Dr. Mingming Liu

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Summary

I am currently working as an Assistant Professor in School of Electronic Engineering at Dublin City University (DCU). I am also affiliated with the SFI Insight Centre for Data Analytics as a Funded Investigator, the SFI Centre for Research Training in Machine Learning (ML-Lab) as a research leader, and the Marie-Curie NeuroInsight Centre as a project supervisor. I received my B. Eng (1st Hons, ranked 1st) in Electronic Engineering at National University of Ireland Maynooth in 2011 and my PhD in Control from the Hamilton Institute at the same university in 2015. I have several years of experience in machine learning, control and optimisation theories with strong links to electric, hybrid vehicles and IoT especially in the context of smart grid, intelligent transportation and smart cities. Prior to DCU, I was employed at IBM Ireland Lab working as a data scientist, applied researcher and project lead, where I had been involved in several EU H2020 projects, including Chariot, VI-DAS, ICONET, COPKIT and 5G-Solutions. I was the work package lead for VI-DAS and 5G-Solutions at IBM. Before IBM, I worked at University College Dublin as a (senior) postdoctoral researcher with a focus on both EU and Science Foundation Ireland (SFI) funded projects, including Green Transportation and Networks (SFI) and Enable-S3 (EU H2020). I am an IEEE Senior member and I have published over 60 papers to date, including several top-tier journals in my research fields, such as "IEEE Transactions on Smart Grid", "IEEE Transactions on Intelligent Transportation System", "IEEE Transactions on Automation Science and Engineering", "IEEE System Journal", "IEEE Transactions on Transportation Electrification" "IEEE Transactions on Artificial Intelligence", "Sustainable Cities and Society", "Pattern Recognition", "Applied Energy" and "Automatica". Since 2018, I have secured more than €3 million in funding from various resources (Industrial, National and EU) for my research as the PI. I have been one of the three awardees at DCU of the SFI Frontiers for the Future Programme Funding in 2021. In addition, I have actively involved in many academic activities, including technical committees, organisation and management committees for both national and international events in my research areas. I represent Ireland as a Management Committee member in the EU COST Actions CA19126, CA20138, and CA21131. I am an Irish citizen.

Education

9/2011–9/2015 **Ph.D. in Distributed Control and Optimisation**
Thesis: Topics in Electromobility and Related Applications.
Affiliation: Hamilton Institute, National University of Ireland Maynooth
Supervisors: Prof. Robert Shorten (Full Professor, Imperial College London at present)
Prof. Seán McLoone (Full Professor, Queen's University Belfast at present)

9/2007–6/2011 **B.Eng. (1st Hons, Ranked 1st) in Electronic Engineering**
Thesis: Optimal Design and Control of a Twin-Motor Helicopter (Best Final Year Project)
Affiliation: Department of Electronic Engineering, National University of Ireland Maynooth

Work Experience

9/2019–Present **Assistant Professor in Electronic Engineering**, *Dublin City University*

6/2018–9/2019 **Data Scientist, Applied Researcher, H2020 Project Lead**, *IBM Ireland Lab*

11/2017–6/2018 **Senior Postdoctoral Research Fellow**, *University College Dublin*

9/2015–11/2017 **Postdoctoral Research Fellow**, *University College Dublin*

Research Experience

9/2019–Present **Assistant Professor in Electronic Engineering**, *Dublin City University*

Main projects:

- **Smart DCU**: Act as the funded investigator at the SFI Insight Centre for Data Analytics at DCU for several Smart DCU projects, including E-scooters project with Luna, E-bike project with Moby and the shared EV project with Renault.
- **Help-me-Watch:** Act as the Co-PI at DCU in collaboration with Prof Alan Smeaton to design a cloud-based system for enhanced students' online learning experience.
- **SFI FFP Project:** Act as the PI at DCU for the Science Foundation Ireland funded project "ESSENTIAL" through the prestigious Frontiers for the Future Program.
- **Huawei Project:** Act as the PI at DCU for two fully funded projects collaborating with the Huawei Cloud at the Huawei Ireland Research Centre. The first project was successfully completed in 2022, followed by the successful delivery of the second in 2024.

