

AI2002 - Artificial Intelligence
Assignment # 1 (BCS-6A)

Max Marks: 100

Due Date: Feb 24, 2023

Q1. Differentiate between A*, RTA* and LRTA* Algorithms using diagrams and Implement Route Planner for RESCUE 1122 using A* search algorithm. You are required to design the complete system as (SIMULATION) for *Route planning for optimal path to reach the accident site (Shortest-distance finding problem)*. You can use any tool for its implementation. You can use google maps as well. You can use bit-map method for simulation by using (40 x 40) and (60 x 60) grid and use cells as 2D locations e.g., start-state (2, 3) to destination (38, 39) with obstacles and roads infra-structure as well. First, map your problem and then propose solution. You can use case study of Rescue 1122 ambulance service in Lahore and design an optimized scheduling system. It will be a simulation and modeling project in programming. (40 marks)

References:

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.137.1955&rep=rep1&type=pdf>
http://turing.cs.pub.ro/blia_2003/Real-time_search_1.htm
<https://arxiv.org/pdf/1308.3309.pdf>
<https://arxiv.org/pdf/1110.4076.pdf>
<http://www.cs.unh.edu/~ruml/papers/rtds-socs10.pdf>
<http://www.ai.soc.i.kyoto-u.ac.jp/~ishida/pdf/aamas98.pdf>
<http://www.cs.cmu.edu/~esefer/papers/realtime.pdf>

Q2. Comparative analysis of features/functions of 4-5 commercial tools/applications for route planning available in different parts of the world e.g., USA, UK, Europe, UAE, etc. For example: www.mapquest.com and WAZE <https://www.waze.com/livemap> <https://developers.google.com/waze/>, THEAA, RAC, TomTom, Green Flag, etc. Propose some modifications or innovation in these route planners for Pakistani environment. Can we incorporate some extra services like blood donation, ride sharing, security, smart and secure tourism, restaurant recommendation system within main car navigation system, etc. What are the requirements for such systems from the AI perspective? (30 marks)

Q3. Compare ChatGPT and BANG in terms of functionality, performance and scalability. Is it a problem of State Space Search; Justify? Test ChatGPT for AI and NLP (Natural Language Processing e.g., Urdu) related questions. Explore the technical implementation of ChatGPT from the AI perspective. What are the future applications of ChatGPT? (30 marks)

Submit complete report with running code on SLATE along with readme file before **11:00 pm – Feb 24, 2023**.
Zero marks/DC for copied or plagiarized work.