Ridgetop Group, Inc.
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Job Description: Battery Simulation Engineer

Position Overview

A Battery Simulation Engineer will help Ridgetop Group provide advanced diagnostic and prognostic solutions for critical applications. Their main responsibilities include designing new battery management systems (BMS), novel battery diagnostics, and developing advanced battery simulation models and prognostics algorithms for embedded applications. The position will also be involved in all phases of the product development lifecycle, including requirement definition, design, validation, documentation, release, and maintenance.

Responsibilities

- Support and lead product development and commercialization of Ridgetop Group's battery simulation product line CellSage
- Develop multi-physics based and data driven based models of lithium-ion batteries under extreme operating conditions based on electrochemistry knowledge and test data
- Develop robust battery models to predict cell behavior including but not necessarily limited to rate performance, life degradation, calendar aging, electrochemical and thermal response, and safety related behavior
- Provide novel solutions of battery management control system to optimize dischargeable capacity, cycle life, and charge time, and support battery management for algorithm and model development
- Formulate and execute designs of experiments to acquire sufficient data to train, validate, and test the battery models
- Work on battery estimation algorithms and models regarding SOC, SOH, impedance, and performance limitation under given operating conditions
- Work with cross-functional teams to develop, implement, test and maintain your model
- Review academic papers and provide insight summary for team members
- Develop advanced deep learning models and tools for data analysis and optimization
- Deliver documents related to model and algorithm development
- Work with intellectual property team to patent your inventions
- Collaborate with battery team to determine and achieve battery performance and lifetime targets

Qualifications and Requirements

- Master's Degree or BS with 3 or more years of relevant experience in a related in a related engineering discipline
- Very strong analytical skills
- Strong background in probability and statistics
- Experience in system modeling and optimization, preferably using MATLAB
- Strong programming skills and GUI design
- High level of personal drive and self-motivation
- Commitment to continuous improvement
- Strong communication skills, both written and verbal
- Fundamental knowledge of lithium-ion cell electro-chemistries and mechanisms
- Experienced in creating multi-physics based and data driven based models for electrochemical/thermal/mechanical systems

- Familiar with battery testing equipment and test protocol
- Experience in writing efficient code to process and analyze large data sets
- Comfortable with initiating and taking ownership of projects

Additional Preferred Experience and Skills

- MS in Electrical, Computer, Mechanical or Aerospace Engineering, Computer Science or in a related field
- Statistical estimation, filtering, pattern recognition, classification, prediction
- Fault detection and diagnosis methods
- System diagnostics and prognostic expertise
- Reliability analysis
- Proficiency in LabVIEW
- Embedded programming skills
- Experience in power systems and electrical engineering systems
- Experience in using COMSOL or other multi-physics-based package for battery simulation
- Experience in developing data driven based model for battery simulation
- Experience in model and algorithm development applied in battery management system
- Good mathematical knowledge and experience in statistical analysis, optimization, machine learning, and deep learning tools

Position Type / Expected Hours of Work

This Part-Time Position is expected to maintain 32 hours per week or as agreed upon by management.

Benefits and Compensation

For Full-Time Employees the Company offers a competitive salary and comprehensive benefits program, including health/dental insurance and an employer match to retirement fund. Compensation is DOE.

Job Location

Corporate Headquarters, Tucson, Arizona.