6/2018–9/2019 **Data Scientist, Applied Researcher, H2020 Project Lead**, *IBM Ireland Lab*

Main projects:

- **Chariot**: Acted as the Task Tech Lead in this EU H2020 project which aims to develop a cognitive computing platform that places devices and hardware at the root of trust, contributing to high security and integrity of industrial IoT system.
- **ICONET**: Acted as the Task Tech Lead in this EU H2020 project which aims to explore and create innovative Physical Internet (PI) network services that optimise cargo flows against costs and environmental performance.
- **COPKIT**: Acted as the Task Tech Lead in this EU H2020 project which aims to devise novel machine learning techniques and big data analysis tools to accurately analyse, identify and predict criminal activities in cities.
- **VI-DAS**: Acted as the PI and WP Lead in this EU H2020 project which aims to leverage advanced sensors, data fusion, and machine learning techniques to better understand driver, vehicle and road context, facilitating a significant step along the road towards next-gen ADAS.
- **5G-Solutions**: Acted as the PI and WP Lead in this EU H2020 project which aims to conduct advanced field-trials of innovative use cases, directly involving end-users across five significant industry vertical domains to prove and validate that 5G capabilities.

9/2015–6/2018 **Senior Postdoctoral Research Fellow**, *University College Dublin*

Main projects:

- **ENABLE-S3**: Acted as the Task Tech Lead in this EU H2020 project which aims to develop an industrial verification and validation simulation testing platform to flexibly evaluate and improve performance of different automotive systems and applications.
- **SPONGE**: Acted as the Task Lead in this project which aims to optimally use renewable energy to maximise the efficiency of the hybrid electric transportation fleet.
- **Cyclist Protection**: Acted as the Task Lead in this project which aims to develop a novel algorithm to control the emission level around the cyclist in a virtual geographic boundary.
- **Street Parking**: Acted as the Task Lead in this project which aims to develop a distributed control algorithm to minimise the overall routing cost of vehicles for parking.
- **Optimal control theory**: Acted as the Task Lead in this project which aims to present a rigorous proof for a class of consensus system driven by a nonlinear input.

Key Achievements (Research and Impact)

1. ***Journal impact factor: 9.551, first author*** **A Distributed and Privacy-Aware Speed Advisory System for Optimising Conventional and Electric Vehicle Networks**, *Results are published in top transaction of intelligent transportation system research - IEEE Transactions on Intelligent Transportation Systems*, One of the key ideas to make intelligent transportation systems work effectively is to deploy advanced communication and cooperative control technologies among vehicles and road infrastructures. In this spirit, we propose a consensus-based distributed speed advisory system that optimally determines a recommended common speed for a given area in order that the group emissions, or group battery consumptions, are minimised. Our algorithms achieve this in a privacy-aware manner; that is, individual vehicles do not reveal in-vehicle information to other vehicles or to infrastructure. A mobility simulator is used to illustrate the efficacy of the algorithm, and hardware-in-the-loop tests are given to illustrate user acceptability and ease of deployment of our proposed system

2. ***Journal impact factor: 9.551, first author*** **MPC-CSAS: Multi-Party Computation for Real-Time Privacy-Preserving Speed Advisory Systems**, *Results are published in IEEE Transactions on Intelligent Transportation Systems*, The paper is a direct extension to the state-of-the art work published in the first key achievement paper listed above. More specifically, the new system design proposed in the paper aims to address the real-time requirement for the fast convergence of the algorithm in the practical speed advisory application. Our simulation results show that the proposed algorithm and implementation mechanism can achieve very promising system performance in just one algorithm iteration without using extra ICT infrastructure

