelling, hyperparameter tuning etc while clustering only clusters data based on similarity without the labels and hyperparameter tuning.

Q10) deep learning applications include medical imaging, data analytics, chatbots etc in health care. Linear regression generalises data as linear relation and predicts necessary variables beforehand allowing us to manage many usecases.

Q11) abstraction removes unnecessary details while generalization includes all the details while generalizing relations. Human intervention is required for guided learning while unsupervised learning doesn’t require human intervention. Classification classifies data to predict classes while regression generalizes data into certain equation to predict specific value.