OpenROAD Flow Scripts on a Ibex and MUX16x1

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Abstract—In this paper, I am going to present my design experience with the OpenRoad app. As a physical design engineer, I will share design flow challenges and tool sophisticated level in the sense how efficient in terms of physical design flow will be considered for sharing my the experience through this paper.

Keywords— OpenROAD Flow Scripts, RTL-to-GDSII flow, open-source tools, automated design, no-human-in-the-loop.

I. INTRODUCTION

Academic institutions, and startup companies often face difficulties in obtaining EDA tools because these tools are typically proprietary software, and maintaining their licenses is expensive. Additionally, acquiring foundry supported Process Design Kits is also a costly endeavour.

As a result, many talented VLSI enthusiasts are unable to bring their ideas to fruition. However, with the advent of open source EDA tools now even VLSI student enthusiasts can try their ideas.

II. EXPERIENCE OF THE DESIGN FLOW

To gain familiarity with the OpenROAD app, I have tried two design examples. The first was that came with OpenROAD app installation ibex, while the second was a MUX16x1 . While my experience with the ibex design was hassle free RTL-to-GDSII generation, but I encountered difficulties when attempting to use my own design. Specifically, I found it challenging to manually edit the configuration variables. In addition, directory freedom is not seen in the sense desiner must abide by the directory structure.

III. STRENGTH OF THE TOOL

The OpenROAD application's design flow process exhibits remarkably amazing when compared with the commercial EDA tools in implementing the design flow process from RTL to GDSII.

IV. PROPOSED PLAN

I am planning in this contest to work on flow methodology to enhance the performance on the provided design which is Ibex.

V. CONCLUSION AND RECOMMENDATIONS

In my concluding statement, I urge developers to include DFT tool as well in the OpenROAD app. This will enable talented individuals to contribute towards the advancement of sophisticated technology. As mentioned in Section II, I recommend the implementation of a system that allows designers to modify numerical values without the need to deal with the variable and TCL syntax.

REFERENCES

[1] https://github.com/The-OpenROAD-Project/OpenROAD

[2] https://openroad.readthedocs.io/en/latest/