

# Customizing FPGA Designs using RapidWright

Bachelor semester project

École Polytechnique Fédérale de Lausanne (EPFL)

Parallel Systems Architecture Lab (PARSA)

by

Ahmed Ben Haj Yahia



supervised by :

Seyedeh Sharareh Mirzargar

Andrea Guerrieri

Dr. Mirjana Stojilovic

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Wings are a constraint that makes  
it possible to fly.  
— Robert Bringhurst

To my parents...

# Abstract

A Field Programmable Gate Array (**FPGA**) is a digital programmable chip that is widely used in electronic products. Its application is everywhere; Medical use, Aerospace, Data centers, etc. After manufacturing, It can be programmed or reprogrammed to the required functionality. For instance, RapidWright is an open source Java framework that enables implementation manipulation of modern Xilinx FPGA designs. (reference : what is RapidWright) [1] It will be used in this project to customize FPGA designs by adding sensors that are represented by ring oscillators. These sensors can be used to measure physical data of the monitored parameter (voltage, thermal..). We present an overview of RapidWright as a tool to customize FPGA designs. Next, we implement a methodology to embed our selected sensors into pre-implemented designs. Finally, we show results of applying this toolchain on real-sized industrial circuits from VTR benchmark suite.

Key words: FPGA, RapidWright, Vivado Design Suite



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# 1 Introduction

In this project, RapidWright is used as a tool to customize FPGA designs and embed sensors. RapidWright is an open source platform from Xilinx Research Labs with a gateway to back-end tools in Vivado®. RapidWright allows modifying Xilinx-FPGA designs outside of Vivado environment.

The final goal of this project is to be able to insert  $n$  sensors to an already-placed and routed designs using RapidWright. So as a starting point, we want to be able to locate all the free cells of a selected design that could be used and chosen from to insert our sensors. One also needs to specify the topology and location of these sensors that we want to insert.

This is done by listing the (x,y) coordinates of all the desired LUTs to be used, and it's corresponding gate types (*as shown in figure 1.1*)

```
"[150, 340, 'Unisim.AND2']" , "[145, 335, 'Unisim.NAND2']" ,  
"[145, 315, 'Unisim.AND2']" , "[165, 315, 'Unisim.AND2']" ,  
"[165, 335, 'Unisim.AND2']" , "[185, 335, 'Unisim.AND2']" ,  
"[185, 315, 'Unisim.AND2']"
```

Figure 1.1 – An example showing coordinates of cells for one sensor in the description file.

We present the steps of the implemented process for finding and selecting the free cells to be inserted into the design. We then test our procedure on an empty design and a dense one. Finally, we automate the procedure of inserting the sensors and apply it to a list of selected design benchmarks.



## 2 Preliminaries and Overview

The procedure begins and ends with standard FPGA design flow performed by Xilinx Vivado Design Suite. It starts by placing and routing the user's design, then generates a design checkpoint (DCP). This generated DCP is then imported to RapidWright, where the process of inserting the desired cells is performed.

### 2.1 FPGA architecture

A **Field-Programmable Gate Array** (FPGA) is an integrated circuit designed to be configured by a customer or a designer after manufacturing.

The **Configurable Logic Block** (CLB) is the main resource for implementing general-purpose combinatorial and sequential circuits. It is made up of the logic elements themselves, which are grouped together in a slice, along with the interconnect routing resources to connect the logic elements. A CLB element contains a pair of slices, and each slice is composed of four **look-up tables** and eight storage elements.

- SLICE(0) : slice at the bottom of the CLB and in the left column;
- SLICE(1) : slice at the top of the CLB and in the right column;

These two slices do not have direct connections to each other, and each slice is organized as a column. Each slice in a column has an independent carry chain. Figure 2.1 from Xilinx user guide [2] shows four adjacent CLBs and the relationship between their slices.

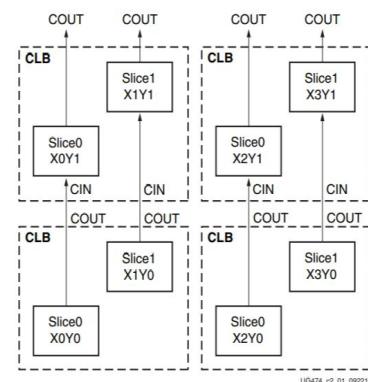


Figure 2.1 – Row and Column Relationship between CLBs and Slices

LUTs in FPGAs help significantly reduce the costs of computation and operation as it offers the computational range without requiring excessive time or massive gate count. They are constructed over simple memories that store Boolean functions and each LUT has a fixed number of inputs and is coupled to a multiplexer and a Flip-Flop in order to build any combinatorial and sequential circuits [3].

Therefore, in order to embed our sensors, we start by finding all the free LUTs of the design. We then modify and assign to the selected LUTs the desired functionality.

## 2.2 RapidWright

RapidWright's mission is to facilitate rapid creation of custom design implementation solutions for FPGAs. It compliments Xilinx's Vivado® Design Suite and provides developers with capabilities and hundreds of APIs that enable users to read , write and customize unencrypted Vivado design checkpoints files (DCPs) and help with variety of implementation challenges. On the RapidWright framework, we read the DCP file and use multiple APIs to embed our sensors. Figure 2.2 [1] illustrates how RapidWright interacts with Vivado by reading and writing .dcp files.

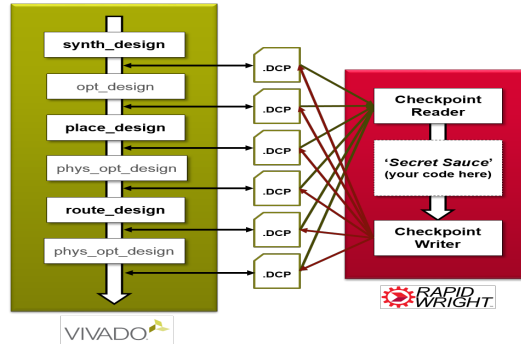


Figure 2.2 – Interaction between RapidWright and Vivado

## 2.3 Sensors

Multi-tenant FPGAs that contain circuits from multiple users are emerging as a new usage model in cloud and embedded computing environments. A diverse collection of FPGA voltage attacks that can be exploited in multi-tenant scenarios have been reported [4]. One tenant may try to maliciously induce localized instability in the supply voltage through LUT-based shift registers [5].

Voltage sensors have been used previously to assess voltage changes in the power distribution network under typical FPGA workloads. Gnad et al. [6] examined spatial and temporal voltage effects across an FPGA for a variety of workload characteristics.

Conventional sensors for characterizing voltage noise or thermal hot-spots of FPGAs are based

on a ring oscillator that feeds a frequency counter. A ring oscillator (RO) is composed of an odd number of NOT gates (Inverter) in a ring. One of the advantages of using ROs in a reprogrammable logic framework is that they offer the possibility to detect hot spots or signal contentions in a design [7].

Minimizing the number of inversions in the oscillator loop reduces sensor power consumption but also lowers the measurement resolution [8]. In our case, we configure only one of the LUTs of the oscillator loop as inverter and let the other LUTs being buffers. As in [8] We define the topology of the ring oscillators using three parameters :

- **N** : Number of unique x-coordinates of the LUTs forming one RO loop
- **S** : Stride, the distance between every two neighboring sensor columns
- **H** : Height, the distance between the two RO LUTs of same column

We have limited our search space to a configurations ( $N=3$ ,  $H=20$ ,  $S=20$ ) proposed in [8] and shown in figure 2.3 which means the ring oscillator sensors that we have used have 6 LUTs placed with regular spacing. Between two consequent LUTs, each one is located 20 LUTs away (both in terms of vertical distance and horizontal distance). In the figure, the black dot is the LUT representing the inverter, while the other dots are LUTs acting as delay elements.

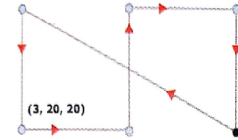


Figure 2.3 – sensor configuration

## 2.4 Overview

To summarize, we want to insert  $n=13$  sensors into a selected design. The coordinates as well as the types of the LUTs forming these sensors are specified in a description file. This file is used in RapidWright to select the desired cells. RapidWright then generates a DCP file and a TCL file containing corresponding TCL commands. Finally, these commands are applied by Vivado on the generated DCP file to place and route the modified design and generate the Bit-stream.

