ACM International Symposium on Physical Design 2011
Routability-driven Placement Contest
Call for Participation

Registration Deadline: November 12, 2010
Please see the "OTHER INFORMATION" section for details.

The last few years have seen significant advances in the quality of global placement and routing algorithms, mainly due to the availability of large, challenging testcases by way of the ISPD 2005-2008 contests. The ISPD placement contests evaluated the placers based on the half-perimeter wire length (ISPD-05) and their spreading capability by way of a placement target density in addition to wire length and runtime (ISPD-06). Although wire length and spreading ability are important metrics, they still do not directly address a fundamental requirement for placement algorithms, namely, the ability to produce routable placements. In fact, routing congestion is a serious concern for advanced process technologies like 65nm and below.

In light of the advances in global placement and routing technologies, the ISPD 2011 contest will be on "ROUTABILITY-DRIVEN PLACEMENT". In the spirit of the past ISPD contests, a new set of challenging industrial benchmarks will be released to test the routability of the placement algorithms. Please note, none of the benchmarks will have any artificial constraints like target density, etc., to enforce more spreading. The placer can use any technique to come up with a routable placement solution.

BENCHMARK DESCRIPTION:

The Bookshelf file format will be extended to handle the routability-driven placement problem. Each design in the benchmark suite will have the following files:
1) circuit.aux: Auxiliary file listing the files those need to be read in by the placer.
2) circuit.nodes: Specifies object attributes (name, dimensions, etc.,)
3) circuit.nets: Specifies the set of nets in the design.
4) circuit.pl: Specifies the location and orientation of the objects.
5) circuit.scl: Specifies the placement image information to place the objects.
6) circuit.wts: Currently unused, as all objects and nets have the same weight.
7) circuit.route: Specifies the global routing information for the current design.

The format of files 2-6 will be similar to the ISPD-05 and ISPD-06 placement contests.

The **circuit.route** is a new file having at least the following information:
- Global routing g-cell size.
- Number of routing layers.
- Layer capacity values.

- Wire widths and spacing information.
- Via specifications.
- Routing blockage construction information corresponding to fixed macros.
- G-cell offset (lower-left corner) of the whole grid.

This file will enable each team/contestant to perform global routing congestion analysis on the current placement. The contestant is allowed to use any technique to perform the congestion analysis, and use that information to come up with a routable placement solution.

METRICS FOR EVALUATION:

The metrics for evaluation will be based on:
- Routability of a given placement.
- Overall runtime to generate a placement solution.

As a part of the contest, two or three "golden" routers will be released to evaluate the routability of the placement algorithms. During the contest, all the golden routers will be run on every placement solution, and the best result will be used for each benchmark. The finalized metrics for evaluation / contest objective function will also be released along with the "golden" routers.

OTHER INFORMATION:

1) This year the contest will be administered by Natarajan Viswanathan from IBM. Please send all emails regarding the contest to **nviswan@us.ibm.com**.
2) Please add "ISPD2011_Contest" to your subject line for any emails regarding the contest.
3) To be considered for the contest, you must register by **November 12, 2010** by sending an email to the contest administrator. This will enable the administrator to create a targeted mailing list to email relevant contest information.
4) Please include the following information during registration:
   a) Name of the placer
   b) Names of the developers
   c) Affiliation of the team/contestant
   d) One email id as the corresponding member of the team
5) Further details including contest website, benchmark release dates, deadlines, contest objective function, etc., will be announced after the registration deadline.