

# RAJAT SETHI

## Contact Summary

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Mechanical Engineer with passion for sustainable energy. Hands-on experience in implementing machine-learning algorithms that optimize the energy management system for microgrid projects that include solar, battery storage, and electric vehicle charging. Have experience in and relish working cross-functionally with teams to ensure hardware/software product is designed as per customer requirements.

## Technical Skills

Python (familiar with  
NumPy, Pandas,  
Scikit-learn, Keras,  
Tensorflow,  
Plotly),  
MATLAB,  
Solidworks,  
MS Excel 2010  
Certified Expert

## Language Skills

English  
(Native Proficiency),  
Hindi  
(Native Proficiency),  
Japanese  
(Full Professional  
Proficiency),  
French  
(Basic Proficiency)

## Education

Expected  
March 2020

M.S. in Mechanical Engineering  
(Specializing in modeling of Distributed  
Energy Systems)

University of California,  
San Diego

July 2014

Bachelor of Technology in Mechanical  
Engineering  
*Graduated Summa Cum Laude*

Delhi Technological University,  
Delhi

## Relevant Coursework

Deep Learning, Python for data analysis and visualization, Numerical Optimization (in progress), Applied Mathematics, Linear Control Systems Design, Battery Management System Design, Optimal Estimation and Control, Teaching Assistant (TA) for Thermodynamic Systems course.

## Experience

**June 2019 – Present**

**Software and Algorithm Design Intern,  
EDF Renewables, San Diego**

- Developed Load Forecasting algorithm using LSTM neural network in Python.
- Benchmarked the Load Forecasting algorithm with third party results and was successful in getting superior forecasting accuracy across multiple load profiles. Gave company capability to do analysis in-house instead of waiting 3-4 weeks for results from third-party.
- Developed Battery Sizing Optimization Algorithm in order to get recommendation of the optimal battery size for a given load profile and tariff. Benchmarked with NREL's REOpt Lite tool.
- Developed API to integrate forecasting model and optimization model with company in-house analytics tool.
- Delivered technical presentation of intern work to senior management and to other departments and received high appreciation.

**Oct 2014 – Aug 2018**

**Systems Design Engineer,  
Toshiba Corporation, Japan**

- Built energy balance models for optimization of the plant thermodynamic cycle for different operating conditions to achieve desired plant power output and cycle efficiency.
- Collected technical data (steam temperature, pressure, mass flowrate, steam quality, load) and analyzed the effect of these parameters on overall plant performance (plant heat rate, turbine and condenser efficiency) which served as inputs to detail design teams.
- Built design tools (programmed macros in Excel) to automate turbine design parameter calculation, resulting in post implementation reduction of engineering man hours from 7 hrs. /day to 40 min. /day.
- Worked together with teams from heat balance design, heat exchanger design, control valve design, manufacturing, procurement and project management, simultaneously and ensured timely design input and design completion which was appreciated by the customer.
- Led technical clarification meetings with Malaysian, Indian and Japanese customers and with consortium partners from Korea and Japan on basic/detail design stages.

## Projects

- Designed a Kalman Filter (KF) in MATLAB to predict the state of the system with a lot of input noise and compared its performance with a Bayesian Filter in different noise environments.

- Implemented Convolution Neural Net (CNN) based architecture on NYUv2 indoor object labeled dataset for learning and predicting depth from a single image in Python.
- Conducted Techno-economic analysis of installing battery energy storage at Miramar Marine Corps Microgrid using NREL REopt tool and submitted the report to NREL for internal review.
- Masters thesis is focusing on modeling degradation effect due to charge/discharge cycles and average SOC on the State of Health (SOH) of the battery.
- Bachelors Thesis: Analysis of performance and emission effects of blending Hydrogen with Compressed Natural Gas (H-CNG blends).