

Broader Impact Statement

Both LLM and AutoML research have concerns about the corresponding societal impact. An AutoML system could optimize towards a fairer model, and an LLM could be fine-tuned to reduce the risk of unfairness. However, as a general survey paper that tries to build a bridge between these two fields, we do not explicitly discuss the societal impact here as this depends on the actual use cases and will be discussed within the related literature.

LLMs have attracted lots of attention in recent years. However, the amount of resources required to train an LLM is already quite huge and keeps increasing. This indicates that applying AutoML to LLM could potentially help to reduce the carbon footprint by training an LLM. On the other hand, configuring an AutoML system might require lots of trial-and-error processes. Applying LLM to AutoML could be a solution to this that leads to a smaller energy consumption.

Submission Checklist

1. For all authors...

- (a) Do the main claims made in the abstract and introduction accurately reflect the paper's contributions and scope? [Yes]
- (b) Did you describe the limitations of your work? [N/A] This is a survey paper. Therefore, there is no need to discuss the limitation here
- (c) Did you discuss any potential negative societal impacts of your work? [Yes]
- (d) Did you read the ethics review guidelines and ensure that your paper conforms to them? <https://2022.automl.cc/ethics-accessibility/> [Yes]

2. If you ran experiments...

- (a) Did you use the same evaluation protocol for all methods being compared (e.g., same benchmarks, data (sub)sets, available resources)? [N/A]
- (b) Did you specify all the necessary details of your evaluation (e.g., data splits, pre-processing, search spaces, hyperparameter tuning)? [N/A]
- (c) Did you repeat your experiments (e.g., across multiple random seeds or splits) to account for the impact of randomness in your methods or data? [N/A]
- (d) Did you report the uncertainty of your results (e.g., the variance across random seeds or splits)? [N/A]
- (e) Did you report the statistical significance of your results? [N/A]
- (f) Did you use tabular or surrogate benchmarks for in-depth evaluations? [N/A]
- (g) Did you compare performance over time and describe how you selected the maximum duration? [N/A]
- (h) Did you include the total amount of compute and the type of resources used (e.g., type of GPUs, internal cluster, or cloud provider)?
- (i) Did you run ablation studies to assess the impact of different components of your approach? [N/A]

3. With respect to the code used to obtain your results...

- (a) Did you include the code, data, and instructions needed to reproduce the main experimental results, including all requirements (e.g., requirements.txt with explicit versions), random seeds, an instructive README with installation, and execution commands (either in the supplemental material or as a URL)? [N/A]
- (b) Did you include a minimal example to replicate results on a small subset of the experiments or on toy data? [N/A]
- (c) Did you ensure sufficient code quality and documentation so that someone else can execute and understand your code? [N/A]
- (d) Did you include the raw results of running your experiments with the given code, data, and instructions? [N/A]
- (e) Did you include the code, additional data, and instructions needed to generate the figures and tables in your paper based on the raw results? [N/A]

4. If you used existing assets (e.g., code, data, models)...
 - (a) Did you cite the creators of used assets? [N/A]
 - (b) Did you discuss whether and how consent was obtained from people whose data you're using/curating if the license requires it? [N/A]
 - (c) Did you discuss whether the data you are using/curating contains personally identifiable information or offensive content? [N/A]
5. If you created/released new assets (e.g., code, data, models)...
 - (a) Did you mention the license of the new assets (e.g., as part of your code submission)? [N/A]
 - (b) Did you include the new assets either in the supplemental material or as a URL (to, e.g., GitHub or Hugging Face)? [N/A]
6. If you used crowdsourcing or conducted research with human subjects...
 - (a) Did you include the full text of instructions given to participants and screenshots, if applicable? [N/A]
 - (b) Did you describe any potential participant risks, with links to Institutional Review Board (IRB) approvals, if applicable? [N/A]
 - (c) Did you include the estimated hourly wage paid to participants and the total amount spent on participant compensation? [N/A]
7. If you included theoretical results...
 - (a) Did you state the full set of assumptions of all theoretical results? [N/A]
 - (b) Did you include complete proofs of all theoretical results? [N/A]