The following figure 2.4 [8] shows a flow chart representing the main steps towards customizing an FPGA design by adding sensors using RapidWright and Vivado Design Suite.

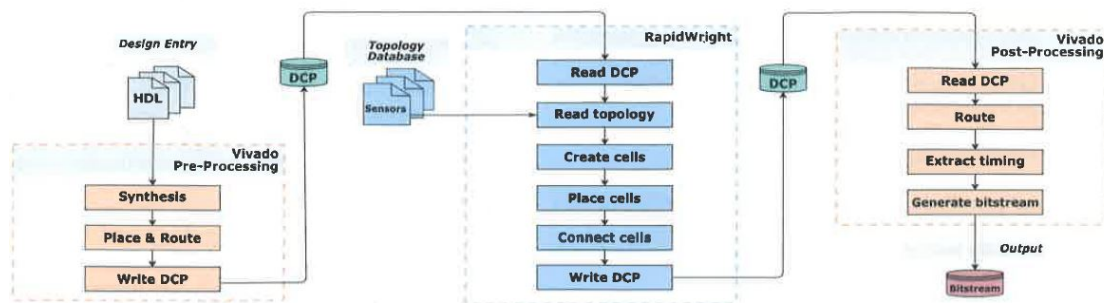


Figure 2.4 – Steps in the procedure of embedding sensors into a design



## 3 Methods

In this chapter we present the implemented methods used in RapidWright to insert the sensors into the design.

We want to place  $n=13$  sensors consisting of 6 LUTs each. A seventh LUT is added outside the loop of our ring oscillator sensor and has as functionality to connect the loop to the controller. We define the topology and locations of the LUTs in the description file.

The process starts by importing the design checkpoint into RapidWright. We then iterate over the number of sensors that we want to insert and, for each cell of each sensor, we find all free LUTs near the desired location, then select one at random to be used. When a sensor is placed, we connect its cells and continue to the next sensor.

At the end, we generate a new DCP corresponding to the new design with the added sensors.

Below we can see a description of the process.

```
1 - For each sensor:
2     - For each cell:
3         - Extract all free LUTs of the design.
4         - set search radius to 0.
5         - from specified (x ,y) coordinates, we find candidates cells for
          inserting.
6         - We then keep only free candidates
7         - If there is no free candidates:
8             we increment the search radius and redo the process
9         - Otherwise:
10            choose a LUT at random from free candidates and use it
```

### 3.1 Finding free LUTs

The process of finding free LUTs of a design will be repeated several times. We consider that the design has changed whenever a new sensor is placed. Thus, for each cell of each sensor, we search for the new set of coordinates of free LUTs that will be chosen from.



So, for a specific design, we each time iterate over all tiles of the corresponding device, and for each tile, we iterate over its sites; if a site is used -i.e. verified using API design class function *isSiteUsed(s)* - we consider all its BELs as occupied. Otherwise, we store it in *unused\_sites*. From these unused sites, we will generate a list of all free BELs and store it in *free\_cells*.

```
isSiteUsed
public boolean isSiteUsed(Site site)
Checks if the site is used in this design.
```

The following is a piece of code for finding unused sites in a design using RapidWright's APIs.

```
1      List<Site> unused_Sites = new ArrayList<Site>();
2      for(Tile t : design.getDevice().getAllTiles()) {
3          for(Site s : t.getSites()) {
4              if(!design.isSiteUsed(s)) {
5                  unused_Sites.add(s);
6              }
7          }
8      }
```

### 3.2 Choosing a valid LUT

For each cell, we use a function *generate\_offsets* that, given a search radius, generates a list of offsets. Using the desired location in the description file, these offsets are later used to create a list *candidates*. This list will contain the coordinates of all the LUTs located within the search radius from the desired location.

Once all the *free\_cells* are obtained, we iterate over all candidates and keep only *free\_candidates*. We then select one of these cells and use it for our sensor. If no free candidates are found, we increment the search radius and search again for free cells, this time farther from the desired location. This iterative search continues until a minimum of one free LUT is found.

In the following figures, we show Clock Region X1Y2 of an empty design (fig 3.1) before applying the process in RapidWright, then after selecting the cells of our sensor (fig 3.2), and finally when routed in Vivado (fig 3.3).



Figure 3.1 – X1Y2 empty

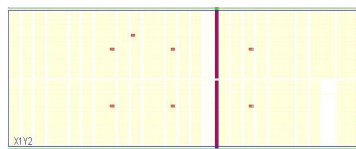


Figure 3.2 – X1Y2 with selected cells of sensor

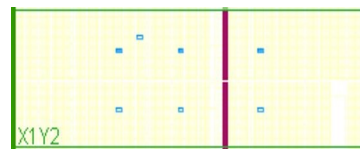


Figure 3.3 – X1Y2 with sensor placed and routed

### 3.3 Generating multiple solutions

Later, when applying these methods to the a specific design to embed our sensors, and in order to maximize our chances of obtaining a valid configuration, we want to present multiple and different solutions. To implement this, we generate a fixed number  $d$  of different DCPs and for each one we keep track of the cells selected from *free\_candidates* to form our ring oscillator sensors in *alreadyChosenCandidates*.

When selecting the LUTs from *free\_candidates*, we remove the already!chosen ones for previous solutions and select one LUT at random. This pseudo-algorithm explains the procedure.

---

**Algorithm 1** Selecting a cell different from the previous selected ones

---

**Input:** *alreadyChosenCandidates*, *free\_candidates*  
**Output:** Free LUT *selected\_cell*  
**Variables:** *final\_candidates*, random number  $r$   
**Require:**  $r \leq \text{final\_candidates.size}()$   
*final\_candidates*  $\leftarrow$  *free\_candidates*  
**for** *chosenCell* **in** *alreadyChosenCells* **do**  
    **if** *final\_candidates.contains(chosenCell)* **then**  
        *final\_candidates.remove(chosenCell)*  
    **end if**  
**end for**  
 $r \leftarrow \text{Random}()$   
*selected\_cell*  $\leftarrow$  *final\_candidates.get(r)*  
**return** *selected\_cell*

---



## 4 Experimenting and automating the process

In this chapter, we experiment our methods on different designs.

First, We use the provided description file to implant our sensors on an empty design, then on a noisy design. Finally, we automate the process and apply it to a series of real-size industrial circuits from VTR benchmark suite.

### 4.1 Experiment

#### 4.1.1 On empty design

Since we are using an empty design, the desired cells should be free and ready for insertion, and the search radius will not increase and should always equal 0.

As a matter of fact, the placement of the sensors on an empty design lead to a combination of cells that is exactly the same as described in the description file. After applying the corresponding TCL commands by Vivado on the generated DCP, we see that the design is successfully placed and routed, and we can thus generate the Bitstream.

We show in figure 4.1 the successfully placed and routed design with sensors.

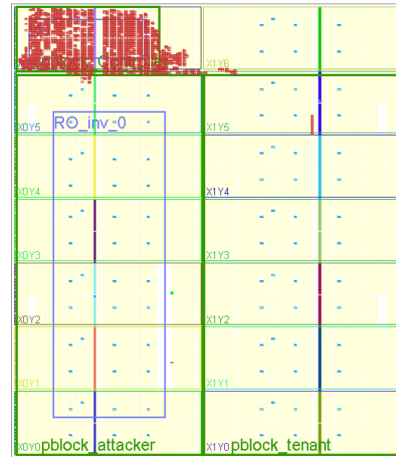


Figure 4.1 – Empty design with sensors after Place & Route.

### 4.1.2 On noisy design

The noisy tenant is composed of the following components:

1. 2000 instances of *seed\_generator*
2. 2000 instances of **32-bit** LFSRs (Linear Feedback Shift Register)
3. 2000 instances of **16-bit** adders

The seed generator is simply adding 3 to its last output to change the seed of the LFSRs so that we guarantee that the LFSR outputs will keep toggling. Therefore the power consumption of the tenant is variable over time and is kept at its maximum rate.

