HEMANTH HARIHARAN
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SCHOLASTIC ACHIEVEMENTS

Program	Academic Institution	GPA	Completion Date
MS, Sustainability	Stanford University	4/4	Jun 24'
B. Tech, Engineering	Indian Institute of Technology Madras	9.17/10	Aug 20'

RELEVANT COURSEWORK

Machine Learning, Convex Optimization, Risk Analysis, 100% Clean Renewable Energy, Electricity Economics, Systems Engineering, Project Finance, Life Cycle Assessment, Carbon Capture and Sequestration, Hydrogen Economy

SKILL SET

Machine Learning, Optimization, Data analytics and visualization, Financial and risk modeling, Monte Carlo simulations

PROJECTS AND EXPERIENCE

Energy analyst at COI Energy
Jul 24' – Sep 24'

Energy analyst intern at a startup that enables commercial building owners sell excess capacity

- Customer evaluation for Excess Energy Exchange (E^2X) pilot deployment based on peak demand.
- E^2X machine learning forecasting and P2P trading and matching algorithm peer review.
- Financial modeling for evaluating payback period of customers and forecasting cash flows.

Deep learning modeling of carbon storage
Jan 24' – Sep 24'

Computing the Area of Review (AoR) using CCSNet, a deep learning-based tool for CO_2 storage

- Used CCSNet's API to run 500k trials and built a parametric tool to compute plume and pressure radius for varying brine densities, injection rates, permeabilities and thicknesses of reservoir.
- Developed a phase diagram and nomogram to assist project developers with site selection.

Machine Learning for time-series forecasting
Sep 23' – Dec 23'

Course project – Machine Learning for wind turbine output prediction

Exploratory Data Analysis: Analysis and visualization of SCADA dataset of wind farm in Turkey.
Training: Ensemble model using ARIMA, XGBoost and LSTM neural network for time-series forecasting of wind turbine output.
Validation and Testing: Walk-forward validation and error-metric (RMSE and MAPE) analysis.

Development at Cypress Creek Renewables
Jun 23' – Sep 23'

Worked with the ERCOT development team on utility-scale solar and battery-storage projects

Interconnection queue project: Analyzed trends in historical data from public ERCOT information. Used machine learning to predict interconnection study times and project outcomes.
Financial Modeling: Prepared developer-facing financial models for all ERCOT pipeline projects and performed sensitivity analyses to compute key financial metrics (margins, IRR).

24/7 Carbon-Free Charging Project
Apr 23' – Jun 23'

Independent study with Prof. Ram Rajagopal on decarbonizing Stanford University's transportation

Low Carbon Fuel Standards (LCFS): Applied LCFS to calculate potential monetary benefits through both charging and capacity pathways.
Data Analytics: Identified trends in charging patterns, electricity costs incurred and grid emissions.

Renewable Energy Financial Risk Modeling
Jan 23' – Mar 23'

Course project – Financial modeling of an HVDC cable project to utilize renewable energy capacity

Sensitivity Analysis: Varying timelines, exchange rates, operating costs, and potential outages.
Recommendations: Refinancing project loan at favorable terms, back leverage to increase value of equity position, option to enter interest rate swap.
Monte Carlo Analysis: Performed using ChanceCalc library to estimate probability distribution of IRR (Internal Rate of Return) and ROE (Return on Equity).

Engineer at TATA Projects Limited
Oct 20' – Mar 22'

Worked on energy generation and transmission projects in India and Africa

Flue gas desulfurization plant for one of India's largest power plants (4 GW): Execution, supply chain management, project scheduling, quality, safety
Power transmission-line project: Tender risk assessment, delay analysis, PG&E underground cabling bid, tower testing, market research.