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Knowledge-Infused in Transformers for Text Classification in Low-Resource Languages

Transformers have emerged as the foundation of state-of-the-art natural language processing (NLP). However, their effectiveness often declines in low-resource language settings due to limited training data and increased linguistic complexity. In this talk, I will introduce the concept of knowledge infusion and provide a concise overview of leading techniques used to enhance transformer models with external knowledge. I will then present a case study focused on applying knowledge-infused transformers for threatening speech detection in a low-resource language, demonstrating how structured linguistic and domain-specific information can improve performance. I will conclude my talk with a discussion of key challenges and promising opportunities in advancing NLP for low-resource languages.

Biography

With over 22 years of experience in developing innovative artificial intelligence solutions, Dr. Malik serves as an Associate Professor and Head of the AI Program at HITEC University, Taxila, Pakistan. He recently completed a Postdoctoral Fellowship at the School of Data Analysis and Artificial Intelligence, National Research University Higher School of Economics (HSE), Moscow, Russia. Prior to his academic career, he spent more than a decade in the HVAC industry, where he led the development of embedded system solutions that integrated real-world engineering with intelligent, data-driven computing. His research interests include data mining, social media mining, natural language processing, data science, and explainable artificial intelligence. His work emphasizes the development of interpretable, robust, and socially responsible AI systems, particularly in low-resource and multilingual settings. Dr. Malik has authored numerous peer-reviewed publications in reputable SCI and Scopus-indexed journals and international conferences.