

QUANT · ENERGY MARKETS · AI ENGINEERING

# Siddharth Sunil Bhosale

Master's student in AI Engineering at THI (Germany), focused on **quantitative risk**, **energy-market forecasting**, and **algorithmic trading**. This portfolio collects my core GitHub projects linking *ML*, *LLMs*, *quantum*, and *trading*.

[View Projects](#) [Download PDF Portfolio](#)

Location: Ingolstadt, Germany

Focus: Energy markets, risk, AI & LLM tooling

GitHub: [github.com/bhosalesiddharth30](https://github.com/bhosalesiddharth30)

## PORTFOLIO

### Quant, Energy & AI Projects

Filter by theme or click on any card to expand details. Projects are ordered with the most recent work at the top.

Latest · Azure Risk Pipeline

#### Risk Metrics ETL & Validation Pipeline (Azure + Streamlit)

Production-inspired ETL + validation pipeline for risk metrics (P50/P95, spreads, deltas, vol) using simulated Azure ingestion, YAML validation rules and a Streamlit monitoring dashboard.

Python

Azure Functions (sim)

Pandas

YAML rules

Streamlit

[GitHub Repo →](#)

Click card to toggle more details.

Risk · Regulatory

#### Regulatory VaR & ES Backtesting Engine

VaR backtesting engine with Basel-style traffic-light backtesting, Kupiec test and automated risk diagnostics for trading portfolios.

Python

NumPy

SciPy

Matplotlib

Risk Backtesting

[GitHub Repo →](#)

Good showcase of classical quant risk skills.

Equity · Research Automation

#### Equity Research Data Automation Dashboard

Automated equity + macro data pipeline with anomaly detection and Excel-style dashboards for faster research and cleaner inputs for valuation models.

Python

Pandas

Excel / Power Query

Power BI / Charts

LLM × Quantum

#### LLM-Guided Quantum Optimization Framework

End-to-end framework that converts natural-language optimisation tasks into QUBO formulations and solves them with QAOA-based quantum circuits.

Python

Qiskit

PennyLane

LLM Tooling

QUBO / QAOA

[GitHub Repo →](#)

Bridges between analytics teams and Excel-heavy users.

[GitHub Repo →](#)

Good conversation starter for future-tech / research teams.

Energy · Forecasting

### Probabilistic Transformer – Power Market Forecasting

Quantile-based Transformer model to forecast day-ahead electricity prices for the DE-LU power market using ENTSO-E data and probabilistic calibration.

Python

PyTorch

Transformers

Quantile Loss

ENTSO-E

[GitHub Repo →](#)

Shows deep learning applied to real energy data.

Energy · NLP

### Energy-Market Sentiment Analysis & Price Forecasting

Trading framework combining FinBERT-based sentiment on news with power fundamentals to forecast EPEX DE-LU day-ahead prices.

Python

FinBERT

NLP

Power Fundamentals

[GitHub Repo →](#)

Nice bridge between NLP and commodity trading desks.

Equity · Pairs Trading

### Cointegration Strategy – HDFC vs ICICI

Classical statistical-arbitrage pairs trading strategy built on cointegration between HDFC Bank and ICICI Bank equities.

Python

Statsmodels

ADF / Johansen

Z-Score Signals

[GitHub Repo →](#)

Core quant skill: cointegration &amp; mean reversion.