Helios EcoSolutions

Saving money through optimised energy storage, enabling renewable energy integration and smart utilisation

Agenda

01 Introduction / Framing the Problem

02 Data and Modelling

03 Optimisation

04 Results and Conclusion

05 Outlook

Helios EcoSolutions

Team

Anna Weyrich
PhD in Microbiology and
experience in Data Analysis

Friedrich Eggers
M.Sc Mechanical Engineering
System Modeling & Simulation

Hari Bhaskar
Background in Supply chain
Planning and Operations

Tanjina Afroj
B.Sc in Computer Science &
Engineering

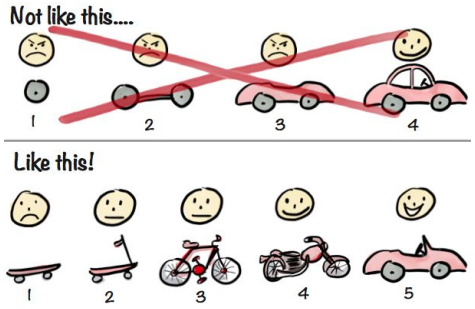
Wanchai Nagel
Background in Product
Management & Digital Analytics

Project Philosophy

Design Thinking

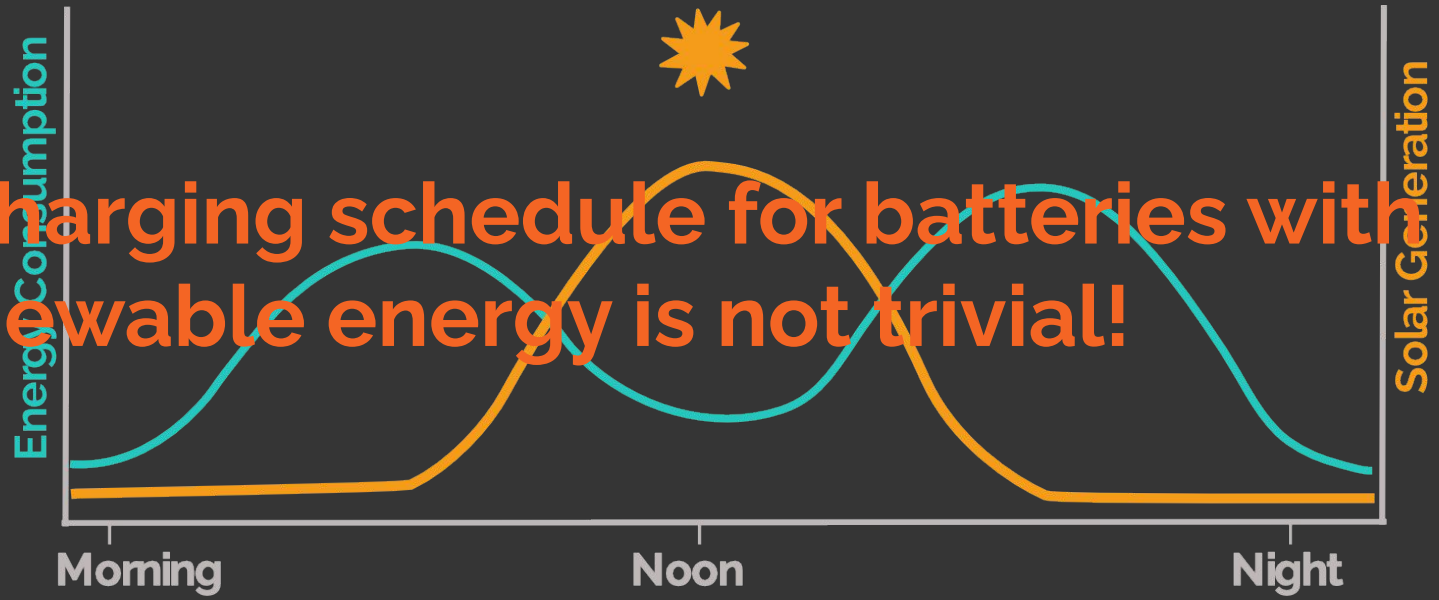
Agile

Minimum Viable Product



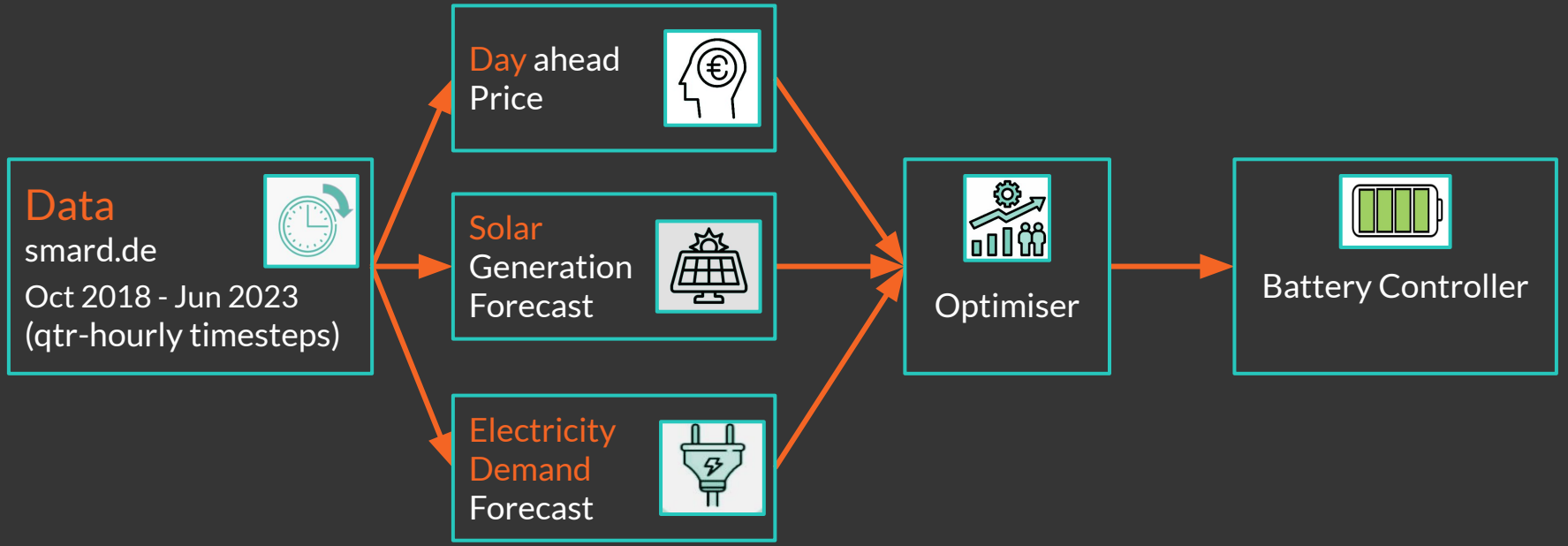
Framing the problem

Production and demand are decoupled for renewable energy. Storage systems are essential for bridging the gap.



A charging schedule for batteries with renewable energy is not trivial!