Each LFSR has a 32-bit adder which varies as its input seed is varied over time. We then add its MSB 16-bit with LSB 16-bit and do nothing with the results [9]. The whole operation is intended to increase the power consumption.

When placing our sensors in the noisy design, the proposed combination of cells differ with the one described in the description file. Since some desired cells are already being used by the design, the search for free cells will lead to a higher search radius, until it finds a minimum of one free LUT.

We show in figure 4.2 the successfully placed and routed design with sensors.

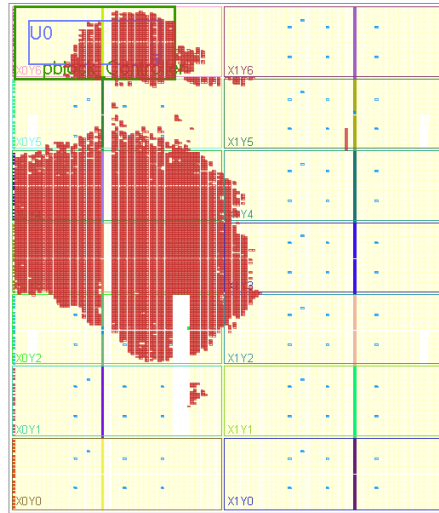


Figure 4.2 – Design with LFSR tenant with placed sensors after Place & Route.

In figure 4.6 we show a comparison between the desired locations of the cells forming *sensor 7* from the description file, and the locations of the selected LUTs in the empty design and in the noisy design.

```
Sensors 7
"[40, 140, 'Unisim.AND2']"
"[35, 135, 'Unisim.NAND2']"
"[35, 115, 'Unisim.AND2']"
"[55, 115, 'Unisim.AND2']"
"[55, 135, 'Unisim.AND2']"
"[75, 135, 'Unisim.AND2']"
"[75, 115, 'Unisim.AND2']"
```

Figure 4.3 – The desired locations of the cells of sensor 7

```
Sensors 7
=====
search radius is 0
0 : 7 : at SLICE_X40Y140/A6LUT -placing AND
search radius is 0
1 : 7 : at SLICE_X35Y135/C6LUT -placing NAND
search radius is 0
2 : 7 : at SLICE_X35Y115/A6LUT -placing AND
search radius is 0
3 : 7 : at SLICE_X55Y115/C6LUT -placing AND
search radius is 0
4 : 7 : at SLICE_X55Y135/C6LUT -placing AND
search radius is 0
5 : 7 : at SLICE_X75Y135/B6LUT -placing AND
search radius is 0
6 : 7 : at SLICE_X75Y115/A6LUT -placing AND
```

Figure 4.4 – The locations of selected LUTs for sensors 7 in empty design

```
Sensors 7
=====
search radius is 0
search radius is 1
0 : 7 : at SLICE_X41Y140/A6LUT -placing AND
search radius is 0
1 : 7 : at SLICE_X35Y135/B6LUT -placing NAND
search radius is 0
2 : 7 : at SLICE_X35Y115/C6LUT -placing AND
search radius is 0
3 : 7 : at SLICE_X55Y115/B6LUT -placing AND
search radius is 0
search radius is 1
search radius is 2
search radius is 3
search radius is 4
search radius is 5
4 : 7 : at SLICE_X50Y135/C6LUT -placing AND
search radius is 0
search radius is 1
search radius is 2
search radius is 3
search radius is 4
5 : 7 : at SLICE_X77Y133/A6LUT -placing AND
search radius is 0
search radius is 1
search radius is 2
search radius is 3
6 : 7 : at SLICE_X78Y115/B6LUT -placing AND
```

Figure 4.5 – The locations of selected LUTs for sensors 7 in noisy design

Figure 4.6 – Sensor 7: Comparison between locations of cells

## 4.2 The automated process

In this section, we show how the whole process of inserting sensors into a design is automated in RapidWright and in Vivado. For each cell of each sensor, we automate the procedure to select a LUT with least possible search radius from the wanted location. The DCP is then exported to Vivado for Place and Route. As a final step, we apply it on pre-defined circuits from VTR benchmarks.

### 4.2.1 VTR Benchmarks

The VTR benchmarks shown in 4.1 are a set of real-sized industrial circuits included with Verilog-to-Routing (VTR) [10]. They are fully compatible with the full VTR flow and they are suitable for FPGA architecture research.

Table 4.1 – VTR Benchmarks and their domain

Benchmark	Domain
bgm	Finance
blob_merge	Image Processing
boundtop	Ray Tracing
LU8PEEng	Math
LU32PEEng	Math
LU64PEEng	Math
mcml	Medical Physics
or1200	Soft Processor
raygentop	Ray Tracing
sha	Cryptography
stereovision0	Computer Vision
stereovision1	Computer Vision
stereovision2	Computer Vision

#### 4.2.2 On RapidWright's side

The process should , for each design benchmark, present 10 different DCPs , each one representing a possible combination of selected free cells to form our sensors. This aims to ensure that at least one of the proposed designs succeeds in Place & Route.

For the 10 DCPs to be different, each time we find a possible combination and generate a DCP, we consider the selected cells as occupied when computing the next one.

At the end, It outputs a report *Output.txt* containing the following information:

1. Which benchmark is being tested.
2. How many and precisely which Clock Regions are occupied by the benchmark.
3. The DCP being formed.
4. The sensor being placed.
5. The search radius
6. The selected cells, their location and the gate type

#### 4.2.3 On Vivado's side

After generating the 10 DCP files, we will run a script (see Appendix) that iterates over all the proposed solutions, and each time, apply the corresponding TCL commands on Vivado.

It outputs, for each DCP, the *results* of *place\_design* and *route\_design* commands to decide whether the placement and routing was successful or not.

We show in figure 4.7 Example of the output file *results* for bgm benchmark

```
[ 'DCP 1 place design completed ? YES!', 'DCP 1 route design completed ? YES!' ]
[ 'DCP 2 place design completed ? YES!', 'DCP 2 route design completed ? YES!' ]
[ 'DCP 3 place design completed ? YES!', 'DCP 3 route design completed ? YES!' ]
[ 'DCP 4 place design completed ? YES!', 'DCP 4 route design completed ? YES!' ]
[ 'DCP 5 place design completed ? YES!', 'DCP 5 route design completed ? YES!' ]
[ 'DCP 6 place design completed ? YES!', 'DCP 6 route design completed ? YES!' ]
[ 'DCP 7 place design completed ? YES!', 'DCP 7 route design completed ? YES!' ]
[ 'DCP 8 place design completed ? YES!', 'DCP 8 route design completed ? YES!' ]
[ 'DCP 9 place design completed ? YES!', 'DCP 9 route design completed ? YES!' ]
[ 'DCP10 place design completed ? YES!', 'DCP10 route design completed ? YES!' ]
```

Figure 4.7 – Output file showing results for bgm benchmark

### 4.3 Results/Output for VTR benchmarks

Each *Output.txt* file contains information about the placed sensors. For each cell of each sensor, it starts by mentioning the *search radius* for that LUT -i.e how far from the desired location is our search for free cell. Starting with search radius 0, we check if the LUT which coordinates are precised in the description file is free. If it's not, we increment the radius and search again for farther free LUTs. Once a free cell is chosen, its exact location and gate type are precised in the output file.

we present, for each benchmark from table 4.1, the first generated solution for embedding the sensors in Appendix. We recall that all 10 solutions were successfully placed and routed, and are included in the GIT repository [11].





## 5 Conclusion

In this paper, we introduce RapidWright as a tool for customizing FPGA designs. We extract all free LUTs of a design for a potential use, then implement our ring oscillator sensors by selecting the desired cells. Next, we generate a DCP file and run corresponding TCL commands in order to finally generate the bitstream.

Considering multi-tenants FPGAs security vulnerabilities, we present a way of embedding voltage sensors into a design with as goal to monitor power consumption and/or detect any abnormal activity. These sensors do not interfere with the circuits already running on an FPGA and occupy only the free exploitable space. They consist in ring oscillators that are able to collect voltage information in real time and pass them to a central controller.



