Parallelizing dynamic sequential programs using polyhedral process networks
Nadezhkin, D.

Citation

Version: Corrected Publisher’s Version
License: Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden
Downloaded from: https://hdl.handle.net/1887/20357

Note: To cite this publication please use the final published version (if applicable).
The handle http://hdl.handle.net/1887/20357 holds various files of this Leiden University dissertation.

Author: Nadezhkin, Dmitry
Title: Parallelizing dynamic sequential programs using polyhedral process networks
Issue Date: 2012-12-20
Bibliography


Index

affine nested loop program with dynamic loop bounds, 23
affine nested loop program with while-loops, 23

Dependence Analysis, 4
dynamic program, 10
Dynloop, 23

in-order, 33
input port domain, 25
IO, 8
IOM, 8
iteration domain, 21
iteration vector, 21

lexicographical order, 20
Lexicographically minimal Preimage, 33
LmP, 33

mapping function, 26
multiplicity, 34
Multiplicity Problem, 34, 76, 78

node domain, 25

OO, 8
operation, 22
out-of-order, 33
output port domain, 25

parameterized mapping function, 76
parameterized polyhedron, 20
polyhedra, 20

Polyhedral Process Network, 24
polyhedral reduced dependence graph, 6
polyhedron, 20
PPN, 24
Reordering Problem, 34, 76, 78
SANLP, 22
sequencing predicate, 22
static affine nested loop program, 22
WDP, 23
Weakly Dynamic Program, 23
WLAP, 23
Z-polyhedron, 20
Acknowledgments

Working on the Ph.D. was an incredible and often overwhelming experience. It was a time of professional and personal growth, a time of unforgettable experience living abroad and a time when new friends were met. It is my privilege and great pleasure to express my gratitude to those who have, directly or indirectly, supported me and helped me during my Ph.D. studies.

First of all, I would like to thank the former and the current members of the LERC group. It is an honor to say that I was a part of this group. The good advice, support and friendship of the LERC members has been invaluable on both an academic and a personal level, for which I am extremely grateful. My thoughts go out to Hristo Nikolov, Sven van Haastregt, Bin Jiang, Teddy Zhai, Mohammed al Hissi, Mohammed Bamakhrama, Emanuele Cannella and many others.

I also want to specially thank Sjoerd Meijer for being my “Dutch” friend and helping me to discover The Netherlands. Amongst the fruitful professional interactions at Niels Bohrweg, there always was time for jokes and joyful moments.

Furthermore, several professors outside of my research group and/or Leiden University have contributed to building my way of thinking and knowledge at a level, giving me the confidence needed to finish Ph.D. research. In particular, Sven Verdoolaege, Andy Pimentel, Georgi Gaydadjiev, Andre Deutz, and many others. Thank you!

Also, I would like to acknowledge the financial, academic and technical support of the LIACS institute and its staff. I also thank the HR Department of Leiden University for their support and assistance during my Ph.D. studentship.

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.

I am very grateful to the committee members for the critical evaluation of my dissertation.
Especially, I would like to say “spasibo” to all my Russian friends I met in The Netherlands. Polina, Kate, Misha, Masha, Anton and many many others, thank you for being a small motherland for me. I sincerely appreciate our friendship and thousand of kilometers that now separate us will never fade my feelings to you. You are always welcome to visit me wherever I will be living.

I also want to thank those who put up with me throughout the whole Ph.D. process and shared with me their thoughts and experience: Luca, Alexander, Chris, Jorge, Marat, Niki, Oleg, Arseniy and many others.

In addition, I would like to thank my friend “ironman” Norman, whose self-discipline and musical talents have always been great inspirations for me.

At times, when I needed a cosy and homelike atmosphere, I often headed to Babbles restaurant. Thank you, Natali.

More than four years of my living in Leiden I spent at Mozartstraat. While staying there I had many unforgettable events and happy moments. Thank you, Oscar, for providing me this roof in Leiden. I will always remember this place as my home.

My special thoughts go to Sean who became my close friend and soul mate. I truly enjoyed the discussions and debates we had about almost any subject. Sometimes, we happen to look on things differently but had always respected and accepted each other’s opinion. Thank you and the best of luck in your personal pursuits.

With all my heart, I would like to thank Masha for her love and encouragement which supported me when I needed it the most.

Finally, I would love to express my gratitude to my mom, dad, and brother for their infinite support throughout everything.

Dmitry Nadezhkin
December, 2012
Leiden, The Netherlands