Sulaeman Aloradi

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Phone: (+49) 15754221331 | **Portfolio:** https://sulaiman-nedal.github.io/Portfolio/ | **GitHub:** https://github.com/Sulaiman-Nedal
Caisa Lab Profile: https://caisa-lab.github.io/members/sulaeman.html

EDUCATION

[04/2023 – Current]

Master of Science in Computer Science

Bonn University

City: Bonn | **Country:** Germany

[09/2018 – 06/2022]

Bachelor of Science in Computer science

King Abdulaziz university

City: Jeddah | **Country:** Saudi Arabia | **Final grade:** 4.66 out of 5 (Excellent) |

Thesis: Recommendation System for Educational Material Quality Assessment

Projects

[Currently]

Project 1: Transformers Navigating Mazes with Multi-Step Prediction

Caisa-Lab from Bonn-Aachen international Centre for Information Technology (b-it)

- Developing a decentralized multi-agent reinforcement learning (MARL) framework to enable autonomous agents to navigate dynamic mazes with minimal collisions and optimal pathfinding. This is inspired by the research paper "Transformers Can Navigate Mazes With Multi-Step Prediction".

- Implementing hybrid Q-learning and Deep Q-Networks (DQN) with prioritized experience replay to enhance agent adaptability in unseen maze configurations.

- Designing a reward-shaping mechanism that balances exploration-exploitation trade-offs, achieving an 88% success rate in Unity-simulated environments.

- Integrating Unity ML-Agents Toolkit for scalable environment training and PyTorch for neural network architecture optimization.

- Collaborating with researchers to refine code quality, resolve edge cases (e.g., deadlock scenarios), and document workflows.

- Technologies: Python, PyTorch, Unity ML-Agents, Q-learning/DQN, Git, Scikit-learn.

  Caisa Lab Personal Profile Link: https://caisa-lab.github.io/members/sulaeman.html

  Link: https://github.com/Sulaiman-Nedal/KGAT

[01/2025–04/2025]

Project 2: Implementation of a Speak Function for Robot Communication

Bonn University Project

- Engineered a natural language speak function for the RoboCup robot using Python, enabling extended conversational interactions by preventing repetitive short utterances and implementing robust validation checks.

- Integrated context-aware response generation to maintain dialogue coherence, improving the robot's ability to sustain long-form conversations.

- Designed a sanity check module to validate responses for relevance and logical consistency, reducing errors during human-robot interactions.

- Technologies: Python, ROS2 (Robot Operating System), NLP techniques, Large Language Models (LLMs).

  Link: https://github.com/Sulaiman-Nedal/LLM-based-Communication-Agent-for-Human-Robot-Interaction

[08/2024 – 10/2024]	**Project 3: Fine-grained Fact Verification with Kernel Graph Attention Network**

Bonn University Project

- Leveraged the KGAT model to classify scientific claims, achieving a 3% improvement (from 71% to 74%) in labeling accuracy, and a 1% improvement (from 69% to 70%) in FEVER Score. This was inspired by the research paper "Fine-grained Fact Verification with Kernel Graph Attention Network".

- Applied tokenization, stemming, and lemmatization using NLTK for model training.

  Used TF-IDF vectorization to enhance feature extraction.

- Trained using multiple classification models, including Logistic Regression, Naive Bayes, and SVM.

  Link: https://github.com/Sulaiman-Nedal/KGAT

[05/10/2024 – 30/10/2024]	**Project 4: Text Summarization Tool with Extractive and Abstractive Methods**

Personal Project

- Deployed a web application for text summarization, employing both extractive and abstractive techniques to summarize texts.

- Leveraged NLTK for sentence and word tokenization, stop word removal, and stemming to prepare text data for summarization tasks.

- Utilized Scikit-learn for TF-IDF vectorization to identify features for extractive summarization.

- Enhanced extractive summarization with the TextRank algorithm (via NetworkX) and integrated tokenized data into the BART transformer model for abstractive summarization, producing coherent and concise summaries.

  Link: https://github.com/Sulaiman-Nedal/text-summarization-tool

SKILLS

- **Technical Skills:** Python (Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn, NLTK), Java, SQL, Git, Github, Jupyter Notebooks, Google Colab. HPC Clusters.

- **Soft Skills:** Analytical thinking, problem-solving, adaptability, teamwork, enthusiasm for new technologies.

- **Language Skills:** English (Fluent), German (Beginner), Arabic (Native).