Preface

The objective of the NeurIPS 2020 Preregistration Workshop was to conduct a pilot study of the *preregistration* review cycle in machine learning. The motivation for preregistration is the observation that while machine learning research has benefited considerably from the adoption of standardised public benchmarks, heavy reliance upon performance as a proxy for scientific progress may have limitations. The status quo incentivises researchers to "beat the state of the art", potentially at the expense of deep scientific understanding and rigorous experimental design. Since typically only positive results are rewarded, the negative results inevitably encountered during research are often omitted, allowing many other groups to unknowingly and wastefully repeat these negative findings.

The preregistration publishing and reviewing model aims to address these issues by changing the incentive system. A preregistered paper is a regular paper that is submitted for peer-review without any experimental results, describing instead an experimental protocol to be followed after the paper is accepted. This implies that it is important for the authors to make compelling arguments from theory or past published evidence. As for reviewers, they must assess these arguments together with the quality of the experimental design, rather than comparing numeric results. Experiments are conducted after reviewers have accepted the preregistered paper and are included as an extension to the preregistered paper. Finally, a second "confirmatory" round of peer review is conducted to validate that the experiments faithfully followed the proposed experimental protocol and the preregistered paper is published together with the experimental findings.

The NeurIPS 2020 Preregistration Workshop was held in December 2020. We received 73 high quality preregistered paper proposals spanning a broad range of topics across the machine learning research spectrum. Each submission received at least two double-blind reviews and 38 (53%) were accepted to the workshop. Among the accepted workshop papers, 25 (66%) submitted a results paper for confirmatory review and of these, 23 (92%) were accepted to appear in the proceedings that follows. We were encouraged by the breadth and quality of ideas that emerged from the NeurIPS 2020 Preregistration Workshop and hope that it serves as a useful proof of concept and a springboard for broader adoption of preregistration across the machine learning ecosystem.

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