

LOWER AND SIMULATE LLHD USING MLIR

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ABSTRACT

The current hardware design workflow is sparse, with tools being mostly monolithic and proprietary. This introduces unnecessary redundancies, as well as possible implementation discrepancies between tools. LLHD [2] brings a simple IR, yet still able to fully capture existing HDLs. MLIR [1] provides a powerful and open source infrastructure to implement LLHD and enable a new and open source HDL workflow.

CONTENTS

1	INTRODUCTION	1
2	BACKGROUND	3
3	IMPLEMENTING LLHD USING MLIR	5
	BIBLIOGRAPHY	7

LIST OF FIGURES

LIST OF TABLES

LISTINGS

INTRODUCTION

BIBLIOGRAPHY

- [1] Chris Lattner, Mehdi Amini, Uday Bondhugula, Albert Cohen, Andy Davis, Jacques Pienaar, River Riddle, Tatiana Shpeisman, Nicolas Vasilache, and Oleksandr Zinenko. “MLIR: A Compiler Infrastructure for the End of Moore’s Law.” In: (Feb. 25, 2020). arXiv: [2002.11054v2 \[cs.PL\]](#).
- [2] Fabian Schueki, Andreas Kurth, Tobias Grosser, and Luca Benini. “LLHD: A Multi-Level Intermediate Representation for Hardware Description Languages.” In: (2020).



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