Ashutosh Timilsina

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https://ashutoshtmlsna.github.io

Education

2019–2023 **Ph.D., Computer Science**, *University of Kentucky*, Lexington, KY, *GPA 3.917/4.0.* Dissertation title: *Peer-to-Peer Energy Trading in Smart Residential Environment with User Behavioral Modeling*

2012–2016 **Bachelor of Engineering, Electrical Engineering**, *Tribhuvan University*, Institute of Engineering, Pulchowk Campus, Nepal, Graduated with First Division

Technical Skills

Languages Python, C/C++, MATLAB, SQL, Lua

Libraries Gurobi, NetworkX, SciPy, PyTorch, Keras, TensorFlow, MPI, OpenMP

Software LaTex, Dayzer, AutoCAD, ADS, MS Office, Dayzer, Tranzer

Research Interests

Energy Trading, Mathematical Optimization, User Behavioral Modeling, Artificial Intelligence, Machine Learning, Reinforcement Learning, Computer Vision, Blockchain

Research and Work Experience

June 2023 – Present

Energy Market Analyst
Cambridge Energy Solutions, Cambridge, MA, USA
- Quality control of all changes and updates to the DAYZER, TRANZER and database models. Test the models of all combinations of inputs and confirm these are performing as intended.
- Maintaining the market models and writing new scripts and update existing scripts using DZScript, specifically transmission system market models.
- Maintaining the market models for several North American markets.
- Tracking market changes in various ISOs/RTOs.
- Assisting in the development of new market model features.
- Testing, using, supporting and improving existing CES software products.

Aug. 2019 – May 2023 (3 years 10 months)

Graduate Research Assistant
Cyber Physical Systems Lab – Under Dr. Simone Silvestri, University of Kentucky
- Designed and developed novel algorithms for P2P energy trading and Electric vehicle based spatial crowdsourcing platform, financial trading via blockchain
- Evaluation and analysis of algorithms including complexity & efficiency
- Formulated the solutions to complex problems using mathematical optimization, behavioral modeling, reinforcement learning & machine learning
- Implemented combinatorial multi-armed bandit-based task recommendation system and reverse auction mechanism
- Mentored undergraduate students on crowdsourcing & energy-sharing project

Apr. 2019 – Aug. 2019 (5 months)

Electrical Engineer
Nilgiri Khola Hydropower Company Ltd., Kathmandu, Nepal.
- Managed design and implementation of large-scale hydroelectric project of 110 MW

- Collaborated with cross-functional teams of civil, mechanical engineers as well as financial officers and led electro-mechanical team
- Conducted site surveys to evaluate and optimize plant designs and prepared detailed project reports, and tender/bid documents
- Developed and maintained relationship with stakeholders, including government agencies, local communities, and project investors

May 2017 –
May 2019
(2 years)

Electrical Engineer
Mandu Hydropower Ltd., Kathmandu, Nepal.
- Led the design supervision and implementation of hydroelectric project of 22 MW
- Conducted research on new data-driven solutions to support integration of renewable energy into the grid and reduce energy waste
- Supervised design and installation of electro-mechanical equipment, transmission line, sub-station,
- Developed communication system using SCADA, data storage & retrieval, power distribution systems, and prepared electrical schematics
- Provided technical support for the installation and commissioning of the project
- Developed and maintained relationship with stakeholders, including government agencies, local communities, and project investors

Dec. 2016 –
May 2018
(1 year 6 months)

Technical Officer
H.I.F. Renewable Energy Ltd., Kathmandu, Nepal.
- Analyzed large datasets to identify patterns and trends in solar energy production and Consumption in Nepal
- Developed machine learning and predictive models for energy forecasting
- Manage the design and implementation of grid connected solar PV projects
- Performed technical and financial viability of PV projects
- Conducted site surveys to evaluate and optimize solar designs and prepared detailed project reports, and tender documents

Publications

2023   e-Uber: A Crowdsourcing Platform for Electric Vehicle-based Ride- and Energy-sharing (link)

2023   V2G Optimization for Dispatchable Residential Load Operation and Minimal Utility Cost (link)

2023   P2P Energy Trading in a Smart Residential Environment with User Behavioral Modeling (link)

2022   P2P Energy Trading through Prospect Theory, Differential Evolution, and Reinforcement Learning (link)

2022   Prospect Theory-inspired Automated P2P Energy Trading with Q-learning-based Dynamic Pricing (link)

2021   A Reinforcement Learning Approach for User Preference-aware Energy Sharing Systems (link)

2019   Comparative Analysis of Cell Balancing Topologies in Battery Management Systems (link)

2017   Technical Design of a Grid-Connected Photovoltaic System and Its Challenges in Nepalese Power Scenario (link)

2016   A Novel Approach for Wireless Power Transfer using Magnetic Resonant Method (link)

Awards

2022   **Outstanding Student Paper Award – Winner,** Dept. of Computer Science, UKY

2022   **Member of the Year Award – Winner,** GSACS, University of Kentucky

2015   **LOCUS 2015: Electrical Project Competition - Winner**

| 2014 | LOCUS 2014: Electrical Project Competition - Appreciation |

Leadership & Volunteering Experience and Other Services

June 2023 –	**Qubit Nepal QNepal –** *Founding Member*
Oct. 2022	**International Conference on Network Protocols (ICNP'22) –** *Volunteer*
2022–2023	**University of Kentucky Graduate Student Congress –** *Representative* Also serving in International Student Concern Committee
2022–2023	**Nepali Student Organization –** *President*
2021–2022	**Nepali Student Organization –** *Secretary*
2016	**Zerone Magazine and Zerone Scholar –** *Editor and Author*
2014 –	**Electrical Club –** *Founding Member*
2012-2016	**LOCUS –** *Volunteer and Participant* 47 citations and Peer-reviewed over 21 articles and journal papers