

RESEARCH ARTICLE / REVIEW

A Concise and Informative Title of No More than Twenty Words

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Abstract

Write a single-paragraph abstract of up to 250 words without citations or undefined abbreviations. State the problem and why it matters, what you did, the main quantitative results, and what they mean. Readers and indexers often see only the title and abstract, so make every sentence count.

Keywords keyword one · keyword two · keyword three · keyword four · keyword five

1 Introduction

Explain the problem, its context and why it matters. Open with the broad research area and narrow down, step by step, to the specific question that this paper answers. Readers from neighbouring fields should be able to follow the first paragraph without specialist knowledge, so define key terms when they first appear and avoid abbreviations that are not widely known. State clearly what is at stake: what fails, costs more, takes longer or remains unknown if the problem is not solved, and who is affected by it in practice.

Summarise the state of the art in a few sentences and cite the most relevant and recent work [1, 2]. Then identify the gap: what existing methods cannot do, which assumptions they depend on, or which settings, data sets and scales they have not yet been tested in. Keep this part short and focused, because the detailed comparison with earlier work belongs in the Related work section. Cite with numbers in square brackets in the order in which references first appear; ranges are compressed automatically [1–4].

Describe your approach in one or two sentences and explain why it addresses the gap better than the alternatives. Then state the contributions of the paper clearly and specifically, for example as a short list:

- a new method for . . . that . . . , together with a formal analysis of its main properties;
- an evaluation on . . . public benchmark data sets showing . . . , compared with . . . strong baselines;
- an ablation study that explains which components of the method matter, and why;
- an analysis of the limitations of the method and of the settings in which it should not be used;
- an open-source implementation, trained models and the data needed to reproduce every result.

Close the introduction with the main quantitative result in one sentence, so that readers know what to expect, and give a short outline of the rest of the paper. Section 2 reviews related work, Section 3 describes the method, Section 4 presents the results, Section 5 discusses them, and Section 6 concludes. Paragraphs after the first one in a section start with a small indent, as here.

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2 Related work

Group earlier work by theme and explain how your work differs. The journal welcomes careful systems implementations, empirical evaluations, benchmarks, replication studies and well-founded negative results, not only new methods.

3 Methods

Describe what you did in enough detail for others to reproduce it. Number display equations that you refer to:

$$\mathcal{L}(\theta) = -\frac{1}{N} \sum_{i=1}^N \log p_{\theta}(y_i | x_i) + \lambda \|\theta\|_2^2. \quad (1)$$

Equation (1) is the training objective.

3.1 Algorithm

Pseudocode can be written with the `algorithm` and `algpseudocode` packages, as in Algorithm 1.

Algorithm 1 Example procedure

Require: data set D , learning rate η

- 1: initialise θ
- 2: **for** each mini-batch $B \subset D$ **do**
- 3: $\theta \leftarrow \theta - \eta \nabla_{\theta} \mathcal{L}(\theta; B)$
- 4: **end for**
- 5: **return** θ

3.2 Code

Short listings are welcome; long code belongs in a public repository.

```
1 def accuracy(predictions, labels):
2     # share of correct predictions
3     return sum(p == y for p, y in zip(predictions, labels)) / len(labels)
```

4 Results

Present the results with figures and tables, each cited in the text (Fig. 1, Table 1). Report the variability of results (for example mean $\pm$ standard deviation over several runs) and the statistical tests used.

Table 1 Tables use horizontal rules only. Put units in the column heads.

Method	Accuracy (%)	F1 score	Time (s)
Baseline A	81.2 $\pm$ 0.4	0.79	12.4
Baseline B	84.0 $\pm$ 0.6	0.82	15.1
Proposed method	88.7 $\pm$ 0.3	0.87	13.0

5 Discussion

Interpret the results, compare them with earlier work, and state the limitations and threats to validity honestly.

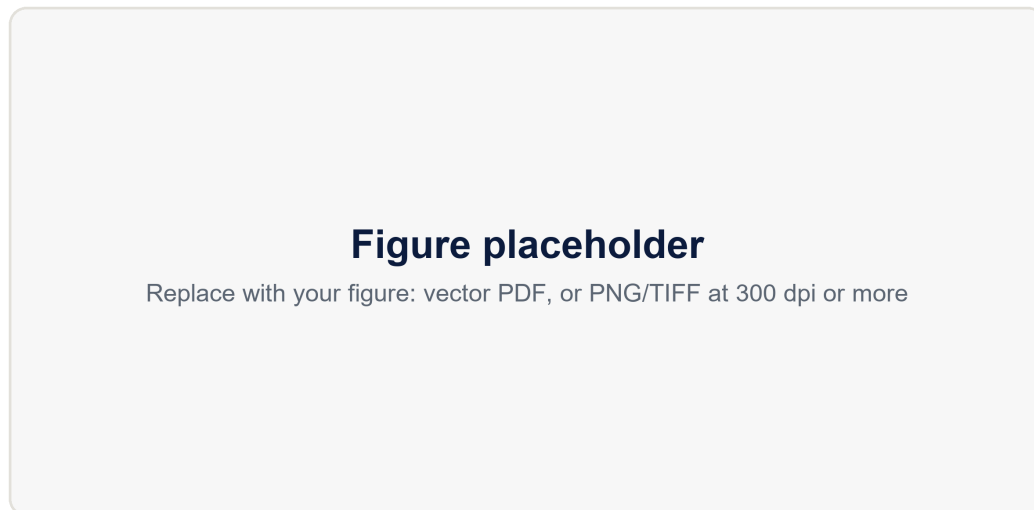


Fig. 1 A self-contained caption. Start with a short title sentence, then explain what is shown, the symbols used and the number of runs. Supply figures as vector PDF or as images of at least 300 dpi.

6 Conclusion

Summarise the main findings and their implications in one or two paragraphs.

Declarations

Data availability State where the data can be found (repository and persistent identifier), or why they cannot be shared.

Code availability Give the repository URL and, ideally, an archived version with a DOI (for example Zenodo).

Author contributions Use CRediT roles, for example: First Author: conceptualisation, methodology, writing (original draft). Second Author: software, validation. Third Author: supervision, writing (review and editing).

Funding Name the funders and grant numbers, or state that the work received no specific funding.

Competing interests Declare any financial or non-financial competing interests, or state “The authors declare no competing interests.”

Use of generative AI Describe any use of AI tools in the research or writing, or state that none were used. AI tools cannot be authors.

Ethics approval Required for studies with human participants or personal data; otherwise write “Not applicable”.

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