# A Appendix : output files and python script

## A.1 Python script

The following is a Python script that iterates over the generated DCPs for a specific benchmark design (Boundtop here) and outputs the results of commands *Place\_design* and *Route\_design* as in 4.7

```
import subprocess
import os

benchmark_name = "boundtop"
dcp_complement = "_implemented_13_RW_auto_dcp_number_"
dcp_name = benchmark_name+dcp_complement
signature = ".dcp_vivado_post_processing.tcl"
placed = "place_design completed successfully"
routed = "route_design completed successfully"
command="/softs/xilinx/Vivado/2019.1/bin/vivado -mode batch "
source="-source /home/benhaj/vtr_benchmarks/"
stringOut = []

for i in range(1,11):
    filename= benchmark_name + dcp_complement + str(i) + signature
    outputName= "output_dcp"+str(i)
    bashCommand1 = command+source+benchmark_name+ "/dcp/"+dcp_name+ str(i)+signature
    bashCommand1 = bashCommand1 + " > {:s}.txt".format(outputName) #write output
    os.system(bashCommand1)

for i in range(1,11):
    with open("{:s}.txt".format(outputName), 'r') as f: #iterate over output files
        if placed in f.read():
            if routed in f.read():
                stringOut.append("dcp "+ str(i) + " worked ? True")

print(stringOut)
```

## A.2 BGM

```

----- OUTPUT.txt -----
=====
RapidWright Sensors Placement
      vers. 1.0- EPFL-LAP 2019
=====
Benchmark : bgm
3 used Clock Regions :  X1Y4  X1Y5  X1Y6
=====
===== DCP 1 =====
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/B6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/A6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/A6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/B6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/B6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/B6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/C6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/C6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/C6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/C6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/C6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/C6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/C6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/C6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
search raduis is 1
0 : 2 : at SLICE_X151Y290/B6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/B6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/B6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
3 : 2 : at SLICE_X165Y263/B6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
4 : 2 : at SLICE_X165Y288/B6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/B6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/C6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/C6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/A6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/B6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/C6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/C6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/A6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/A6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
0 : 4 : at SLICE_X147Y240/C6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/C6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/B6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/A6LUT -placing AND
search raduis is 0
search raduis is 1
4 : 4 : at SLICE_X165Y234/C6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/A6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/A6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/B6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/A6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/C6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/C6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/C6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/A6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/C6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/A6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/B6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/B6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/C6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/A6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/B6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/C6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/A6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/B6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/B6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/B6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/C6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/C6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/B6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/B6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/B6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/C6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/C6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/B6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/A6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/B6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/C6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/C6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/A6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/C6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/A6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/C6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/C6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/B6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/B6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/C6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/C6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/B6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/B6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/B6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/C6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/B6LUT -placing AND
search raduis is 0
3 : 11 : at SLICE_X55Y15/A6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/A6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/C6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/A6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0

```

```

0 : 12 : at SLICE_X150Y40/A6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/B6LUT -placing AND
search raduis is 0

3 : 12 : at SLICE_X165Y15/A6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/C6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/C6LUT -placing AND
search raduis is 0

6 : 12 : at SLICE_X185Y15/A6LUT -placing AND
=====

```

## A.3 Blob Merge

```

=====
OUTPUT.txt
=====
RapidWright Sensors Placement
    vers. 1.0- EPFL-LAP 2019
=====
Benchmark : blob_merge
2 used Clock Regions :  XOY2  XOY3
=====
DCP 1
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/C6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/B6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/C6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/A6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/B6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/B6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/B6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/B6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/B6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/A6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/A6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/B6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/A6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/C6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/C6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/A6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/C6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/C6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/A6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/B6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/B6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/B6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/A6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/B6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/C6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/B6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/C6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/B6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/A6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/C6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/C6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/A6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/B6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/B6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/B6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/B6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/C6LUT -placing NAND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
2 : 5 : at SLICE_X38Y165/B6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/B6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/A6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/B6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/A6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/A6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/C6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/C6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/B6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/B6LUT -placing AND
search raduis is 0

6 : 6 : at SLICE_X185Y165/C6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/C6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/A6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/A6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/C6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/A6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/A6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/B6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/A6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/C6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/A6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/A6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/C6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/B6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/C6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/A6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/B6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/A6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/B6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/A6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/B6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/B6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/B6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/C6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/A6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/B6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/A6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/B6LUT -placing AND

```

```

search raduis is 0
6 : 10 : at SLICE_X185Y65/A6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/C6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/B6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/B6LUT -placing AND
search raduis is 0
3 : 11 : at SLICE_X55Y15/B6LUT -placing AND

search raduis is 0
4 : 11 : at SLICE_X55Y35/C6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/C6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/A6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/B6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND

search raduis is 0
2 : 12 : at SLICE_X145Y15/C6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/A6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/A6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/B6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/A6LUT -placing AND
=====

```

## A.4 Boundtop

```

=====
OUTPUT.txt
=====
RapidWright Sensors Placement
vers. 1.0- EPFL-LAP 2019
=====
Benchmark : boundtop
1 used Clock Regions : XOY3
=====
DCP 1
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/A6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/B6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/B6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/A6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/A6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/B6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/C6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/A6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/B6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/A6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/A6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/C6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/C6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/C6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/B6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/B6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/C6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/A6LUT -placing AND
search raduis is 0

4 : 2 : at SLICE_X165Y285/C6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/C6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/A6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/C6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/A6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/A6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/A6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/B6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/C6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/C6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/A6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/B6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/C6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/A6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/B6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/B6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/A6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/C6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/B6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/C6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/A6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/B6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/A6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/C6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/C6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/C6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/C6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/B6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/A6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/C6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/C6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/C6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/A6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/C6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/A6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/A6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/C6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/B6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/C6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/B6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/B6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/C6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/A6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/A6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/C6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/C6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/C6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/B6LUT -placing AND

```

```

search raduis is 0
4 : 9 : at SLICE_X55Y85/B6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/A6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/C6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/B6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/B6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/A6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/C6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/C6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/B6LUT -placing AND

search raduis is 0
6 : 10 : at SLICE_X185Y65/A6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/A6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/B6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/B6LUT -placing AND
search raduis is 0
3 : 11 : at SLICE_X55Y15/A6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/B6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/C6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/A6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/B6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/B6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/B6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/B6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/A6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/C6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/B6LUT -placing AND
=====
Generate Vivado Post Processing Script
=====

```

## A.5 LU8PEEng

```

=====
OUTPUT.txt
=====
RapidWright Sensors Placement
vers. 1.0- EPFL-LAP 2019
=====
Benchmark : LU8PEEng
1 used Clock Regions : XOY2
=====
DCP 1
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/A6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/A6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/B6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/C6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/A6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/B6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/C6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/B6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/A6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/B6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X165Y260/A6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/C6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/C6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/C6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/C6LUT -placing AND

search raduis is 0
1 : 2 : at SLICE_X145Y285/B6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/C6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/A6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/C6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/B6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/B6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/A6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/A6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/B6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/B6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/B6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/C6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/C6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/A6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/B6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/B6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/C6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/C6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/A6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/C6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/A6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/A6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/A6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/C6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/C6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/A6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/C6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/A6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/A6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/B6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/C6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/C6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/A6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/A6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/B6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/B6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/B6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/C6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/B6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/A6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/A6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/A6LUT -placing NAND

```



```

search raduis is 0
2 : 8 : at SLICE_X145Y115/B6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/C6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/A6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/B6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/B6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/A6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/B6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/C6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/B6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/A6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/C6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/C6LUT -placing AND

=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/C6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/B6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/A6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/A6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/A6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/C6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/B6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/C6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/C6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/C6LUT -placing AND
search raduis is 0

=====
3 : 11 : at SLICE_X55Y15/A6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/A6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/C6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/B6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/A6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/A6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/C6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/A6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/C6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/C6LUT -placing AND
=====

