SoPa++: Leveraging explainability from hybridized RNN, CNN and weighted finite-state neural architectures

M.Sc. Thesis Defense

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Overview

Motivation

- Trend of increasingly complex deep learning models achieving SOTA performance on ML and NLP tasks, as per Figure 1
- To address emerging concerns such as security risks and inductive biases, several studies make argument for research into XAI (Arrieta et al., 2020; Danilevsky et al., 2020)
- Schwartz, Thomson, and Smith (2018) approach XAI in NLP by proposing an explainable hybridized RNN, CNN and WFA neural architecture called **So**ft **Pa**tterns (SoPa)
- SoPa provides localized and indirect explainability despite being suited for **globalized and direct** explanations by simplification

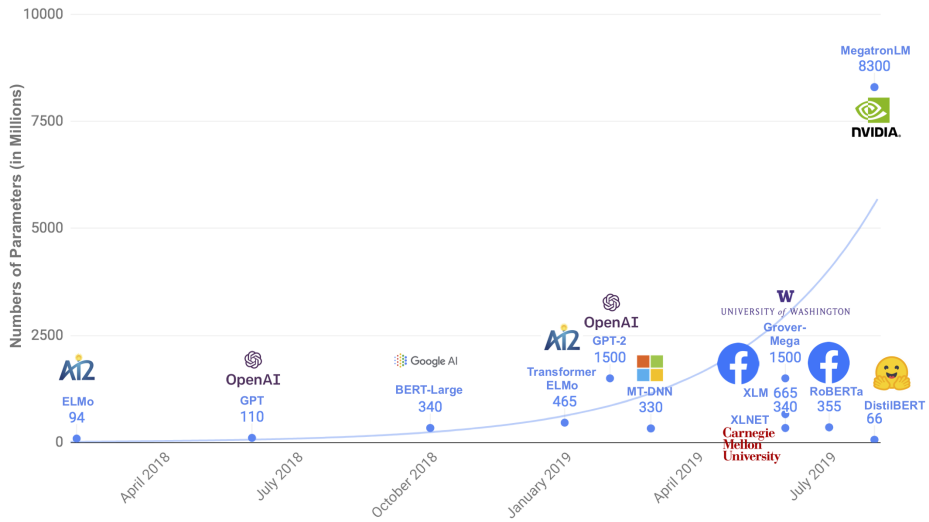

Figure 1: Parameter counts of recently released pre-trained language models; figure taken from Sanh et al. (2019)

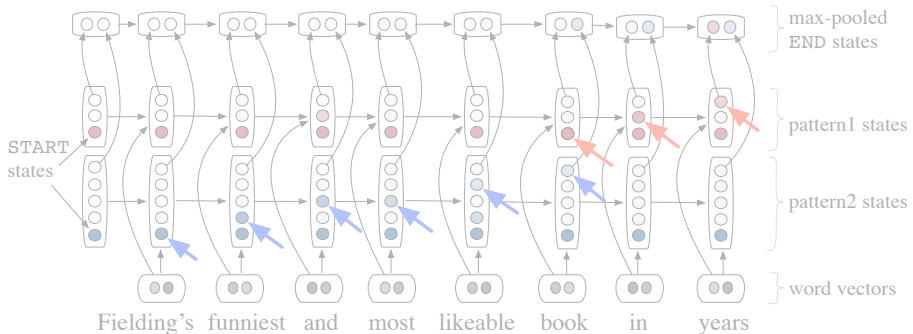

Figure 2: SoPa's partial computational graph; figure taken from Schwartz, Thomson, and Smith (2018)

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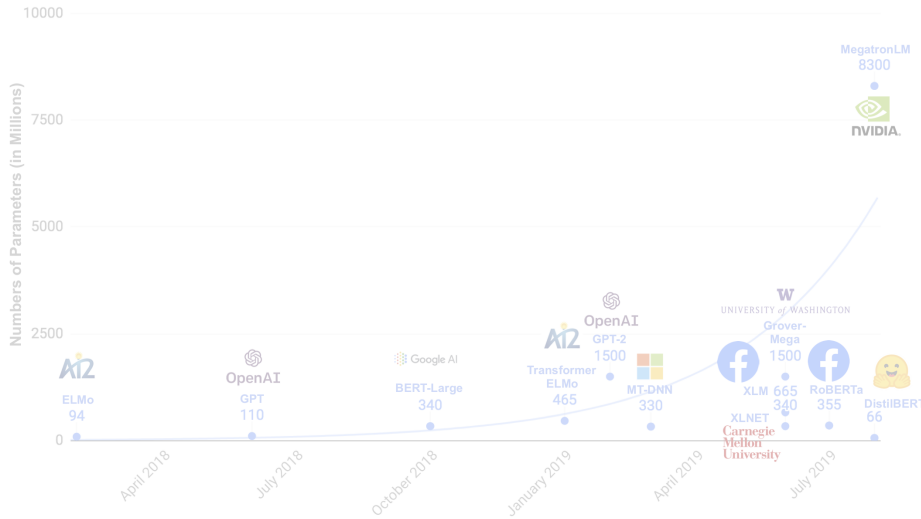

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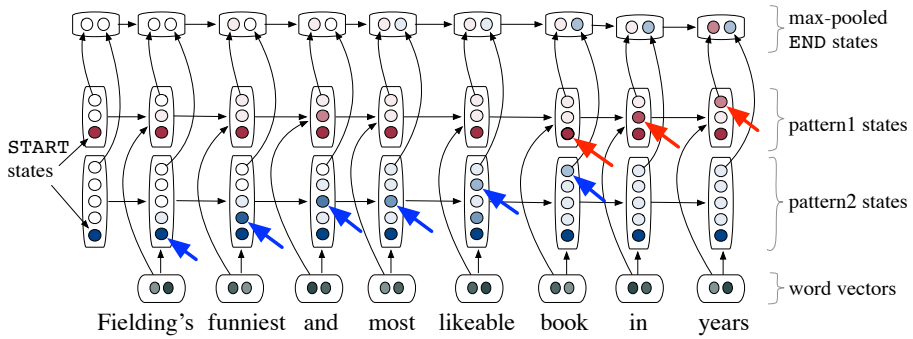

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Bibliography I

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