Andreas PLENGE

Quantitative Energy Systems Engineer

Applied mathematician and systems engineer specializing in stochastic modeling, optimization, and real-time decision systems. Building control and forecasting systems for distributed energy assets operating in electricity markets, with emphasis on probabilistic modeling, algorithmic efficiency, and dynamic optimization under uncertainty.

Contact Information

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Languages

- Danish — Native
- English — Fluent

Mathematical Foundation

- PDE Theory
- Probability Theory
- Stochastic Calculus

Implementation Stack

- Python
- TypeScript
- MQTT

Work Experience

Bodil Energi
August 2024 – Present

Tech Lead | VPP Systems Engineer — prev. ML Engineer

Deployed the platform across households, controlling devices based on live frequency monitoring to participate in ancillary service markets. The control algorithm achieved 33% of target capacity within 500ms, 86% within 700ms, and full portfolio stability within 3 seconds.

Developed a forecasting system for bid capacity availability in virtual power plant portfolios, and applied Monte Carlo Dropout methods to quantify uncertainty in neural network predictions for heat pump power consumption. Built multi-source telemetry infrastructure collecting device data across multiple brokers and APIs.

◇ TypeScript, Python

KOMBIT
August 2022 – August 2024

IT Consultant | Power BI Developer — prev. Student Developer

Designed dashboards and built tools for complex data visualization and automation. Developed a governance tool enabling municipalities to detect system misuse, and built automated pipelines for personalized email reporting. Programmed data transformation logic in Power Query M, and provided technical support and ad hoc data analysis.

◇ Python, R

Education

MSc in **Software Design** — 2024

at IT University of Copenhagen

- Specialization in **machine learning**
- **Thesis:** Proposed a machine learning algorithm for the k-approximate nearest neighbors problem, applying a hierarchical structure to inverted file indexes using k-means clustering.

MSc in **Mathematics** — 2020

at University of Copenhagen

- Specialization in **dynamical systems**
- Program not formally concluded.

BSc in **Mathematics** — 2018

at University of Copenhagen

- Specialization in **mathematical finance**
- **Thesis:** Explored the connection between the heat equation and Brownian motion, combining advanced concepts in probability and differential equations.