

Machine Learning and Compilers: A Survey of ML
Techniques for Enhancing Optimizing Compilers
(Technical Report)

The Convenience of Pollution: The Struggle over
Gasoline-Powered Leaf Blowers in the United States
(STS Research Paper)

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by

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Preface

Energy use from unclean sources in the United States exacerbates global climate change. Strategies to reduce energy use can come from both technological innovation and behavioral changes.

Optimizing compilers are an important step in transforming source code into executable programs. The variety and unpredictable interdependence of optimizations make code optimization a difficult problem. How might machine learning be exploited to improve compiler efficacy and efficiency? A review of research on the problem is a useful starting point. Research indicates that machine learning integration in compiler design may yield improvements to program efficiency, decrease compile times, and help automate the creation of optimization heuristics for different target architectures.

Gasoline-powered leaf blowers (GLBs) emit large amounts of pollutants due to design limitations. How do advocates and critics of GLBs in the United States advance their agendas? Many homeowners oppose GLBs for their effects on health and the environment, while landscaping companies and manufacturers rely on them as business necessities. Both sides engage in lobbying and propaganda or public awareness campaigns for agenda advancement. Participants in the debate have been divided by conflicting perceptions of personal responsibility to environmental stewardship and how best to balance regulation and personal freedoms.