

List of User Queries

By William Ikenna-Nwosu

Queries

Query 1

Thesis Topic: GAPRS: A Graph-based Academic Paper Recommender System

Author: William Ikenna-Nwosu

Keywords: Artificial Intelligence, Recommender System, Information Retrieval, Search Engine, Graph Theory, Network Science, Web Science, Graph Dynamics, Data Visualization, Human-Computer Interaction, User Experience, User Interface, Explainable Artificial Intelligence, Optimization, Research Paper Recommender System, Graph-based Recommender System, Bibliometrics, Scientometrics

Research Questions

1. What role does graph structure and topology play in the effectiveness of graph-based academic paper recommender systems, and how can this be optimized?
2. In graph-based recommender systems, which graph properties can be exploited to produce novelty, diversity and serendipity in recommendations?
3. How can visualization and explainability of graph-based academic paper recommender systems be improved to help users understand how recommendations are generated?, i.e., How to indicate to users that recommendations share common attributes?
4. How can graph mining techniques be used to reveal unique patterns in the way users search for, interact with and find papers in graph-based academic paper recommender systems?

Query 2

Thesis Topic: Finding the Minimum Number of Sudoku Clues Through Information Theory

Author: William Ikenna-Nwosu

Keywords: Sudoku, Latin Square, Information Theory, Erasure Communication Channel, Law of Large Numbers (LLN), Asymptotic Equipartition Property (AEP), Zero-Error Capacity of a Noisy Channel, Error-Free Coding, Noisy-Channel Coding Theorem, Puzzle, Minimum Sudoku Clue Problem, Coding

Research Problem: Minimum Sudoku Clue Problem

Query 3

Thesis Topic: A Neuroevolution Approach to Robotic Arm Control

Author: Anthony Horgan

Keywords: Neuroevolution, Artificial Intelligence, Reinforcement Learning, Neural Networks, Robot Control

Research Questions

1. How should neuroevolution be implemented to effectively evolve a robotic arm controller?
2. How does expert demonstration impact the performance of the evolved controller?

Query 4

Thesis Topic: Anomaly Detection using Internet of Things Sensors

Author: Chandana Dasari

Keywords: Anomaly Detection , Time Series data, Data Distribution, Error distribution, Outliers, Machine Learning, Real-time data

Query 5

Thesis Topic: Dynamic Economic Emissions Dispatch with Thresholded Lexicographic Ordering

Author: Conor F. Hayes

Keywords: Reinforcement Learning, Multi-Agent Reinforcement Learning, Dynamic Economic Emissions Dispatch, Multi-Objective Optimisation

Research Questions

1. How can traditional reward structures from single-agent reinforcement learning be applied to a benchmark multi-agent reinforcement learning problem domain?
2. How can reward structures be applied to large multi-objective multi-agent reinforcement learning problem domains?
3. Is it possible to prioritise the optimisation of objectives in a multi object multi-agent reinforcement learning problem domain in lexicographic order?

Query 6

Thesis Topic: Stock Price Predictions from Financial Statements using Machine Learning and Deep Learning algorithms augmented with Knowledge Graph Embeddings

Author: Conor Melody

Research Questions

1. How accurately can a company's financial statements predict that company's share price? And which statements in particular are good predictors of the price?
2. Can the change in the state of a company's financial statements be used to predict whether the price of that company's shares has increased or decreased? And how accurately can this change in price be predicted?
3. By taking into account additional non-numerical information related to individual companies unrelated to their financial performance, such as the industry and sector within which the company operates, in the form of a Knowledge Graph, can this added information be used in the form of Knowledge Graph Embeddings to improve predictions of price over the performance achieved using only financial statements?

Query 7

Thesis Topic: Expanding the Secondary School Network in Sub-Saharan Africa Meta-Heuristic Facility-Location Techniques

Author: Darragh Minogue

Keywords: School Location Problem, Facility-Location, Meta-Heuristics, Optimisation

Research Question: Given a budget for the construction of n secondary schools in Ethiopia, where should they be located?

Query 8

Thesis Topic: Creating Agents with Tuneable Behaviours using Multi-Objective Deep Reinforcement Learning

Author: David O'Callaghan

Keywords: Reinforcement Learning, Multi-Objective Decisions, Multi-Agent Systems, Artificial Intelligence, Machine Learning, Deep Learning

Research Questions

1. What are the effects of refactoring the tuneable agents framework by Kallstrom and Heintz (2019b) to meet the definition of linear scalarisation from Roijers et al. (2013)?
2. Does this same framework scale to more complex environments?
3. Can agents achieve tuneable behaviours in a multi-agent setting?

Query 9

Thesis Topic: Evaluation of Multi-Agent Deep Reinforcement Learning Algorithms in the Pursuit-Evasion Environment

Author: Dhaval Salwala

Query 10

Thesis Topic: A Comparative Study of SVM and LSTM Deep Learning Algorithms for Stock Market Prediction

Author: Sai Krishna Lakshminarayanan

Query 11

Thesis Topic: Nonlinear Multilayered Sequence Models

Author: Ilya Sutskever