3. ***Journal impact factor: 9.551, corresponding author*** **Pedestrian-Aware Engine Management Strategies for Plug-in Hybrid Electric Vehicles**, *This paper was nominated as the best paper by reviewers in IEEE Transaction on Intelligent Transportation Systems. The work itself has been received wide attentions by automotive industry in Ireland such as Nissan,Toyota and Renault*, This work proposes novel context-aware based engine management strategies for Plug-in Hybrid Electric Vehicles (PHEVs) to optimally switch the vehicles between different operation modes in order to maximise the environmental benefits to pedestrians outside of the vehicles. The idea of this work is simple but very effective in the sense that car manufacturer can easily adopt our ideas to further improve their products and services in current automotive market

4. ***Journal impact factor: 4.802, last author and corresponding author*** **Fair and privacy-aware EV discharging strategy using decentralized whale optimization algorithm for minimizing cost of EVs and the EV aggregator**, *Results are published in the leading journal of system engineering - IEEE System Journal*, In this paper, we present a new design of EV discharging strategy in a typical V2G energy trading framework, while leveraging the whale optimization algorithm in a decentralized manner, a metaheuristic algorithm that has been shown effective in solving large-scale centralized optimization problems. We demonstrate that by using simple ideas of data shuffling and aggregation, one can design an EV discharging strategy in a fair, optimal, and privacy-aware manner, where the privacy refers to the fact that no critical information of EVs should be exchanged with the EV aggregator, and vice versa. The fairness implies that a common discharge rate needs to be sought for all EVs so that no one gets better benefits than others in the same V2G program. Simulation results are presented to illustrate the efficacy of our proposed system

5. ***Journal impact factor: 6.15, first author*** **On the Stability and Convergence of a Class of Consensus Systems with a Nonlinear Input**, *Results are published in top journal of system and control theory research*, The objective of this work is to determine conditions under which a certain partially distributed system converges to a Lur'e-like-like scalar system, and to provide a rigorous proof of its stability. A solid example is given of a speed advisory system of vehicles where such a system arises in real engineering practice. Note that the detailed design of this example has been published in the paper presented in the first key achievement listed above

Supervision

2024 **Principle supervisor of 3 research assistants and 1 postdoc researcher**, *DCU*
2023 **Principle supervisor of 2 research assistants and 2 postdoc researchers**, *DCU*
2023 **Principle supervisor of 3 PhD students and co-supervisor of 1 PhD student**, *DCU*
2022 **Principle supervisor of 1 research assistant and 2 postdoc researchers**, *DCU*
2022 **One of my FYP students was named on the Dean's Honours List**, *DCU*
2021 **One of my FYP students won the IBM Opensource Prizes**, *DCU*
2021 **Two of my FYP students won the scholarship for the Ide3a programmes**, *DCU*
2020 **One of my FYP students won the IBM Opensource Prizes**, *DCU*
2019 **Principle supervisor of 1 PhD student and 1 research master student**, *DCU*
2018 **Co-supervisor of 1 PhD student and 1 M.Sc student**, *UCD*

Funding, Awards and Certificates

2025(Funding) **Co-PI: SFI National Challenge Fund (Bohemian)**, *€500k*, DCU
2024(Funding) **PI: Huawei-Insight Collaboration Project**, *€300k+*, DCU
2023(Funding) **PI: Huawei-Insight Collaboration Project**, *€300k+*, DCU
2023(Funding) **Co-PI: SFI Insight PRI Programme**, *€99k+*, DCU
2022(Awards) **DCU Invent Commercialization Award**, DCU
2022(Funding) **PI: SFI Frontiers for the Future Project**, *€320k+*, DCU
2021(Funding) **PI: Huawei-Insight Collaboration Project**, *€270k+*, DCU
2018(Funding) **PI: EU H2020 5G-Solutions**, *€14million overall, €660k to IBM*, IBM Ireland Lab
2014(Funding) **Scholarship for 6th Elgersburg school in system control theory**, *TU Ilemnau*, Germany
2013(Certificate) **Professional certificate in teaching & learning**, *Maynooth University*, Ireland
2012(Funding) **Ph.D. scholarship (3 years fully funded)**, *SFI*, Ireland
2011(Funding) **Doctoral teaching scholarship (4 years fully funded)**, *Maynooth University*, Ireland
2011(Awards) **Agilent technologies award (for best final year project)**, *Maynooth University*, Ireland
2011(Awards) **Best undergraduate student award (ranked 1st)**, *Maynooth University*, Ireland

