

國立成功大學

113學年度碩士班招生考試試題

編 號： 183

系 所： 電腦與通信工程研究所

科 目： 人工智慧概論

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備 註： 不可使用計算機

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

Choose the Correct Answer of the Questions.

1. (10%) In the current stage, what is the primary goal of AI?
 - (a) To automate tasks
 - (b) To improve decision-making
 - (c) To enhance human abilities
 - (d) To replace human intelligence

2. (10%) What is the process of teaching a machine to learn without being explicitly programmed called?
 - (a) Supervised learning
 - (b) Reinforcement learning
 - (c) Unsupervised learning
 - (d) Deep learning

3. (10%) Which of the following is not a popular machine learning algorithm?
 - (a) LightGBM
 - (b) Random Forest
 - (c) K-Nearest Neighbors
 - (d) HP Boosting.

4. (10%) What is the process of teaching a machine to predict future outcomes based on historical data called?
 - (a) Predictive modeling
 - (b) Regression analysis
 - (c) Time series prediction
 - (d) Future computing

5. (10%) What is the process of training a machine to make decisions and determine a course of action based on input data and available information called
 - (a) Reinforcement learning
 - (b) Decision making
 - (c) Incremental learning
 - (d) Predictive modeling

6. (10%) The process of allowing machines to continuously learn from input data and improve their performance over time is called _____.

- (a) Online learning
 - (b) Incremental learning
 - (c) Batch learning
 - (d) Continuous learning
7. (10%) Which of the following statements are true for k-NN classifiers
- (a) The classification accuracy is better with larger values of k.
 - (b) k-NN does not require an explicit training step.
 - (c) The decision boundary is linear.
 - (d) The decision boundary is smoother with smaller values of k.
8. (10%) For a neural network, which one of these structural assumptions is the one that most affects the trade-off between underfitting (i.e. a high bias model) and overfitting (i.e. a high variance model)
- (a) The number of hidden nodes
 - (b) The learning rate
 - (c) The initial choice of weights
 - (d) The use of a constant-term unit input
9. (10%) Suppose you have a CNN model for image classification, with multiple Conv, Max pooling, ReLU activation layers, and a final Softmax output. Ignoring the bias and numerical precision issues, which of the statements below are true?
- (a) Multiplying the weights by a factor of 10 during inference does not affect the prediction accuracy.
 - (b) Multiplying the weights by a factor of 10 during training does not affect training convergence.
 - (c) Subtracting the input data by its mean per channel during inference does not affect the prediction accuracy
 - (d) In general, CNN can get better prediction results than GNN (graph neural network)
10. (10%) Which of the following are true for early stopping during training
- (a) It may reduce the necessity to tune the hyperparameter for the number of training epochs
 - (b) It increases model variance
 - (c) When accuracy reaches a trough on the validation set, we invoke early stopping
 - (d) Early stopping cannot be treated as a kind of Regularization