curriculum vitæ of

Cheung Chung Ming

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Education

Fall 2014 – Summer 2021

Ph.D. in Computer Science   University of Southern California, Los Angeles

Department of Computer Science, Viterbi School of Engineering
GPA: 4.00/4.00
Thesis Title: Data-Driven Methods for Increasing Real-Time Observability in Smart Distribution Grids
Thesis Advisor: Dr Viktor K. Prasanna, Professor - Electrical and Computer Engineering

Fall 2021 – Spring 2014

Bachelor of Engineering (Computer Engineering)   University of Hong Kong, Hong Kong

GPA: 4.10/4.30

Skills

Expertise in Data Science, Machine learning, Time series analysis.
Programming skills in Python, C/C++, Java, MATLAB.
Technologies: PyTorch, cvxpy (Convex Optimization Solver for Python), PI System (Database Management Platform)

Reserach Experience

PhD Thesis: Data-Driven Methods for Increasing Real-Time Observability in Smart Distribution Grids

- Developed a data-driven model for accurate disaggregation of hidden solar energy behind meters from AMI measurements.

- Investigated the use of grid topology information as spatial features input for improving load forecasting results by learning dependencies between spatial features in time series in smart grids.

- Demonstrated enhancements in times series analytics in smart grids from increased observability using the aforementioned results.

- **Technologies involved:** Convolutional Neural Networks, Graph Convolutional Networks, Convex Optimization, Time Series Clustering, Feature Extraction

Fall 2014 - Summer 2021

Participation in Research Projects at USC:

DEEPSOLAR – This project aimed to enable deep solar penetration and scalable operation of distribution system using real time dynamic data driven modeling of smart grids.

- Developed a Ensemble Learning model for Short Term Load Forecasting.

- Developed a data-driven model for accurate disaggregation of hidden solar energy behind meters from AMI measurements.

- **Technologies involved:** Ensemble Learning, Convex Optimization, Time Series Clustering

Fall 2017 – Fall 2019

CiSoft (Center for Smart Oilfield Technology) Projects – This was a joint programme by USC and Chevron. I was involved in several projects under CiSoft related to research on applying Computer Science technologies to develop Smart Oilfield software.

- Developed code for solving subproblems in two projects – Data Integration Framework, and Event Modelling and Management. These projects involved handling of large industrial datasets, and use of machine learning models to solve time series analytics.

- **Technologies involved:** Ontology, Convolutional Neural Networks, Auto-encoders

Fall 2014 – Fall 2017

Other Activities

Fall 2019 - Spring 2021

Lab Management for NexSoft Project led by Professor Donald Paul at USC.
Technologies: PI System

2015-2017

Website Management for IEEE International Conference on High Performance Computing.
Skills: Web management, php

April 2016

Participated in the Target Data Challenge held at USC with a team of 3 PhD students and 1 post-doc. Developed a recommender system to predict future purchases of customers based on historical purchase history.
Skills: Teamwork, C++ Programming

Selected Publications

Authors who equally contributed to a publication are marked with a †.

1. **Cheung, Chung Ming**, Sanmukh Rao Kuppannagari, Rajgopal Kannan, and Viktor K. Prasanna. "Disaggregation of Behind-the-Meter Solar Generation in Presence of Energy Storage Resources." In Proceedings of the 2020 IEEE Conference on Technologies for Sustainability (SusTech), pp. 1-7. IEEE, 2020 April.

2. **Cheung, Chung Ming**, Sanmukh Rao Kuppannagari, Rajgopal Kannan, and Viktor K. Prasanna. "Load Demand User Profiling in Smart Grids with Distributed Solar Generation." In Proceedings of the 2020 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT), pp. 1-5. IEEE, 2020 February.

3. **Cheung, Chung Ming**, Sanmukh Rao Kuppannagari, Rajgopal Kannan, and Viktor K. Prasanna. "Towards Improved Real-Time Observability of Behind-Meter PhotoVoltaic Systems: A Data-Driven Approach." In The Second International Workshop on Energy Data and Analytics (EDA 2019), Published in Proceedings of the Tenth ACM International Conference on Future Energy Systems, pp. 447-455. ACM, 2019.

4. **Cheung, Chung Ming**, Wen Zhong, Chuanxiu Xiong, Ajitesh Srivastava, Rajgopal Kannan, and Viktor K. Prasanna. "Behind-the-Meter Solar Generation Disaggregation using Consumer Mixture Models." In Proceedings of the 2018 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm), pp. 1-6. IEEE, 2018.

5. **Chung Ming Cheung**, Rajgopal Kannan, Viktor K. Prasanna "Temporal Ensemble Learning of Univariate Methods for Short Term Load Forecasting," In Proceedings of the IEEE Innovative Smart Grid Technologies, February 2018.

6. **Chung Ming Cheung**†, Palash Goyal†, Viktor K. Prasanna, and Arash Saber Tehrani, "OReONet: Deep Convolutional Network for Oil Reservoir Optimization," In Proceedings of the 2017 IEEE International Conference on Big Data, December 2017.

7. **Chung Ming Cheung**, Yinuo Zhang, Anand Panangadan, Viktor K. Prasanna, "Computational Cost of Querying for Related Entities in Different Ontologies," In Proceedings of the IEEE International Conference on Information Reuse and Integration (IEEE IRI), 2015.

Complete list of publications can be found at ccming3.github.io/publications/