


Index

affine hyperplane, 17
aggregated FIFO throughput, 76
average production period, 41

Cell platform, 112
communication costs, 38
compound process, 65
computation costs, 38
control overhead, 42

Daedalus, 3
data transfer, 42
execution time of a transformation, 43

FIFO channel throughput, 74
FIFO pull strategy, 116

hyperplane, 17
initial delay, 39
input port domain, 27
Intel IXP network processor, 113
isolated process throughput, 72

lexicographical maximum, 19
lexicographical minimum, 19
lexicographical order, 19

mapping, 28
modulo unfolding, 32

output port domain, 28
parametric integer linear programming, 19
partitioning metrics, 38
plane-cutting, 32
pn compiler, 3
polyhedral model, 21
Polyhedral Process Network (PPN), 24
polytope, 18
process function, 25
process iteration, 27
process iteration domain, 27
process iteration domain size, 27
process merging, 65
process splitting, 33
process throughput, 70
process workload, 26
production period, 40

rank, 20
rational polyhedron, 18

SANLP, 21
scalar product, 17
self-edge, 35
sink process, 25
source process, 25
static affine nested loop program, 21
static control parts (SCoPs), 22
system throughput, 67
throughput propagation, 71
Y-chart, 5
Acknowledgments

This dissertation would not have been written without the help, assistance, and advise of many people. First of all, I would like to thank Alexandru Turjan for introducing me to the topics of compilation techniques and program analysis. Inviting me to write my master's thesis in Philips Research was really the kickstart for my research work later as a PhD-student. Alex, I learned a lot from your research mentality, interest in reading literature, and problem solving skills. It was therefore my pleasure to work briefly together again when you invited me for a PhD internship at NXP Semiconductors.

From the LERC group in LIACS, I am most thankful to Todor Stefanov and Hristo Nikolov. In the "second half" of my PhD time, when results needed to be produced, you pushed me and I pushed you. We had many interesting and challenging discussions that led to the fine results that we produced in such a short amount of time. While I was sometimes rushing, you were always checking and double-checking things and I really enjoyed working together.

From ACE Associated Compiler Experts B.V., I would like to thank Marcel Beemster, Marius Schoorel, Joseph van Vlijmen, and Martijn de Lange for giving me the right advise during my PhD, which really contributed to the successful second half my PhD.

The work presented in this dissertation has been supported by the MEDEA+ NEVA project 2A703. I would like to thank the NEVA project for financially supporting my research, and I am thankful to Sven Verdoolaege for proof reading this dissertation.

Finally, I would like to thank all my other friends, family, parents for their support. Wouter Meuleman in particular, since we finished the same bachelor and master studies, both continued as PhD-students, and thus shared many experiences. And last but not least, I would like to thank Senny for her understanding and support during my PhD time, and for her love!