

# PowerLab Seminars – II

Vahid Safavi, Ph.D. Candidate

**Date:** March 8, 12:00 p.m.

**Place:** ARC 210

## Biography

Vahid Safavi, a last-year Ph.D. student at Aalborg University in Denmark, holds bachelor's and master's degrees from Shiraz University (2009) and Amirkabir University (2015) in Iran. With seven years of professional experience, Vahid specializes in designing electrical systems and integrating renewable energy sources. His current research focuses on developing a digital twin framework for Microgrids, emphasizing the integration of energy storage to enhance energy system resilience and efficiency.



## Abstract

Predicting the remaining useful life (RUL) of lithium-ion (Li-ion) batteries is essential for ensuring the reliability and efficiency of power systems. This presentation introduces a novel Coati-integrated CNN-XGBoost approach for early RUL prediction of Li-ion batteries. By applying convolutional neural network architecture to extract features from battery discharge capacity data and incorporating additional features derived from battery cycling and charging policies, our model enhances RUL prediction accuracy. Utilizing the Coati Optimization Method for hyperparameter tuning further improves performance. Numerical results demonstrate the effectiveness of our approach, achieving satisfactory RMSE and MAPE values of 70.6 and 10.27, respectively.

