OA Gear: OpenAccess for Academic Research

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EDA research in academia has historically been based on infrastructure developed independently by individual contributors. This has led to a fragmentation in the community, where interaction, data exchange and comparison of results between tools are difficult. The proliferation of OpenAccess is now opening new research opportunities to academic communities. The common database with the C++ program API interface to the design data yields many benefits: The fragmentation is minimized, the results can be compared easily, and the benchmarks can be stored in one single format.

While OpenAccess was originally intended for adoption within industry it has been lacking a supporting environment of software components with higher level functionality. Hence, we have started the OpenAccess Gear (OA Gear) project in the summer of 2004. OA Gear is an open source development effort which provides a library of tools and software components. EDA algorithm developers, both in academia as well as in industry, can use these components to extend or improve their own work. Currently, it has the following components: An incremental timing analysis tool, an extensible graphic user interface, a placement interface to Capo, a representation of the logical function in the form of an and-inverter graph with an RTL Verilog reader and some benchmarks. OpenAccess and OA Gear have been adopted by academic research groups, for example for the timing driven WARP-placer developed at the Carnegie Mellon University.

At the end of the year 2005 the first IEEE Programming Challenge at the International Workshop for Logic Synthesis (IWLS) was launched. Participating students implement logic synthesis algorithms in OpenAccess and use the OA Gear functional representation. They can win travel grants to the workshop and a cash prize for an outstanding contribution.

OA Gear is developed for students, but it has also been developed by students: Zhong Xiu (Carnegie Mellon University), David Papa (University of Michigan), Afshin Abdollahi (University of Southern California), Aaron Hurst (University of California Berkeley), Haifeng Qian (University of Minnesota), and Luis Guerra e Silva (University of Lisbon).

OpenAccess Gear website: http://openedatools.si2.org/oagear/