Summary of Interview on AI in Technical Documentation

Introduction

The interview was conducted by Muhammad Ali and Moaz Farooq with a leading professor in the field of Artificial Intelligence (AI) especially Natural Language Processing (NLP) and Knowledge Graphs. It was aimed to explore insights on the role of artificial intelligence in transforming technical documentation, with a particular focus on NLP and graph-based technologies. Through a detailed discussion, the interview revealed key trends, challenges, and opportunities within technical documentation, research writing, and business communication skills. The expert discussed the current and future impact of AI, particularly in enhancing the clarity, efficiency, and accessibility of documentation for industries that rely heavily on technical materials.

Discussion of Key Themes

1. **The Role of AI in Technical Documentation:**

   The expert emphasized AI's potential to revolutionize technical documentation, comparing its impact to the internet's emergence. However, they highlighted that current AI, known as "narrow AI," specializes in specific tasks rather than displaying general intelligence. While this allows for efficient handling of routine and complex documentation tasks, the expert noted that true human-like intelligence is still a distant goal.

2. **Current Limitations of AI in Technical Writing:**

   The expert acknowledged that despite advancements in deep learning, AI models still struggle with domain-specific language and may "hallucinate" or generate inaccurate information. For instance, while an AI model can produce well-written text, verifying its accuracy and relevance, especially in specialized fields like medicine or law, remains essential. Human oversight continues to be necessary to prevent errors in high-stakes documentation.

3. **NLP and Knowledge Graphs in Documentation:**

   NLP and graph-based models were discussed extensively. The expert explained that NLP models handle unstructured data by identifying statistical patterns and probabilities, creating what are called large language models (LLMs). However, they noted that knowledge graphs go further by structuring and linking data meaningfully, offering precise answers rather than mere links to sources. The example of Google's knowledge graph highlighted this distinction, as it provides direct answers to queries rather than only an unappealing list of URLs. They explained graphs as a mutual interface understandable by both humans and computers.

4. **Visual and Structural Benefits of Knowledge Graphs:**

   Knowledge graphs make extensive, complex documentation more accessible by creating a structured and visual representation of information. This capability is especially valuable in government or corporate settings, where busy decision-makers may lack time to read lengthy reports. Knowledge graphs organize critical data points and reveal relationships between them, offering a more intuitive overview that can support faster and more informed decisions.

5. **Future Trends in NLP and Graph-Based AI:**

Emerging trends in AI for technical documentation include knowledge graph embeddings, where AI systems use specialized embeddings to make sense of complex information, such as medical research data. These advancements promise to improve documentation and facilitate quicker knowledge retrieval, with applications extending to various fields including medicine and academia.

Notable Quotes and Examples

- *"Machines are good at doing one particular job. It is not general intelligence...we have deep learning algorithms very good at doing some very meaningless jobs we are used to doing, now AI is doing them."*
- *"Documentation is very important in any industry or software, for example computer science. It is considered as the hardest job. Writing it in such a format that a new person can understand all of the procedure."*
- On knowledge graphs: *"...but where knowledge craft comes in it tries to understand this knowledge as well, contextually and semantically and sometimes to come to that, you have to go beyond the probabilistic models", adding, "When you query Google, you don't want results in URL form; you want the answer as it is, not some links to some articles."* Highlighting the specific needs of humans that need to be catered.
- An example of practical AI application is **Microsoft's Academic Knowledge Graph**, which organizes global research into a massive, interconnected structure, supporting faster, more comprehensive access to scientific knowledge by creating *"a giant cohesive graph with billions of nodes."*

AI and Optimization in Technical Documentation

The expert emphasized how AI and automation are streamlining technical documentation by enhancing efficiency and adaptability. By inputting code into interpreters, developers can quickly generate technical details and identify potential errors, saving considerable time. Additionally, when class diagrams, use case diagrams, and graphical representations are incorporated, AI tools can analyse these patterns and suggest optimizations, often uncovering more efficient pathways. This bidirectional approach not only speeds up the documentation process but also allows for improvements in code structure and design patterns.

Looking ahead, the expert sees AI as essential in personalizing and scaling documentation for diverse applications. He advises future professionals to leverage AI frameworks and avoid "reinventing the wheel" by building upon existing frameworks and templates, such as Bootstrap for web applications. By doing so, they can focus on customization rather than repetitive tasks. AI's adaptability also simplifies creating tailored documentation that meets different regional, demographic, or industry-specific needs.

Engaging Diverse Audiences

The expert shared valuable strategies for engaging a wide range of audiences, from non-technical professionals to STEM students. He emphasized the need to adjust explanations to each audience's background, often using examples that resonate within their specific domains. For instance, when

explaining AI concepts to non-technical audiences, such as government officials, bankers, or even a neurosurgeon approaches for an application idea, he carefully relates examples to fields familiar to them. This approach makes complex topics accessible by drawing on relatable contexts.

For students, especially those in early career stages, he highlighted the importance of making learning both interactive and visually stimulating. Recognizing that today's generation has shorter attention spans, he incorporates "toy" examples, color-coded visuals, and simulations into his teaching. By using movement and vibrant colours in his presentations, he taps into psychological cues that help students retain information better. His goal is to break down complex topics into smaller, digestible parts and gradually build up their understanding, ensuring that students remain engaged throughout the learning process.

Key Takeaways

- AI, especially NLP and knowledge graphs, is transforming technical documentation by automating and organizing vast information in accessible formats.
- Knowledge graphs help simplify complex data, enabling users to quickly understand relationships and key insights, which is particularly valuable in lengthy documents.
- Limitations still exist with AI's accuracy in handling domain-specific jargon; human review remains essential for highly specialized documentation.
- Advanced AI technologies, like knowledge graph embeddings, are poised to enhance documentation by creating even more refined, personalized content.
- Future professionals in technical documentation should leverage AI frameworks to increase efficiency, avoid redundancy, and tailor content to diverse user needs.

Conclusion

This interview offered valuable insights into AI's current and potential roles in technical documentation. By enhancing documentation efficiency and supporting better organization of complex information, AI tools like NLP and knowledge graphs are enabling industries to meet the rising demands of knowledge management. However, the need for ongoing human oversight and domain-specific customization highlights the evolving partnership between AI and human expertise in this field. The expert's insights suggest that as AI continues to advance, technical documentation will become more streamlined, personalized, and accessible, ultimately benefiting both technical professionals and end users.