The 2021 ACL Conference Long Paper Proceedings article and/or paper titled "Examining the Inductive Bias of Neural Language Models with Artificial Languages" has been written by the author known as Jennifer C. White and co-author Ryan Cotterell, who have affiliations with the University of Cambridge, and ETH Zurich respectively. The author Jennifer C. White has affiliations with the University of Cambridge while the author Ryan Cotterell has affiliations with ETH Zurich, an public research university located in the city of Zürich, Switzerland

This paper addresses the problem of how the neural architectures used for language models, a model that models various languages, may possibly be biased when it comes to modeling certain types of languages and how to check for this bias. The investigation of whether a language model is biased increases in difficulty, due to the various variables that show up during the experimental setup of the language. This would cause there to be further things to be needed to take into consideration when checking for bias, as well as unexpected encounters that hinder this. In addition, this difficulty becomes further increased due to how language’s various topological dimensions make it so that when one attempts to pick out one topological dimension from the rest of the topological dimensions, the other topological dimensions usually act as a confounder, as in a influence that may or may not be negative and/or positive, to the one that is being singled out. Therefore, this may negatively the ability to hone on what possible problems that may or may not exist. This would result in further obstacles in checking for bias in the language model.

The author Jennifer C. White prior work in terms of their previous written papers involve their progress and work for the UniMorph’s universal morphology, equivariant transduction through a group-equivariant architecture that uses a group-invariant hard alignment mechanism, their examination of a non-linear structural probe, the aforementioned article, the bias of facial expression recognition, and on a systems' ability to generalize across typologically distinct languages. As for the author Ryan Cotterell’s prior work, this would consists of and spans across gender bias in contextualized word embedding, data substitution, and languages, various works on Sigmorphon, lemming, data augmentation, morphological word embeddings, UniMorph, theoretic probing for linguistic structure, the study of corpus and language models for different languages, morphological for different areas, neural networks, word forms, areas involving transduction, pareto probing, probabilistic typology, modeling of various data, Nerit, phonotactic, text generation, Sigtyp, declension class, language structures, language structure, dependency trees, typology, and NLP. The works of both of these authors are share similar topics, fields, and projects that they have worked on.

Describe the unique contributions of this paper (find that commonly used neural architectures exhibit different inductive biases: LSTMs display little preference with respect to word ordering, while transformers display a clear preference for some orderings over others. Further, we find that neither the inductive bias of the LSTM nor that of the transformer appears to reflect any tendencies that we see in attested natural languages)

This paper’s unique contribution includes their method of how to investigate if a language model has a bias by creating artificial languages and/or probabilistic context-free grammars to check for corpora differences. These are changed at will using switches options that control the order that constituents appear in the mentioned grammar. In addition, we see the results and/or data of this being applied to different neural architectures to see their bias. There is a the additional unique contribution of their method of increasing the control of their experiment in order to better understand how languages are different from one another that establishes a base for exploring inductive bias allowing for base grammars to be manipulated and extended as needed for future hypotheses and experiments.

When it comes to their work, the authors Jennifer C. White and Ryan Cotterell evaluated their work in a way that suggests they have a positive leaning manner and/or evaluation of it. As see in the article, the authors Jennifer C. White and Ryan Cotterell describe their work as a “novel method”. The usage of this description contextually suggests that the authors find their work as something new and interesting. In addition, the author’s Jennifer C. White and Ryan Cotterell usage of presenting a foreboding portrayal of the “difficult to understand” problem they’re investigating to contrast the positive presentation of their “novel” solution. On top of this, their evaluation of the work involves measuring the average perplexity on their data. The lower the average perplexity is on a date set the closer it will fit what is the desired result that authors are attempting to achieve. This is due to how the lower the perplexity, the more the language model fits the data.

The work(s) of author Jennifer C. White and co-author Ryan Cotterell are important because they study how language works, which can assist in being able to better know and understand more about it. By doing this, this researched knowledge and applicable projects can be used for a wide variety of applications with ever growing improvements. These applications can then eventually be used at the consumer or industrial level in some form. This in turn can be used to better improve and raise the ease of our lives at some level, such as through the increased quality of assistance that virtual assistants will be able to provide to users, as this aspect utilizes the knowledge that the author(s) works are involved.

When it comes to papers that originate from a university, usually the lead author, also known as the first author of said paper, is a PhD student, while the last author is the PhD student’s advisor. The person and/or author, of the aforementioned article, with the most citations to their name according to Google Scholar is the author Ryan Cotterell, This is due to the author Ryan Cotterell having four thousand forty-eight (4048) citations to their name, according to Google Scholar, as of October 2022, while on the other hand the author Jennifer C. White has one hundred forty two (142) citations to their name, according to Google Scholar as of October 2022.