

Preface

The NeurIPS 2021 Preregistration Workshop represents the second edition in the series of Preregistration Workshops associated with NeurIPS conference. As with the first edition held in 2020, the workshop sought to implement a *preregistration* review protocol for machine learning research.

Why preregistration? To date, public benchmarks have driven a great deal of progress in machine learning. However, there are potential drawbacks to relying heavily on benchmark scores in the review process. First, typically only positive results are accepted and as such, useful negative results are rarely disseminated. Second, reliance on benchmarks may encourage researchers to prioritise state of the art numbers ahead of other valuable paper characteristics such as careful experimental design and theoretical insight.

The preregistration protocol represents an alternative approach to reviewing that aims to mitigate these drawbacks while retaining the considerable benefits (reproducibility, comparability etc.) of public benchmarks. Authors first write a *preregistered paper* that describes a hypothesis and an experiment protocol by which that hypothesis could be tested. Crucially, no experimental results are included at this stage. Reviewers assess the paper on the basis of its arguments, novelty, potential impact and experiment plans. As such, the authors stand little to gain from “SotA chasing” and much more to gain from creative ideas, compelling hypotheses and careful experimental protocol design. Additionally, such early feedback from reviewers has the potential to improve the plans, hence the final paper. Authors of accepted papers proceed to conduct experiments according to their proposed protocol (documenting deviations from the protocol where necessary). The results are appended directly to the preregistered paper which is subsequently assessed by a final confirmatory peer review stage to confirm that the protocol was followed appropriately. For submissions that pass this final stage of review, the preregistered paper and results are published together.

The NeurIPS 2021 Preregistration Workshop received 22 preregistered paper proposals over a diverse collection of machine learning topics. Reviewing was double-blind, and all proposals received at least two reviews. Of these, 10 (45%) were accepted as part of the workshop proceedings. Among the 10 accepted papers, 3 (30%) also submitted a results paper for the final stage of confirmatory review. All 3 (100%) of these were judged by reviewers to have followed the experimental protocol, and appear in the proceedings.

As with the first edition, we hope that the NeurIPS 2021 Preregistration Workshop will serve as a useful launchpad for further experiments with preregistration in the machine learning research community.

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