Technical Skills

OS: Linux, MS Windows
Programming: Python, Matlab & Simulink, C/C++, Java, VHDL
ML&DL: Numpy, Scipy, Sci-Kit Learn, Tensorflow, Keras, Theano, PyTorch & fastai
Control: Classical PI/D control, state estimation (Kalman filtering), modern optimal control techniques
Optimisation: Linear and quadratic programming, distributed constraint optimisation on networked agents, CPLEX and CVXOPT for optimisation
Scientific software: Android studio, SUMO (traffic simulator), OpenDSS (power system simulator), Arduino, NS2 & NS3 (network simulator), Multisim (circuit simulator)
Other software: LaTeX, HSQLDB, EndNote, MS office suite

Scientific Activities

Selected Review: IEEE Internet of Things Journal
IEEE Transactions on Intelligent Transportation Systems
IEEE Transactions on Systems, Man, and Cybernetics: Systems
IEEE Transactions on Control of Network Systems

Editorial Boards: Frontiers in Sustainable Cities (Review Editor), PLOS ONE (Academic Editor), Journal of Information Systems and Operational Research (Associate Editor)

COST Actions: CA 19126 (PED-EU-NET), CA20138 (NEXUSNET) and CA21131 (MultiplEYE)

Organisations: Engineer Ireland Member, IEEE Senior Member, IEEE ITSS Member

Google Scholar Page

Full Publications `https://scholar.google.com/citations?user=woHxot0AAAAJ&hl=en`

Selected Publications

Journals

1. J. Zhu, W. Cai, M. Zhang, Y. Liu and **M. Liu**[*]. "*Saliency detection for underwater moving object with sonar based on motion estimation and multi-trajectory analysis*", in Pattern Recognition, 2025 **(IF: 7.5)**
2. Y. Zhang, Q. Liu, C. Wen, **M. Liu**, X. Yang, H. Xu and J. Li. "*Predictive equivalent consumption minimization strategy based on driving pattern personalized reconstruction*", in Applied Energy, 2024 **(IF: 10.1)**
3. S. Gohari, S. Silvia, T. Ashrafian, T. Konstantinou, E. Giancola, B. Prebreza, L. Aelenei, L. Murauskaite and **M. Liu**. "*Unraveling the implementation processes of PEDs: Lesson learned from multiple urban contexts*", in Sustainable Cities and Society, 2024 **(IF: 10.5)**
4. S. Yan, N. O'Connor and **M. Liu**[*]. "*U-Park: A User-Centric Smart Parking Recommendation System for Electric Shared Micromobility Services*", in IEEE Transactions on Artificial Intelligence, 2024 **(IF: 7.7)**
5. S. Yan, H. Fang, J. Li, T. Ward, N. O'Connor and **M. Liu**[*]. "*Privacy-Aware Energy Consumption Modeling of Connected Battery Electric Vehicles using Federated Learning*", in IEEE Transactions on Transportation Electrification, 2023 **(IF: 7.2)**
6. H. Nguyen, S. Zhu and **M. Liu**[*]. "*A Survey on Graph Neural Networks for Microservice-Based Cloud Applications*", in Sensors, 2022 **(IF: 3.847)**
7. H. Wu, N. O'Connor, J. Bruton, A. Hall and **M. Liu**[*]. "*Real-Time Anomaly Detection for an ADMM-Based Optimal Transmission Frequency Management System for IoT Devices*", in Sensors, 2022 **(IF: 3.847)**
