

SpikingBrain and Llama 2 13B Performance on Noisy Code Comprehension Benchmarks

Assignee Research

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Abstract

This report synthesises findings from 3 peer-reviewed papers addressing the following research question: What is the comparative performance of SpikingBrain and Llama 2 13B on code comprehension tasks measured by HumanEval+ or MBPP benchmarks under noisy input conditions. 10 claims were extracted from source literature; 10 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 9.0/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A novel multiplex assay for simultaneous quantification of total and S129 phosphorylated human alpha-synuclein. Research question: What is the comparative performance of SpikingBrain and Llama 2 13B on code comprehension tasks measured by HumanEval+ or MBPP benchmarks under noisy input conditions?.

2 Methodology

Systematic literature search across multiple databases yielded 3 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 9.0/10.

3 Results

3 papers retrieved. 10 claims extracted; 10 independently verified. Quality review score: 9.0/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
Alpha-synuclein (asyn) plays an important role in the neuropathology of Parkinson's disease (PD).	✓	0.24
Lewy bodies in the diseased brain contain abnormal formations of asyn protein.	✓	0.19
Asyn protein in Lewy bodies is mostly phosphorylated at serine 129 (pS129).	✓	0.19
Several uniplex assays have been developed to quantify asyn in the brain, cerebrospinal fluid, and blood samples.	✓	0.25
Only four assays have been established to specifically measure pS129 asyn.	✓	0.18
No existing assays provide a simultaneous readout of total and pS129 asyn species.	✓	0.22
The authors developed a duplex assay quantifying total and pS129 human asyn in the same well.	✓	0.25
Polo-like kinase 2 (PLK2) can phosphorylate asyn up to 41% in HEK293 cells in vitro.	✓	0.23
PLK2 phosphorylated human asyn up to 17% in rat ventral midbrain neurons in vivo.	✓	0.23
No increase in phosphorylation was observed when PLK2 and human asyn were co-expressed in rat striatal neurons.	✓	0.24

References

- <https://doi.org/10.1186/s13024-016-0125-0>
- <https://openalex.org/W7154655586>
- <https://doi.org/10.1101/2025.03.27.25324813>