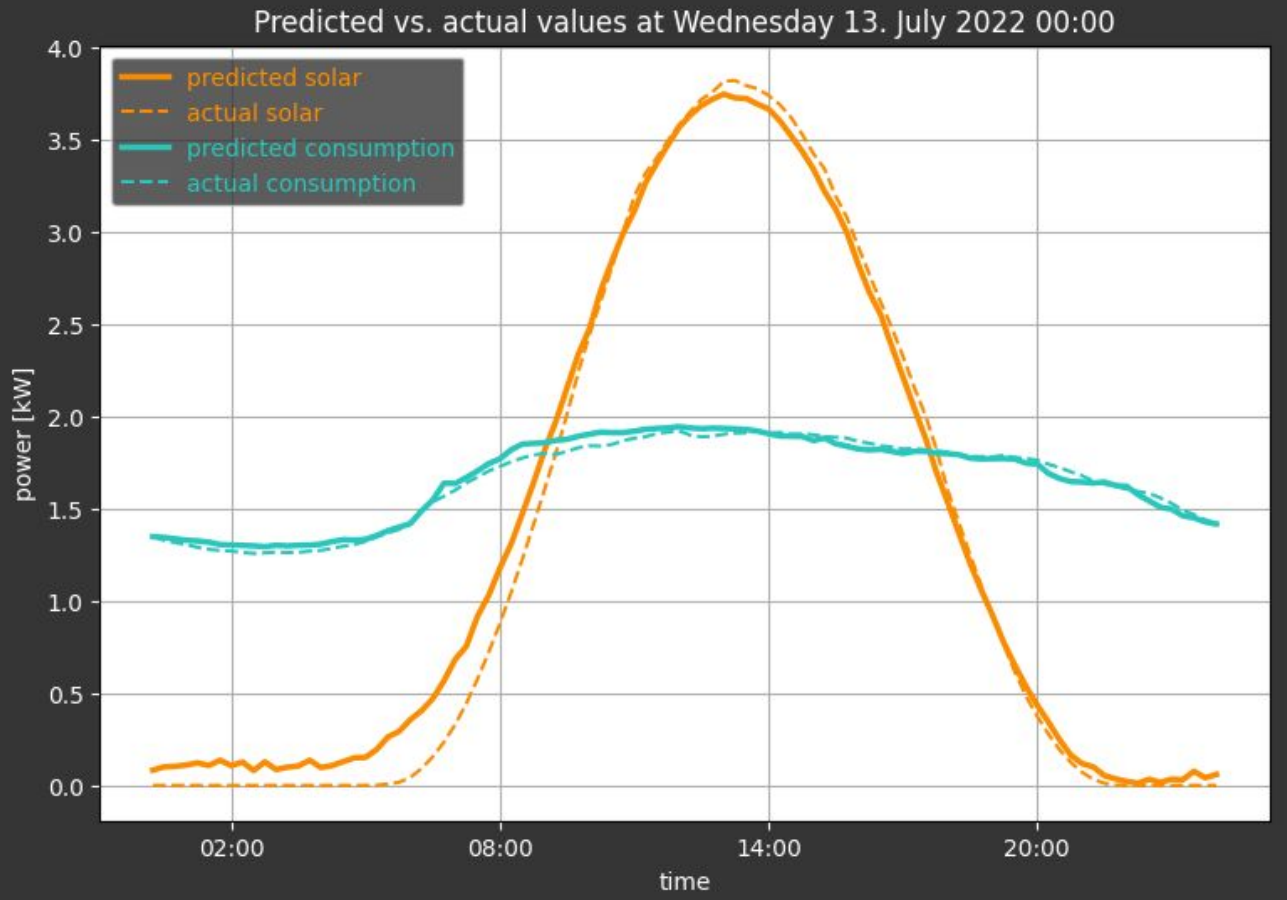
Data Structure



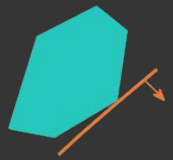
Forecasting Models

LSTM - Neural Net

XGBoost

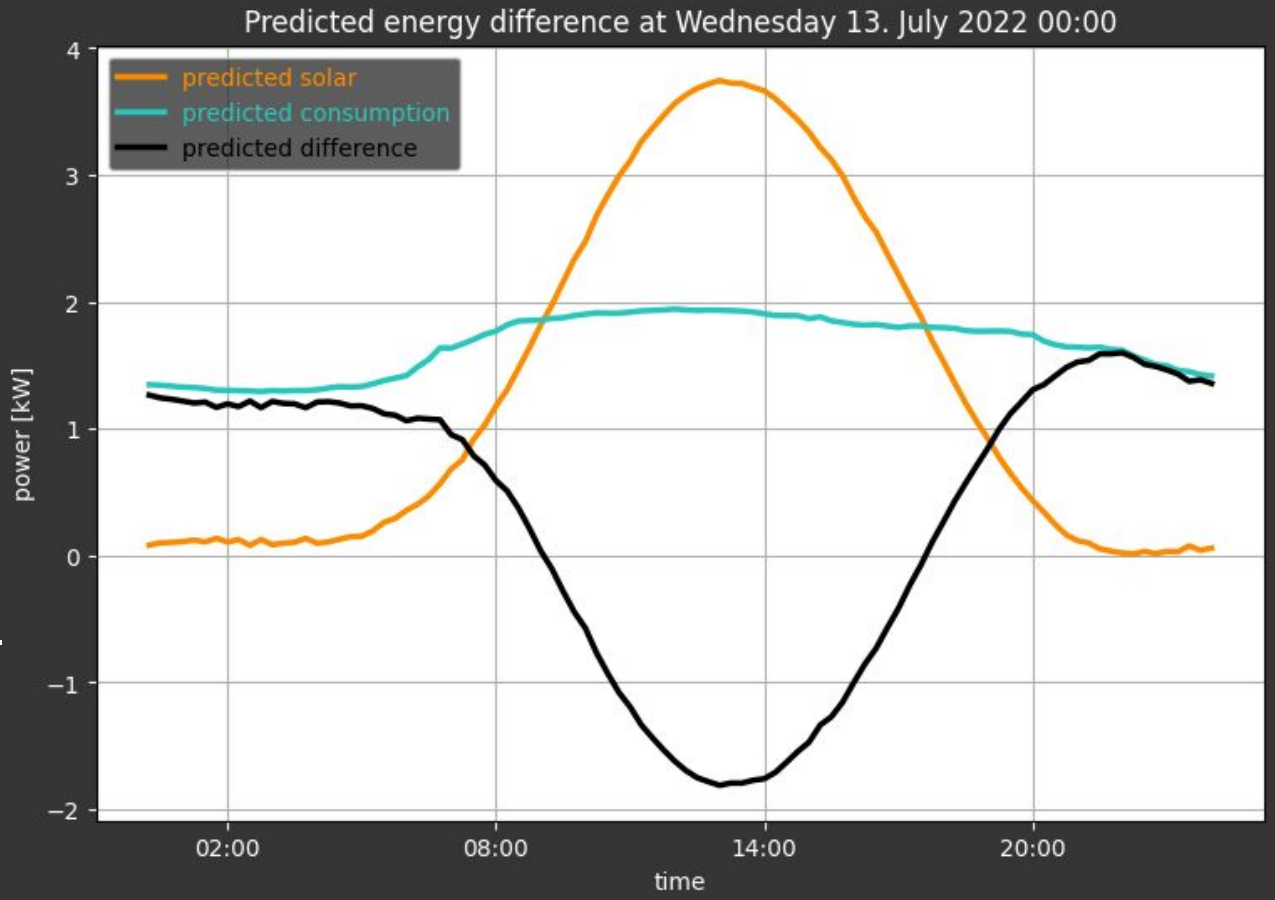


Optimisation



Linear
Programming

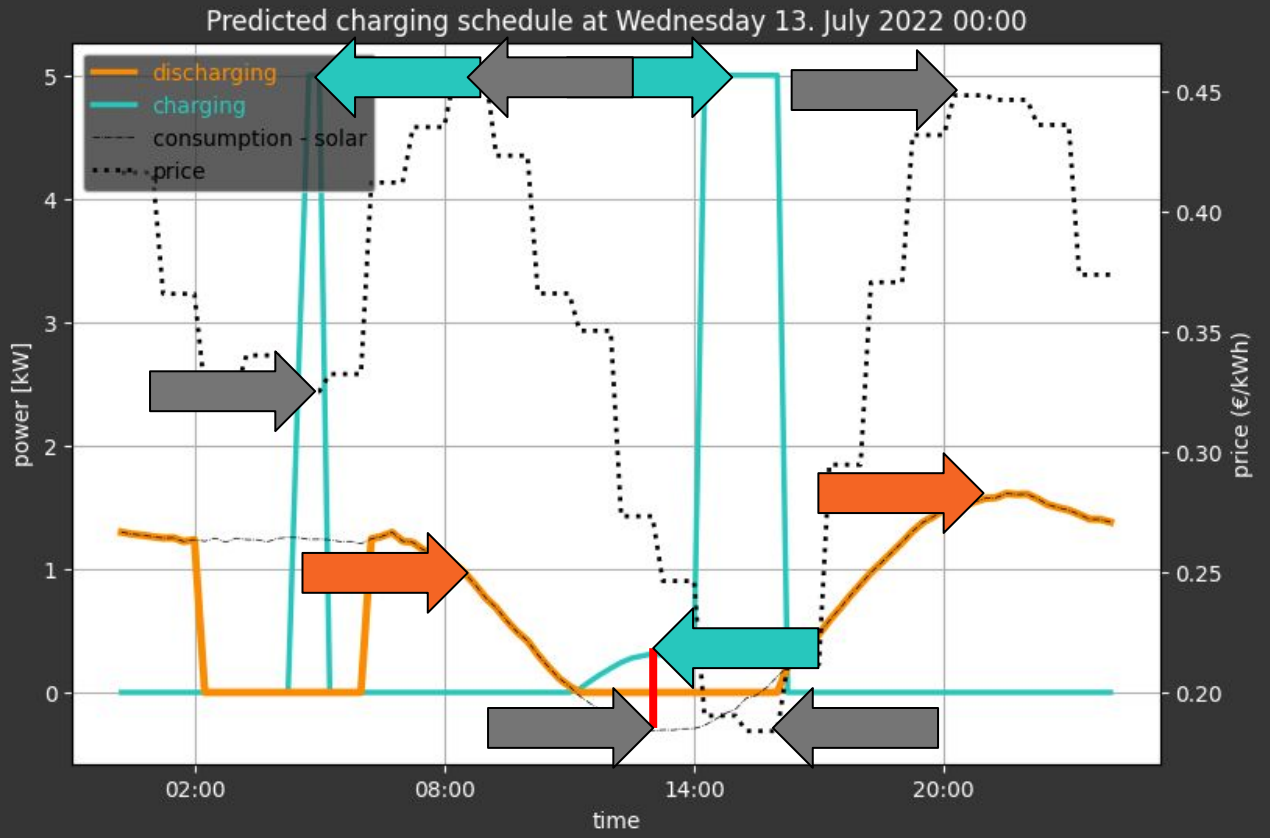
Reinforcement-
Learning



Optimisation

Linear Programming

Reinforcement Learning




Let's explore the algorithm in action using our Streamlit dashboard!

Results

Introduction of the Helios EcoSolutions algorithm into your smart home helps:

- Saving 25 % of the yearly energy costs compared to simple algorithm
- Payback period for our scenario: 3.75 years

Future Enhancements

Additional features

Fine-tuning model performance

Migration to Cloud

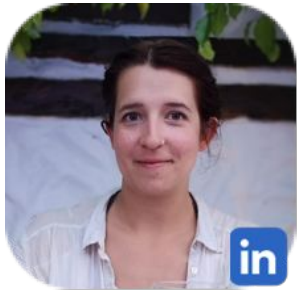
Financial KPIs e.g. NPV

Additional revenue income streams

Diversify energy sources

Deep Q-learning

Thank you for your attention!



Anna Weyrich

Hari Bhaskar

Wanchai Nagel

Friedrich Eggers

Tanjina Afroj