```

## A.6 LU32PEEng

```

=====
OUTPUT.txt
=====
RapidWright Sensors Placement
    vers. 1.0- EPFL-LAP 2019
=====
Benchmark : LU32PEEng
2 used Clock Regions : XOY2 XOY3
=====
DCP 1
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/A6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/C6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/A6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/A6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/A6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/B6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/C6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/C6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/A6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/A6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/A6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/C6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/A6LUT -placing AND

=====
search raduis is 0
6 : 1 : at SLICE_X75Y260/A6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/C6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/C6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/B6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/B6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/B6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/C6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/C6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/A6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/A6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/C6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/A6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/C6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/A6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/B6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/A6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/A6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/B6LUT -placing AND

=====
search raduis is 0
3 : 4 : at SLICE_X165Y215/C6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/B6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/C6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/C6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/C6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/C6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/C6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/C6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/C6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/B6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/C6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/B6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/B6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/C6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/A6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/C6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/C6LUT -placing AND
=====
Sensors 7
=====

```

```

search raduis is 0
0 : 7 : at SLICE_X40Y140/B6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/A6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/C6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/B6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/B6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/C6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/C6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/B6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/B6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/C6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/A6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/C6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/C6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/A6LUT -placing AND
=====
Sensors 9
=====

search raduis is 0
0 : 9 : at SLICE_X40Y90/A6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/B6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/B6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/A6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/C6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/C6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/C6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/C6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/C6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/A6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/B6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/A6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/C6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/A6LUT -placing AND
=====
Sensors 11
=====

search raduis is 0
0 : 11 : at SLICE_X40Y40/A6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/A6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/C6LUT -placing AND
search raduis is 0
3 : 11 : at SLICE_X55Y15/C6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/C6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/A6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/A6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/A6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/A6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/A6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/B6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/C6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/C6LUT -placing AND
=====

```

## A.7 LU64PEEng

```

===== OUTPUT.txt =====
=====
RapidWright Sensors Placement
vers. 1.0- EPFL-LAP 2019
=====
Benchmark : LU64PEEng
1 used Clock Regions : XOY3
=====
===== DCP 1 =====
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/A6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/A6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/B6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/A6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/A6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/C6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/C6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/B6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/C6LUT -placing NAND
search raduis is 0

2 : 1 : at SLICE_X35Y260/C6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/B6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/C6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/B6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/C6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/A6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/C6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/A6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/B6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/B6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/A6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/B6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/B6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/B6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/A6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/C6LUT -placing AND
search raduis is 0

4 : 3 : at SLICE_X55Y230/C6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/B6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/B6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/A6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/C6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/A6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/B6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/B6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/C6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/C6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/C6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/C6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/B6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/A6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/C6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/A6LUT -placing AND
search raduis is 0

```

```

6 : 5 : at SLICE_X75Y165/A6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/B6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/B6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/B6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/A6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/C6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/A6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/B6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/B6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/C6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/B6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/A6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/B6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/C6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/A6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/A6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/B6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X165Y135/C6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/A6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/C6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/B6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/B6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/B6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/B6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/A6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/A6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/A6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/A6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/B6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/C6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/A6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/B6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/B6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/C6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/C6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/B6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/B6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/B6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/A6LUT -placing AND
search raduis is 0
3 : 11 : at SLICE_X55Y15/C6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/C6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/C6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/C6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/A6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/B6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/C6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/A6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/C6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/A6LUT -placing AND
=====

```

## A.8 MCML

```

=====
OUTPUT.txt
=====

RapidWright Sensors Placement
vers. 1.0- EPFL-LAP 2019

Benchmark : mcml
8 used Clock Regions : XOY3 X1Y3 XOY2 X1Y2
XOY1 XOY1 XOYO XOYO
=====
DCP 1
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/B6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/B6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/B6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/A6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/A6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/B6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/A6LUT -placing AND

Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/B6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/A6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/B6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/A6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X165Y280/B6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/A6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/C6LUT -placing AND

Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/B6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/B6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/B6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/C6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/B6LUT -placing AND
search raduis is 0

5 : 2 : at SLICE_X185Y285/B6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/B6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/A6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/B6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/A6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/C6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/C6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/B6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/B6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/A6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/A6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/C6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/C6LUT -placing AND

```

```

search raduis is 0
4 : 4 : at SLICE_X165Y235/C6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/B6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/C6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/C6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/A6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/C6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/C6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/C6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/B6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/A6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/B6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/C6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/A6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/C6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/A6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/A6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/A6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/B6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/A6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/B6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
3 : 7 : at SLICE_X51Y115/B6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/C6LUT -placing AND
search raduis is 0
search raduis is 1
5 : 7 : at SLICE_X75Y136/C6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
search raduis is 5
search raduis is 6
search raduis is 7
search raduis is 8
6 : 7 : at SLICE_X76Y122/C6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/A6LUT -placing AND
search raduis is 0
search raduis is 1
1 : 8 : at SLICE_X145Y134/B6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/A6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/A6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/A6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/A6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/A6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/B6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/A6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/A6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
search raduis is 5
search raduis is 6
search raduis is 7
3 : 9 : at SLICE_X57Y60/C6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
search raduis is 5
search raduis is 6
search raduis is 7
search raduis is 8
4 : 9 : at SLICE_X47Y85/B6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
search raduis is 5
search raduis is 6
search raduis is 7
search raduis is 8
search raduis is 9
5 : 9 : at SLICE_X79Y80/A6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
6 : 9 : at SLICE_X71Y65/A6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/A6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/C6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/B6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/A6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/A6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/A6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/B6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
search raduis is 1
0 : 11 : at SLICE_X40Y41/C6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/B6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/B6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
3 : 11 : at SLICE_X55Y13/A6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
search raduis is 5
search raduis is 6
search raduis is 7
5 : 11 : at SLICE_X76Y41/C6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
search raduis is 5
6 : 11 : at SLICE_X71Y16/A6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/A6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
search raduis is 4
2 : 12 : at SLICE_X147Y17/B6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/A6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/C6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/A6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/B6LUT -placing AND
=====

```

## A.9 OR1200

```

===== OUTPUT.txt =====
RapidWright Sensors Placement
  vers. 1.0- EPFL-LAP 2019
=====
Benchmark : ori200
2 used Clock Regions : XOY2 XOY3
=====
===== DCP 1 =====
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/A6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/C6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/C6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/A6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/A6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/C6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/A6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/C6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/B6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/B6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/A6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/B6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/C6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/B6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/C6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/C6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/A6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/C6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/A6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/B6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/C6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/C6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/C6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/C6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/B6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/C6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/B6LUT -placing AND
=====
search raduis is 0
6 : 3 : at SLICE_X75Y210/C6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/B6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/A6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/B6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/A6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/A6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/C6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/A6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/C6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/A6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/A6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/B6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/A6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/A6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/B6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/B6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/A6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/B6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/B6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/A6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/B6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/C6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/A6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/B6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/B6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/B6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/C6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/B6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/B6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/C6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/A6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/B6LUT -placing AND
=====
search raduis is 0
3 : 8 : at SLICE_X165Y115/A6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/A6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/C6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/C6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/A6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/B6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/B6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/A6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/A6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/C6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/C6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/B6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/A6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/C6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/B6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/A6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/A6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/B6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/A6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/B6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/B6LUT -placing AND
search raduis is 0
3 : 11 : at SLICE_X55Y15/C6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/B6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/B6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/C6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/C6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/B6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/A6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/B6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/A6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/A6LUT -placing AND
=====

```

## A.10 Raygentop

```

===== OUTPUT.txt =====
RapidWright Sensors Placement
  vers. 1.0- EPFL-LAP 2019
=====
Benchmark : raygentop
2 used Clock Regions :  X0Y2  X0Y3
=====
                    DCP 1
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/B6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/A6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/A6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/A6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/B6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/A6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/B6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/C6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/A6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/A6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/A6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/C6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/A6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/C6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/C6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/A6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/B6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/C6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/B6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/A6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/C6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/C6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/B6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/B6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/B6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/B6LUT -placing AND

search raduis is 0
5 : 3 : at SLICE_X75Y230/B6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/C6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/A6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/B6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/A6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/A6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/C6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/B6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/C6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
search raduis is 1
0 : 5 : at SLICE_X40Y189/B6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/B6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/A6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/C6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/B6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/B6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/B6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/A6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/C6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/B6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/B6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/B6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/A6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/B6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/A6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/A6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/A6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/B6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/B6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/B6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/A6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/A6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/A6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/C6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/C6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/B6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/B6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/C6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/C6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/B6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/B6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/B6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/B6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/C6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/A6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/A6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/A6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/A6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/A6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/B6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/A6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/B6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/B6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/A6LUT -placing AND
search raduis is 0
3 : 11 : at SLICE_X55Y15/B6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/A6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/A6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/C6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/B6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/B6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/C6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/A6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/C6LUT -placing AND

