

## Software Engineering Seminar

May 18<sup>th</sup> 13:30-14:30- Online




<https://us02web.zoom.us/j/87088014987>




# Authorship Attribution Problem in the Hebrew Bible: a Tweeter Standpoint

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**Abstract:** The talk presents a novel approach inspired by the modern exploration of short texts' modeling to the creations prescribed to Moses, the most important prophet in Judaism and a significant figure in Christianity and Islam. A deep learning mechanism composed of a Convolutional Neural Network (CNN) and a Bi-Directional Long Short-Term Memory Network (Bi-LSTM) is applied together with the ELMo and FastText word embeddings in the spirit of tweets sentiment analysis aiming is to recognize short, concise templates in documents. The proposed method suggests new attitudes making it possible to investigate ancient and medieval Hebrew and Arabic documents. An evaluation of the results on documents traditionally agreed upon to be ascribed to Moses and Al Ghazali demonstrates the method's high reliability in recognizing the source authorship. Appraisals of two books, "Deuteronomy" and "Job," questioningly attributed to Moses or being co-authored by him, exhibit a significant difference in their overall stylistic style with the ones inherently assigned to Moses. This fact can serve as a substantial formal argument in the long-standing dispute about the manuscripts' authorship. The system proposes a new look at the perusal of ancient documents' inner structures and possible authorship from the deep short-patterning perspective. A part of the obtained results is presented in the following table

Embedding Model	Network Architecture	Traditionally attributed to Moses			Traditionally not attributed to Moses		
		Leviticus (ויקרא)	Deutero. (דברים)	Job (איוב)	Ezra (עזרא)	Nehemiah (נחמיה)	Joshua (יהושע)
<b>FastText</b>	CNN	81.5	88.6	98.0	83.5	86.0	86.2
	Bi-LSTM	85.3	74.1	95.8	84.5	87.7	55.3
<b>ELMo</b>	CNN	99.5	82.1	98.4	92.8	91.4	85.7
	Bi-LSTM	96.8	87.2	99.9	93.9	88.8	90.8

 Moses (90% – 100% Confidence)  
 Moses (80% – 89% Confidence)  
 Moses (Less than 79% Confidence)

 Not Moses (90% - 100% Confidence)  
 Not Moses (80% – 89% Confidence)  
 Not Moses (Less than 79% Confidence)