

Integration of Descriptive AI as a Support Tool in the Assessment of Cognitive Impairment

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Descriptive AI emphasizes transparency, explainability, and clinician-centered interpretation, aligning with current ethical standards for clinical decision support systems.

This approach does not aim to replace the MoCA or clinical judgment, but to enrich cognitive screening interpretation through transparent, domain-level narratives reviewed by dementia specialists.

BACKGROUND	METHODS	RESULTS	CONCLUSIONS	REFERENCES
The Montreal Cognitive Assessment (MoCA) is a widely used and validated screening tool for detecting mild cognitive impairment^[1]. However, clinical interpretation often focuses mainly on the total score. This reductionist approach may obscure relevant performance patterns across specific cognitive domains, including visuospatial abilities, executive function, memory, attention, language, abstraction, and orientation. From a clinical perspective, two patients may obtain similar total MoCA scores while showing different cognitive profiles. Therefore, domain-level interpretation can provide additional information for understanding cognitive strengths and weaknesses. For this reason, the integration of descriptive artificial intelligence is proposed as a support tool for interpreting cognitive test scores in a transparent and clinically meaningful way.	This study presents the implementation of a web-based system designed to support the early detection and the clinical assessment of cognitive impairment^[2,3]. The system integrates an automated MoCA test and processes the scores obtained across cognitive domains. These domain-level results are reviewed and endorsed by medical specialist, generating explainable reports that described the patient's cognitive strengths and weaknesses. The objective of the system is exclusively descriptive and clinically supportive. It is intended to augment the physician's interpretations by transforming raw cognitive scores into a structured semantic narrative, without replacing clinical judgment or establishing an autonomous diagnosis.	Preliminary prototype testing showed that the system can generate coherent and interpretable descriptions from single-visit cognitive assessments using parametric descriptors related to relevant patterns in cognitive domains through descriptive artificial intelligence algorithms. The initial descriptive outputs identified specific cognitive patterns, such as isolated memory retrieval difficulties or relative weaknesses in executive/visuospatial performance, which may not be evident when considering only the total MoCA score. These preliminary descriptions provided a more detailed understanding of relative performance across cognitive domains and facilitated the physician's interpretation of the patient's cognitive state. The descriptive AI module is currently being integrated into the web-based platform and remains under specialist review for clinical refinement.	These preliminary results support the feasibility of applying descriptive AI to the interpretation of MoCA scores. The proposed approach offers a transparent, explainable, and clinically supportive tool that may improve the interpretation of cognitive screening results in both clinical and research contexts. Future work will focus on full integration into the web system, specialist-based validation, comparison with clinical interpretation, and evaluation of its potential contribution to early cognitive impairment assessment.	1. Nasreddine Z et al. (2005). The Montreal Cognitive Assessment, MoCA: A Brief Screening Tool For Mild Cognitive Impairment. Journal of the American Geriatrics Society, 53, 695–699, 2. Del Bosque-Díaz De León, A., García-Vázquez, M. S., Ramírez-Acosta, A. Á., Aguilar-Navarro, S. G., & Mimenza, A. J. (2025). Assessment improved of cognitive impairment with artificial intelligence in the user-web-mobile application. Alzheimer's & Dementia, 20(Suppl 4), e090025. 3. Del Bosque-Díaz De León, A., García-Vázquez, M. S., Ramírez-Acosta, A. Á., Aguilar-Navarro, S., & Mimenza, A. (2025). Improving the visual quality and delivery of visuospatial and executive function tests on an interactive web and mobile platform. Alzheimer's & Dementia, 21(Suppl 4), e107644.
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Note: The conceptual illustrations included in this poster were created by the authors with AI assistance using Gemini.