```



```

search raduis is 0
5 : 12 : at SLICE_X185Y35/A6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/A6LUT -placing AND
=====

```

## A.11 SHA

```

=====
OUTPUT.txt
=====
RapidWright Sensors Placement
vers. 1.0- EPFL-LAP 2019
=====
Benchmark : sha
2 used Clock Regions : XOY2 XOY3
=====
DCP 1
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/C6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/C6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/A6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/B6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/B6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/B6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/C6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/A6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/C6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/A6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/B6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/C6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/C6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/B6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/C6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/A6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/C6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/B6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/B6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/C6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/C6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/A6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/A6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/A6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/A6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/C6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/B6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/B6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/B6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/A6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/A6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/B6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/A6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/C6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/A6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/B6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/A6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/B6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/B6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/B6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/B6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/C6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/A6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/B6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/B6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/B6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/B6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/C6LUT -placing AND
=====
Sensors 7
=====
search raduis is 0
0 : 7 : at SLICE_X40Y140/A6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/A6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/B6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/C6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/A6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/B6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/B6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/B6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/C6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/C6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/C6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/A6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/C6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/C6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/B6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/B6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/A6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/C6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/C6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/C6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/A6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/B6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/A6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/C6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/C6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/A6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/C6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/C6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/A6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/C6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/A6LUT -placing AND
search raduis is 0

```

```

3 : 11 : at SLICE_X55Y15/B6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/A6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/B6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/A6LUT -placing AND
=====
Sensors 12
3 : 12 : at SLICE_X165Y15/C6LUT -placing AND
search raduis is 0
0 : 12 : at SLICE_X150Y40/B6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/C6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/C6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/B6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/C6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/B6LUT -placing AND
=====

```

## A.12 Stereovision0

```

=====
OUTPUT.txt
=====
RapidWright Sensors Placement
vers. 1.0- EPFL-LAP 2019
=====
Benchmark : stereovision0
2 used Clock Regions : X0Y2 X0Y3
=====
DCP 1
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/A6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/B6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/B6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/C6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/C6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/A6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/C6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/B6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/B6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/C6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/A6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/C6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/C6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/A6LUT -placing AND
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/A6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/A6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/B6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/A6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/B6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/A6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/B6LUT -placing AND
search raduis is 0
0 : 3 : at SLICE_X40Y235/A6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/C6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/B6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/B6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/A6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/A6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/C6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/C6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/A6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/A6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/B6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/A6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/C6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/C6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/A6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/A6LUT -placing NAND
search raduis is 0
2 : 5 : at SLICE_X35Y165/A6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/B6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/C6LUT -placing AND
search raduis is 0
5 : 5 : at SLICE_X75Y185/A6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/B6LUT -placing AND
search raduis is 0
1 : 6 : at SLICE_X145Y185/B6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/B6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/B6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/B6LUT -placing AND
search raduis is 0
5 : 6 : at SLICE_X185Y185/C6LUT -placing AND
search raduis is 0
6 : 6 : at SLICE_X185Y165/B6LUT -placing AND
search raduis is 0
0 : 7 : at SLICE_X40Y140/B6LUT -placing AND
search raduis is 0
1 : 7 : at SLICE_X35Y135/C6LUT -placing NAND
search raduis is 0
2 : 7 : at SLICE_X35Y115/A6LUT -placing AND
search raduis is 0
3 : 7 : at SLICE_X55Y115/B6LUT -placing AND
search raduis is 0
4 : 7 : at SLICE_X55Y135/C6LUT -placing AND
search raduis is 0
5 : 7 : at SLICE_X75Y135/C6LUT -placing AND
search raduis is 0
6 : 7 : at SLICE_X75Y115/C6LUT -placing AND
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/B6LUT -placing AND
search raduis is 0
1 : 8 : at SLICE_X145Y135/C6LUT -placing NAND
search raduis is 0
2 : 8 : at SLICE_X145Y115/A6LUT -placing AND
search raduis is 0
3 : 8 : at SLICE_X165Y115/B6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/B6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/C6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/C6LUT -placing AND
search raduis is 0
0 : 9 : at SLICE_X40Y90/B6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/B6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/A6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/A6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/C6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/A6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/A6LUT -placing AND
search raduis is 0
0 : 10 : at SLICE_X150Y90/C6LUT -placing AND
search raduis is 0

```



```

1 : 10 : at SLICE_X145Y85/C6LUT -placing NAND search raduis is 0
search raduis is 0
2 : 10 : at SLICE_X145Y65/B6LUT -placing AND search raduis is 0
3 : 10 : at SLICE_X165Y65/A6LUT -placing AND search raduis is 0
4 : 10 : at SLICE_X165Y85/C6LUT -placing AND search raduis is 0
5 : 10 : at SLICE_X185Y85/A6LUT -placing AND search raduis is 0
6 : 10 : at SLICE_X185Y65/C6LUT -placing AND search raduis is 0
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/C6LUT -placing AND search raduis is 0

1 : 11 : at SLICE_X35Y35/B6LUT -placing NAND search raduis is 0
2 : 11 : at SLICE_X35Y15/C6LUT -placing AND search raduis is 0
3 : 11 : at SLICE_X55Y15/C6LUT -placing AND search raduis is 0
4 : 11 : at SLICE_X55Y35/A6LUT -placing AND search raduis is 0
5 : 11 : at SLICE_X75Y35/C6LUT -placing AND search raduis is 0
6 : 11 : at SLICE_X75Y15/B6LUT -placing AND search raduis is 0
=====
Sensors 12
=====
search raduis is 0

0 : 12 : at SLICE_X150Y40/B6LUT -placing AND search raduis is 0
1 : 12 : at SLICE_X145Y35/B6LUT -placing NAND search raduis is 0
2 : 12 : at SLICE_X145Y15/A6LUT -placing AND search raduis is 0
3 : 12 : at SLICE_X165Y15/C6LUT -placing AND search raduis is 0
4 : 12 : at SLICE_X165Y35/B6LUT -placing AND search raduis is 0
5 : 12 : at SLICE_X185Y35/B6LUT -placing AND search raduis is 0
6 : 12 : at SLICE_X185Y15/A6LUT -placing AND search raduis is 0
=====

