Effective House Energy Management Using Reinforcement Learning Technical Documentation

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Abstract

This is a technical documentation of our university project developed with cooperation and guidance of Rafał Pilarczyk from SAMSUNG. Document contains a short introduction and overview of main concepts, milestones, goals and effects of this project. It is followed by a technical part, that contains a setup guide, code and tests overviews, explanation of used algorithms and concepts (including the Reinforcement Learning part) and details about the development process, providing useful insights, experiences and lessons we have learned the hard way.

1 Introduction

1.1 Goals and milestones

1.2 Results

2 Reinforcement Learning

2.1 What have we used?

2.2 PyTorch Framework

3 Getting Started

3.1 Setup and Requirements

3.2 Learning and Simulation

3.3 Testing

4 Code overview

4.1 HouseEnergyEnvironment module

4.2 Agent module

4.3 Configuration file

5 Accuracy measures and tempo of learning

6 Development Process

6.1 Chronology

6.2 What Failed

7 Conclusions

8 Bibliography and Useful Sources