

## Paper: *Troubling Trends in Machine Learning Scholarship*

Nirajan Koirala

CSC 9010\_001

### Summary

In the given paper authors investigate a basic but important question in ML field, what sort of papers best serve their readers. They lay down the desired characteristics of a paper and acknowledge how recent progress in ML has come despite frequent departures from these ideal characteristics. The four patterns they observe in the literature are failure to distinguish between explanation and speculation, failure to identify the right sources of empirical gains, using excessive mathematical terms which adds confusion instead of clarification and misuse of language itself. The causes behind these kinds of patterns to emerge may include the rapid expansion of the community, the consequent thinness of the reviewer pool and the often-misaligned incentives between scholarship and short-term measures of success. As the field widens, authors hope that by communicating more precise information with greater clarity, they can accelerate the pace of research, reduce the on-boarding time for new researchers and play a more constructive role in the public discourse.

Authors provide some disclaimers in section 2 and start discussing the troubling trends in section 3. They assert how papers often offer speculation in the guise of explanations, which are then interpreted as authoritative due to the trappings of a scientific paper and presumed expertise of the authors. Many papers are found to emphasize complex models and fancy mathematics just to satisfy the reviewing committee. Source of empirical gains are frequently obscured as many authors propose tweaks without proper ablation studies and this can give a false impression and it misleads the readers to believe that all the proposed changes are necessary. However, many papers often perform good ablation analyses and even retrospective attempts to isolate the source of gains can lead to new discoveries. Similarly, some papers are found to include excessive mathematical terms which either bulldoze rather than clarifying the points made. Authors also identify three common avenues of language misuse in ML: suggestive definitions, overloaded terminology and suitcase words. They provide the shortcomings of using these kinds of language misuse and after that move on to the speculation behind the cause of these trends. They point that these patterns are on the rise and suspect several possible candidates which are complacency in the face of progress, rapid expansion of the community, consequent thinness of the reviewer pool and misaligned incentives of scholarship vs short-term measures of success.

In section 5, they provide suggestions for other authors to abstain from the negative patterns and focus on what can we do as a community to raise the level of experimental practice, exposition and theory. They encourage other authors to ask some fundamental questions before submitting their work. They also provide some suggestions for publishers and reviewers for setting better incentives and judging a paper more effectively.

## **Strengths**

- Paper points out some real underlying shortcomings in ML literature.
- Helpful suggestions are provided for improvement of both paper writers and reviewers.

## **Discussion Questions**

- In some cases the suggestions put forth by the authors hinder the fast pace of research. Would it be more appropriate to give pace a higher priority since the ML techniques have widely been used in medical fields where human life has a higher priority?
- Could it be possible to completely ban the use of exaggerated/misleading jargon in ML?
- Discussion on section 4.