

# **Title: Linguistic Complexity and Cognitive Load in Natural Language Processing: A Physio-Behavioural Approach**

## **Principal Investigator (PI)**

Dr. Kedarmal Verma

Assistant Professor (Cognitive Psychology)

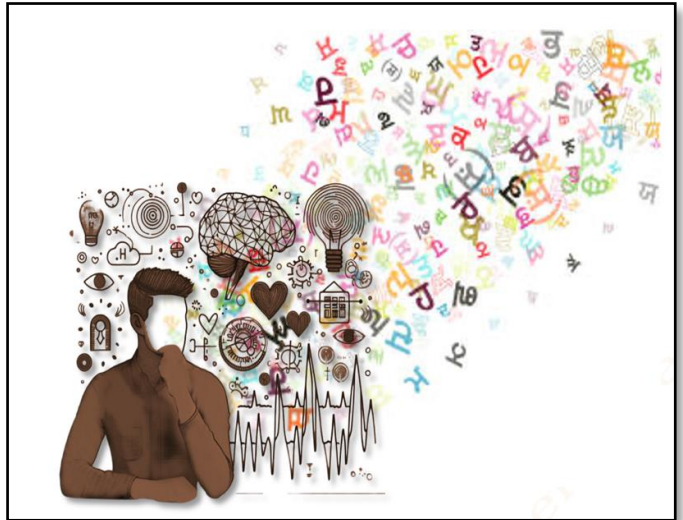
School of Humanities and Social Sciences, IIT Indore

## **Co-Principal Investigator (Co-PI)**

Dr. Thapasya J.

Assistant Professor (Linguistics)

School of Humanities and Social Sciences, IIT Indore



**Overview of the project:** The research focuses on exploring how varying linguistic complexity levels influence cognitive load during natural language processing tasks. The research examines and defines the various aspects of linguistic complexity including syntactic, semantic, and structural characteristics. Furthermore, it explores the relationship between cognitive load and linguistic complexity, using behavioural measurement techniques that lead to the implications for the design of NLP algorithms, user interfaces, and language learning methodologies, aiming to optimize human-computer interactions by considering cognitive aspects.

**Research Methodology:** This research will employ the physio-behavioural measurement approach. The proposed research idea outlines a methodology for assessing behavioural measurements in order to examine the effects of linguistic complexity on cognitive load during language processing tasks. The primary objective of this study is to provide a comprehensive understanding of the relationship between linguistic characteristics and cognitive demands in the field of Natural Language Processing (NLP).

**Deliverables:** This research is intended to improve our comprehension of the cognitive mechanisms involved in both understanding and generating language structures. The expected results of this study involve the identification of correlations between levels of linguistic complexity and cognitive load. These findings will provide important insights into the ways in which specific linguistic structures or features impact cognitive processing demands. The research findings have broad implications for various areas such as the advancement and enhancement of NLP algorithms, the design of user interfaces, and the development of language learning methodologies. These implications aim to optimise human-computer interactions by taking into account cognitive factors.