```

## A.13 Stereovision1

```

=====
OUTPUT.txt
=====

RapidWright Sensors Placement
  vers. 1.0- EPFL-LAP 2019
=====

Benchmark : stereovision1
2 used Clock Regions : XOY2 XOY3
=====
===== DCP 1 =====
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/C6LUT -placing AND search raduis is 0
1 : 0 : at SLICE_X145Y335/C6LUT -placing NAND search raduis is 0
2 : 0 : at SLICE_X145Y315/A6LUT -placing AND search raduis is 0
3 : 0 : at SLICE_X165Y315/C6LUT -placing AND search raduis is 0
4 : 0 : at SLICE_X165Y335/C6LUT -placing AND search raduis is 0
5 : 0 : at SLICE_X185Y335/C6LUT -placing AND search raduis is 0
6 : 0 : at SLICE_X185Y315/B6LUT -placing AND search raduis is 0
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/C6LUT -placing AND search raduis is 0
1 : 1 : at SLICE_X35Y280/A6LUT -placing NAND search raduis is 0
2 : 1 : at SLICE_X35Y260/B6LUT -placing AND search raduis is 0
3 : 1 : at SLICE_X55Y260/C6LUT -placing AND search raduis is 0
4 : 1 : at SLICE_X55Y280/B6LUT -placing AND search raduis is 0
5 : 1 : at SLICE_X75Y280/C6LUT -placing AND search raduis is 0
6 : 1 : at SLICE_X75Y260/C6LUT -placing AND search raduis is 0
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/B6LUT -placing AND search raduis is 0
1 : 2 : at SLICE_X145Y285/A6LUT -placing NAND search raduis is 0
2 : 2 : at SLICE_X145Y265/A6LUT -placing AND search raduis is 0
3 : 2 : at SLICE_X165Y265/C6LUT -placing AND search raduis is 0
4 : 2 : at SLICE_X165Y285/A6LUT -placing AND search raduis is 0
5 : 2 : at SLICE_X185Y285/C6LUT -placing AND search raduis is 0
6 : 2 : at SLICE_X185Y265/C6LUT -placing AND search raduis is 0
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/B6LUT -placing AND search raduis is 0
1 : 3 : at SLICE_X35Y230/C6LUT -placing NAND search raduis is 0
2 : 3 : at SLICE_X35Y210/A6LUT -placing AND search raduis is 0
3 : 3 : at SLICE_X55Y210/C6LUT -placing AND search raduis is 0
4 : 3 : at SLICE_X55Y230/B6LUT -placing AND search raduis is 0
5 : 3 : at SLICE_X75Y230/B6LUT -placing AND search raduis is 0
6 : 3 : at SLICE_X75Y210/C6LUT -placing AND search raduis is 0
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/B6LUT -placing AND search raduis is 0
1 : 4 : at SLICE_X145Y235/C6LUT -placing NAND search raduis is 0
2 : 4 : at SLICE_X145Y215/C6LUT -placing AND search raduis is 0
3 : 4 : at SLICE_X165Y215/A6LUT -placing AND search raduis is 0
4 : 4 : at SLICE_X165Y235/A6LUT -placing AND search raduis is 0
5 : 4 : at SLICE_X185Y235/C6LUT -placing AND search raduis is 0
6 : 4 : at SLICE_X185Y215/B6LUT -placing AND search raduis is 0
=====
Sensors 5
=====
search raduis is 0
0 : 5 : at SLICE_X40Y190/A6LUT -placing AND search raduis is 0
1 : 5 : at SLICE_X34Y185/A6LUT -placing NAND search raduis is 0
2 : 5 : at SLICE_X35Y185/B6LUT -placing AND search raduis is 0
3 : 5 : at SLICE_X55Y185/A6LUT -placing AND search raduis is 0
4 : 5 : at SLICE_X55Y165/B6LUT -placing AND search raduis is 0
5 : 5 : at SLICE_X75Y185/C6LUT -placing AND search raduis is 0
6 : 5 : at SLICE_X75Y165/C6LUT -placing AND search raduis is 0
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/B6LUT -placing AND search raduis is 0
1 : 6 : at SLICE_X145Y185/B6LUT -placing NAND search raduis is 0
2 : 6 : at SLICE_X145Y165/A6LUT -placing AND search raduis is 0
3 : 6 : at SLICE_X165Y165/C6LUT -placing AND search raduis is 0
4 : 6 : at SLICE_X165Y185/C6LUT -placing AND search raduis is 0
5 : 6 : at SLICE_X185Y185/C6LUT -placing AND search raduis is 0
6 : 6 : at SLICE_X185Y165/C6LUT -placing AND search raduis is 0
=====
Sensors 7
=====
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
0 : 7 : at SLICE_X41Y138/A6LUT -placing AND search raduis is 0
1 : 7 : at SLICE_X35Y135/B6LUT -placing NAND search raduis is 0
2 : 7 : at SLICE_X35Y115/C6LUT -placing AND search raduis is 0
3 : 7 : at SLICE_X55Y115/C6LUT -placing AND search raduis is 0
search raduis is 1
4 : 7 : at SLICE_X56Y135/B6LUT -placing AND search raduis is 0
5 : 7 : at SLICE_X75Y135/A6LUT -placing AND search raduis is 0
6 : 7 : at SLICE_X75Y115/C6LUT -placing AND search raduis is 0
=====
Sensors 8
=====
search raduis is 0
0 : 8 : at SLICE_X150Y140/B6LUT -placing AND search raduis is 0
1 : 8 : at SLICE_X145Y135/B6LUT -placing NAND search raduis is 0
2 : 8 : at SLICE_X145Y115/C6LUT -placing AND search raduis is 0

```

```

search raduis is 0
3 : 8 : at SLICE_X165Y115/A6LUT -placing AND
search raduis is 0
4 : 8 : at SLICE_X165Y135/B6LUT -placing AND
search raduis is 0
5 : 8 : at SLICE_X185Y135/C6LUT -placing AND
search raduis is 0
6 : 8 : at SLICE_X185Y115/B6LUT -placing AND
=====
Sensors 9
=====
search raduis is 0
0 : 9 : at SLICE_X40Y90/C6LUT -placing AND
search raduis is 0
1 : 9 : at SLICE_X35Y85/B6LUT -placing NAND
search raduis is 0
2 : 9 : at SLICE_X35Y65/A6LUT -placing AND
search raduis is 0
3 : 9 : at SLICE_X55Y65/A6LUT -placing AND
search raduis is 0
4 : 9 : at SLICE_X55Y85/C6LUT -placing AND
search raduis is 0
5 : 9 : at SLICE_X75Y85/A6LUT -placing AND
search raduis is 0
6 : 9 : at SLICE_X75Y65/A6LUT -placing AND
=====
Sensors 10
=====
search raduis is 0
0 : 10 : at SLICE_X150Y90/A6LUT -placing AND
search raduis is 0
1 : 10 : at SLICE_X145Y85/B6LUT -placing NAND
search raduis is 0
2 : 10 : at SLICE_X145Y65/B6LUT -placing AND
search raduis is 0
3 : 10 : at SLICE_X165Y65/B6LUT -placing AND
search raduis is 0
4 : 10 : at SLICE_X165Y85/B6LUT -placing AND
search raduis is 0
5 : 10 : at SLICE_X185Y85/C6LUT -placing AND
search raduis is 0
6 : 10 : at SLICE_X185Y65/C6LUT -placing AND
=====
Sensors 11
=====
search raduis is 0
0 : 11 : at SLICE_X40Y40/C6LUT -placing AND
search raduis is 0
1 : 11 : at SLICE_X35Y35/B6LUT -placing NAND
search raduis is 0
2 : 11 : at SLICE_X35Y15/B6LUT -placing AND
search raduis is 0
3 : 11 : at SLICE_X55Y15/C6LUT -placing AND
search raduis is 0
4 : 11 : at SLICE_X55Y35/C6LUT -placing AND
search raduis is 0
5 : 11 : at SLICE_X75Y35/C6LUT -placing AND
search raduis is 0
6 : 11 : at SLICE_X75Y15/B6LUT -placing AND
=====
Sensors 12
=====
search raduis is 0
0 : 12 : at SLICE_X150Y40/A6LUT -placing AND
search raduis is 0
1 : 12 : at SLICE_X145Y35/A6LUT -placing NAND
search raduis is 0
2 : 12 : at SLICE_X145Y15/A6LUT -placing AND
search raduis is 0
3 : 12 : at SLICE_X165Y15/A6LUT -placing AND
search raduis is 0
4 : 12 : at SLICE_X165Y35/C6LUT -placing AND
search raduis is 0
5 : 12 : at SLICE_X185Y35/B6LUT -placing AND
search raduis is 0
6 : 12 : at SLICE_X185Y15/C6LUT -placing AND
=====

