

Philipp Gabler, BSc

Automatic Graph Tracking in Dynamic Probabilistic Models via Source Transformations

Master's Thesis

to achieve the university degree of Master of Science

submitted to

Graz University of Technology

Supervisor Univ.-Prof. Dipl.-Ing. Dr. mont. Franz Pernkopf

Co-supervisor
Dipl.-Ing. Martin Trapp, BSc

Institute of Signal Processing and Speech Communication

Faculty of Electrical and Information Engineering

Graz, XXXX 2020

Affidavit

I declare that I have authored this thesis independently, that I have not used
other than the declared sources/resources, and that I have explicitly indicated
all material which has been quoted either literally or by content from the
sources used. The text document uploaded to TUGRAZonline is identical to the
present master's thesis.

Date	Signature

This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.



All code samples, unless otherwise noted or cited from other sources, are also available under an MIT license:

The MIT License (MIT)

Copyright (c) 2020 Philipp Gabler

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

The LATEX source of this document is available at https://github.com/phipsgabler/master-thesis or upon request from the author.

.

¹pgabler@student.tugraz.at

ABSTRACT

Alles sehr abstract hier.

Contents

1 Introduction

- 1.1 PROBLEM DESCRIPTION
- 1.2 RELATED WORK

2 Background

Some introduction here. sdf sd sld fslkdjf sldkj sldk
s sldk sldkfs dfslkd flsdkjf lskdfj

- 2.1 BAYESIAN INFERENCE AND PROBABILISTIC PROGRAM-
- 2.2 Computation Graphs and Automatic Differentiation
- 2.3 METAPROGRAMMING AND COMPILATION IN JULIA

3 Implementation of Automatic Graph Tracking in Julia

- 3.1 DYNAMIC GRAPH TRACKING AND EXTENDED WENGERT LISTS
- 3.2 JAGS-STYLE AUTOMATIC CALCULATION OF GIBBS CONDITIONALS

4 Discussion

- 4.1 EVALUATION
- 4.2 FUTURE WORK

Colophon

This document was typeset using the pdfLTEX typesetting system, with the memoir document class. The body text is set in 11 pt Linux Libertine, enhanced by the microtype package. Other fonts include Biolinum and Inconsolata.

The document source has been written in Emacs with AUCTEX mode, using TeXworks as PDF viewer.