Cover page

Acknowledgements

Abstract of the thesis in English and German

Table of contents

Introduction (10-12)

Motivation

Problem statement

Aim of the work

Methodological approach

Structure of the work

State of the art (15-20)

Literature studies

Electricity Markets and pricing

Energy cost reduction in data centers

Time series forecasting

Machine Learning approaches in forecasting

Virtual machine migration in cloud environments

Analysis

Relevance of topics

Similar approaches existing in literature

Implications and conclusion

Comparison and summary of existing approaches

Comparison by topics

Potential benefits of this work

Summary of investigation

Methodology (15-20)

Energy Markets

Characteristics of energy markets

Outline of selected energy markets

Relevance of markets to cloud environments

Forecasting

Forecasting of electricity prices

Outline of forecasting models

Forecast accuracy measures

Model selection techniques

Forecasting in cloud environments

Data center characteristics

Key indicators in data centers

Data management

Best practices in federated cloud environments

Cloud Simulation

Benefits and limitations

Assumptions of the simulation

Expected results

Summary

Summary of selected methodologies

Relevance for expected results

Results (20-30)

Architectural outline

Application Server

Simulator and Scheduler

R Server

Model selection

Model type selection

Model selection based on data

Accuracy of selected models

Simulation and Scheduling

Definition of cloud settings

Cost models

Cloud Scheduler

Simulation scenarios

Simulation results

Statistics and Empirical evaluation

Result evaluation

Possible improvements

Relevance of results

Discussion (5-10)

Benefits and limitations

Comparison with related work

Discussion of open issues

Summary and future work (3-5)

Summary of the work

Future work

Conclusion and lessons learned

Appendix: source code, data models, . . .

Bibliography