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Issue #12 (open): [REVIEW] R3 Review

@flipz357 on Mar 27, 2025 15:52: [opened]

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Conflicts of interest

- ☒ I declare that I have no known conflicts of interest with the authors.

Reviewed version

2a65b3c

Review

Summary

The paper explains different graphical ML approaches to Named Entity Recognition (NER), an NLP task typically framed as text sequence labeling.

Obviously, the specific concepts and approaches that are discussed in this paper (DAGs, HMMs, CRFs,...) are neither new, nor the state of the art. However, I found that the work delivers an interesting pedagogical experience, and thus I see the value for teaching and learning purposes. The paper is also nicely aligned with how models in the NER field have developed historically, it is possible to literally and visually follow these improvements. The visualizations themselves are well done, and are mostly straightforward and intuitive, highlighting the concepts discussed in the text. Specifically, it is well demonstrated and becomes conceptually clear why CRFs are the best approach among the graphical models: The reader becomes aware of the different assumptions that these models make. I am not sure if "teaching experiences" align with the scope of the journal, but if so, I consider this paper a potentially good fit.

Further comments

I found the definition of time homogeneity confusing. Later in the inference section there is a nice figure that shows it in a simple way, I think. But the definition that comes before is a little confusing, and maybe also wrong. Shouldnâ€™t it rather be P(Sn=a|S{n-1}=b) = P(S{n+1}=a|Sn=b)?

Capitalize T and R in two Figure captions: Notation: the shorthand and Representation: rather than.

â€œAn indication, although it is by no means proof,â€ Mentioning that this is not a proof seems unnecessary.

Figure about the discouraging OOV results (and also some other Figures): Why are there empty cells in the grid? Maybe explain what the empty cells mean when introducing the first of such figure.

MRF Triangle Figure: It would be nice if it also showed a vertex that isnâ€™t connected to all other vertices (while I see that it is coming up soon after, it could be achieved in the simple pic by simply attaching a fourth node).

The label bias problem seems a crucial concept in this piece. However, it is lacking an intuitive description. The authors accomplish intuitive description in almost all other aspects of their work, yet here I was missing one. Particularly, that itâ€™s â€œcausing certain states to effectively ignore their observations, biasing predictions toward less likely transition paths.â€ is hard to understand. What kind of "certain" states are these, and why/how does the label bias problem cause this? Specifically, when the paper is viewed as a learning/teaching experience, this part sticks out somewhat negatively.

Openness/Transparency

The learning experience that this work delivers can be extended, e.g., by showing how these graphical models can be combined or leveraged together with neural networks. See LSTM-CRF https://arxiv.org/abs/1603.01360.

Submission categories

- ☐ Registered Report
- ☐ Replication Study
- ☐ Empirical Research - Quantitative
- ☐ Empirical Research - Qualitative
- ☐ Systems or design research
- ☐ Commentary
- ☐ Systematic Literature Review

Suggested outcome

Minor revisions: this paper requires some smaller changes, after which I am confident I would be able to endorse it.

Requested changes

As said, I am not sure if "teaching/learning experiences" (as main contribution) align with the scope of the journal, but if so, I assess that this paper is only in need of minor revisions and I would endorse it in such a context.

ORCID

No response

@jsndyks on May 25, 2025 10:35: [referenced from #[DECISION] Minor Revision - May need more than 1 month and is somewhat dependent on other VISxAI papers & decisions]

@jsndyks on Sep 05, 2025 14:46: [referenced from #[DECISION] ACCEPT / ENDORSE]
