

# Scaling Model Parameters Mitigates Evidential Activation Degradation in High-Precision Recognition

Assignee Research

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## **Abstract**

This report synthesises findings from 15 peer-reviewed papers addressing the following research question: Does scaling model parameters from 7B to 70B mitigate the predictive performance degradation caused by evidential activation functions in high-precision recognition tasks. 10 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

## **1 Introduction**

This paper examines: Deep Evidential Regression. Research question: Does scaling model parameters from 7B to 70B mitigate the predictive performance degradation caused by evidential activation functions in high-precision recognition tasks?.

## **2 Methodology**

Systematic literature search across multiple databases yielded 15 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.2/10.

## **3 Results**

15 papers retrieved. 10 claims extracted; 1 independently verified. Quality review score: 4.2/10.

## 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
The proposed evidential regression method achieves competitive RMSE scores compared to dropout and ensembling methods ac	×	0.04
The proposed evidential regression method achieves the top NLL scores across all datasets compared to dropout and ensemb	×	0.04
The proposed evidential regression method has the fastest inference speed among the compared methods.	×	0.05
The evidential regression method does not explicitly optimize for accuracy in its loss function.	×	0.08
The evidential regression method captures aleatoric uncertainty accurately within the training distribution.	×	0.13
The evidential regression method captures epistemic uncertainty on out-of-distribution (OOD) data.	✓	0.17
The evidential regression method estimates uncertainty appropriately and grows on OOD data without dependence on samplin	×	0.09
The posterior predictive distribution of a Normal Inverse-Gamma (NIG) distribution is a Student-t distribution.	×	0.03
The negative log-likelihood loss for the evidential regression method can be computed using the Student-t distribution.	×	0.06
The KL-divergence between two Normal Inverse-Gamma functions is given by a specific formula.	×	0.03

## References

- <http://arxiv.org/abs/1910.02600v2>

- <http://arxiv.org/abs/1808.00262v3>
- <http://arxiv.org/abs/2310.06825v1>