```

## A.14 Stereovision2

```

===== OUTPUT.txt =====
=====
RapidWright Sensors Placement
vers. 1.0- EPFL-LAP 2019
=====
Benchmark : stereovision2
2 used Clock Regions : XOY2 XOY3
===== DCP 1 =====
=====
Sensors 0
=====
search raduis is 0
0 : 0 : at SLICE_X150Y340/A6LUT -placing AND
search raduis is 0
1 : 0 : at SLICE_X145Y335/A6LUT -placing NAND
search raduis is 0
2 : 0 : at SLICE_X145Y315/C6LUT -placing AND
search raduis is 0
3 : 0 : at SLICE_X165Y315/A6LUT -placing AND
search raduis is 0
4 : 0 : at SLICE_X165Y335/C6LUT -placing AND
search raduis is 0
5 : 0 : at SLICE_X185Y335/C6LUT -placing AND
search raduis is 0
6 : 0 : at SLICE_X185Y315/A6LUT -placing AND
=====
Sensors 1
=====
search raduis is 0
0 : 1 : at SLICE_X40Y285/C6LUT -placing AND
search raduis is 0
1 : 1 : at SLICE_X35Y280/A6LUT -placing NAND
search raduis is 0
2 : 1 : at SLICE_X35Y260/B6LUT -placing AND
search raduis is 0
3 : 1 : at SLICE_X55Y260/C6LUT -placing AND
search raduis is 0
4 : 1 : at SLICE_X55Y280/A6LUT -placing AND
search raduis is 0
5 : 1 : at SLICE_X75Y280/A6LUT -placing AND
search raduis is 0
6 : 1 : at SLICE_X75Y260/B6LUT -placing AND
search raduis is 0
=====
Sensors 2
=====
search raduis is 0
0 : 2 : at SLICE_X150Y290/C6LUT -placing AND
search raduis is 0
1 : 2 : at SLICE_X145Y285/C6LUT -placing NAND
search raduis is 0
2 : 2 : at SLICE_X145Y265/B6LUT -placing AND
search raduis is 0
3 : 2 : at SLICE_X165Y265/C6LUT -placing AND
search raduis is 0
4 : 2 : at SLICE_X165Y285/A6LUT -placing AND
search raduis is 0
5 : 2 : at SLICE_X185Y285/B6LUT -placing AND
search raduis is 0
6 : 2 : at SLICE_X185Y265/C6LUT -placing AND
=====
Sensors 3
=====
search raduis is 0
0 : 3 : at SLICE_X40Y235/C6LUT -placing AND
search raduis is 0
1 : 3 : at SLICE_X35Y230/C6LUT -placing NAND
search raduis is 0
2 : 3 : at SLICE_X35Y210/A6LUT -placing AND
search raduis is 0
3 : 3 : at SLICE_X55Y210/C6LUT -placing AND
search raduis is 0
4 : 3 : at SLICE_X55Y230/B6LUT -placing AND
search raduis is 0
5 : 3 : at SLICE_X75Y230/B6LUT -placing AND
search raduis is 0
6 : 3 : at SLICE_X75Y210/C6LUT -placing AND
=====
Sensors 4
=====
search raduis is 0
0 : 4 : at SLICE_X150Y240/A6LUT -placing AND
search raduis is 0
1 : 4 : at SLICE_X145Y235/B6LUT -placing NAND
search raduis is 0
2 : 4 : at SLICE_X145Y215/A6LUT -placing AND
search raduis is 0
3 : 4 : at SLICE_X165Y215/C6LUT -placing AND
search raduis is 0
4 : 4 : at SLICE_X165Y235/C6LUT -placing AND
search raduis is 0
5 : 4 : at SLICE_X185Y235/B6LUT -placing AND
search raduis is 0
6 : 4 : at SLICE_X185Y215/C6LUT -placing AND
=====
Sensors 5
=====
search raduis is 0
search raduis is 1
search raduis is 2
0 : 5 : at SLICE_X38Y190/B6LUT -placing AND
search raduis is 0
1 : 5 : at SLICE_X35Y185/C6LUT -placing NAND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
2 : 5 : at SLICE_X38Y165/B6LUT -placing AND
search raduis is 0
3 : 5 : at SLICE_X55Y165/A6LUT -placing AND
search raduis is 0
4 : 5 : at SLICE_X55Y185/C6LUT -placing AND
search raduis is 0
search raduis is 1
search raduis is 2
search raduis is 3
5 : 5 : at SLICE_X72Y185/B6LUT -placing AND
search raduis is 0
6 : 5 : at SLICE_X75Y165/A6LUT -placing AND
=====
Sensors 6
=====
search raduis is 0
0 : 6 : at SLICE_X150Y190/C6LUT -placing AND
search raduis is 0
search raduis is 1
1 : 6 : at SLICE_X145Y184/C6LUT -placing NAND
search raduis is 0
2 : 6 : at SLICE_X145Y165/C6LUT -placing AND
search raduis is 0
3 : 6 : at SLICE_X165Y165/B6LUT -placing AND
search raduis is 0
4 : 6 : at SLICE_X165Y185/A6LUT -placing AND
search raduis is 0

```

```

5 : 6 : at SLICE_X185Y185/A6LUT -placing AND 6 : 8 : at SLICE_X185Y115/B6LUT -placing AND =====
search raduis is 0 ===== search raduis is 0
6 : 6 : at SLICE_X185Y165/C6LUT -placing AND Sensors 9 0 : 11 : at SLICE_X40Y40/A6LUT -placing AND
===== search raduis is 0
Sensors 7 search raduis is 0 1 : 11 : at SLICE_X35Y35/A6LUT -placing NAND
===== search raduis is 0
search raduis is 1 0 : 9 : at SLICE_X40Y90/A6LUT -placing AND search raduis is 0
0 : 7 : at SLICE_X39Y140/C6LUT -placing AND search raduis is 0 2 : 11 : at SLICE_X35Y15/C6LUT -placing AND
search raduis is 0 1 : 9 : at SLICE_X35Y85/C6LUT -placing NAND search raduis is 0
1 : 7 : at SLICE_X35Y135/C6LUT -placing NAND search raduis is 0 3 : 11 : at SLICE_X55Y15/B6LUT -placing AND
search raduis is 0 2 : 9 : at SLICE_X35Y65/C6LUT -placing AND search raduis is 0
2 : 7 : at SLICE_X35Y115/B6LUT -placing AND search raduis is 0 4 : 11 : at SLICE_X55Y35/C6LUT -placing AND
search raduis is 0 3 : 9 : at SLICE_X55Y65/B6LUT -placing AND search raduis is 0
3 : 7 : at SLICE_X55Y115/A6LUT -placing AND search raduis is 0 5 : 11 : at SLICE_X75Y35/A6LUT -placing AND
search raduis is 0 4 : 9 : at SLICE_X55Y85/C6LUT -placing AND search raduis is 0
4 : 7 : at SLICE_X55Y135/B6LUT -placing AND search raduis is 0 6 : 11 : at SLICE_X75Y15/A6LUT -placing AND
search raduis is 0 5 : 9 : at SLICE_X75Y85/C6LUT -placing AND =====
5 : 7 : at SLICE_X75Y135/B6LUT -placing AND search raduis is 0 Sensors 12
search raduis is 0 ===== search raduis is 0
6 : 7 : at SLICE_X75Y115/A6LUT -placing AND Sensors 10 0 : 12 : at SLICE_X150Y40/A6LUT -placing AND
===== search raduis is 0
Sensors 8 search raduis is 0 1 : 12 : at SLICE_X145Y35/B6LUT -placing NAND
===== search raduis is 0
search raduis is 0 0 : 10 : at SLICE_X150Y90/B6LUT -placing AND search raduis is 0
0 : 8 : at SLICE_X150Y140/B6LUT -placing AND search raduis is 0 2 : 12 : at SLICE_X145Y15/C6LUT -placing AND
search raduis is 0 1 : 10 : at SLICE_X145Y85/B6LUT -placing NAND search raduis is 0
1 : 8 : at SLICE_X145Y135/C6LUT -placing NAND search raduis is 0 3 : 12 : at SLICE_X165Y15/C6LUT -placing AND
search raduis is 0 2 : 10 : at SLICE_X145Y65/C6LUT -placing AND search raduis is 0
2 : 8 : at SLICE_X145Y115/C6LUT -placing AND search raduis is 0 4 : 12 : at SLICE_X165Y35/B6LUT -placing AND
search raduis is 0 3 : 10 : at SLICE_X165Y65/B6LUT -placing AND search raduis is 0
3 : 8 : at SLICE_X165Y115/C6LUT -placing AND search raduis is 0 5 : 12 : at SLICE_X185Y35/B6LUT -placing AND
search raduis is 0 4 : 10 : at SLICE_X165Y85/C6LUT -placing AND search raduis is 0
4 : 8 : at SLICE_X165Y135/B6LUT -placing AND search raduis is 0 6 : 12 : at SLICE_X185Y15/C6LUT -placing AND
search raduis is 0 5 : 10 : at SLICE_X185Y85/A6LUT -placing AND =====
5 : 8 : at SLICE_X185Y135/C6LUT -placing AND search raduis is 0
search raduis is 0 Sensors 11
=====

```

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