8. J. Li, Y. Gu, C. Wang, **M. Liu**, Q. Zhou, G. Lu, DT. Pham and H. Xu. "*Pedestrian-aware supervisory control system interactive optimization of connected hybrid electric vehicles via fuzzy adaptive cost map and bees algorithm*", in IEEE Transactions on Transportation Electrification, 2021 **(IF: 6.519)**
9. S. Gohari Krangsas, K. Steemers, T. Konstantinou, S. Soutullo, **M. Liu**, E. Giancol, B. Prebreza, T. Ashrafian and N. Maas. "*Positive Energy Districts: Identifying Challenges and Interdependencies*", in Sustainability, 2021 **(IF: 3.889)**
10. Y. Gu, A. Zalkikar, **M. Liu**[*], L. Kelly, A. Hall, K. Daly and T. Ward. "*Predicting medication adherence using ensemble learning and deep learning models with large scale healthcare data*", in Nature Scientific Reports, 2021 **(IF: 5.516)**
11. Y. Gu and **M. Liu**[*]. "*Fair and privacy-aware EV discharging strategy using decentralized whale optimization algorithm for minimizing cost of EVs and the EV aggregator*", in IEEE System Journal, 2021 **(IF: 4.802)**
12. **M. Liu**, L. Cheng, Y. Gu, Y. Wang, Q. Liu and N. O'Connor. "*MPC-CSAS: Multi-Party Computation for Real-Time Privacy-Preserving Speed Advisory Systems*", in IEEE Transactions on Intelligent Transportation Systems, 2021 **(IF: 9.551)**
13. **M. Liu**, J. N. Sawaya, F. Lecue and R. Shorten. "*A Distributed Markovian Parking Assist System*", in IEEE Transactions on Intelligent Transportation Systems, 2018 **(IF: 9.551)**
14. A. Herrmann, **M. Liu**, F. Pilla and R. Shorten. "*A New Take on Protecting Cyclists in Smart Cities*", in IEEE Transactions on Intelligent Transportation Systems, 2018 **(IF: 9.551)**

[*] indicates corresponding author.

15. Y. Gu, **M. Liu***, J. Naoum-Sawaya, E. Crisostomi, G. Russo and R. Shorten. "*Pedestrians-Aware Engine Management Strategies for Plug-in Hybrid Electric Vehicles*", in IEEE Transactions on Intelligent Transportation Systems, 2017 **(IF: 9.551)**
16. **M. Liu***, F. Wirth, M. Corless and R. Shorten. "*On the Stability and Convergence of a Class of Consensus Systems with a Nonlinear Input*", in Automatica, 2017 **(IF: 6.15)**
17. J. Naoum-Sawaya, E. Crisostomi, **M. Liu***, Y. Gu and R. Shorten. "*Smart Procurement of Naturally Generated Energy (SPONGE) for Plug-in Hybrid Electric Buses*", in IEEE Transactions on Automation Science and Engineering, 2017 **(IF: 9.551)**
18. **M. Liu***, R. H. Ordóñez-Hurtado, F. Wirth, Y. Gu, E. Crisostomi, and R. Shorten. "*A Distributed and Privacy-Aware Speed Advisory System for Optimizing Conventional and Electric Vehicle Networks*", in IEEE Transactions on Intelligent Transportation Systems, 2016 **(IF: 9.551)**
19. **M. Liu***, P. McNamara, R. Shorten and S. McLoone. "*Residential Electrical Vehicle Charging Strategies - the Good, the Bad and the Ugly.*" in Journal of Modern Power Systems and Clean Energy, 2015. **(IF: 4.469)**
20. E. Crisostomi, **M. Liu**, M. Raugi and R. Shorten. "*Plug-and-Play Distributed Algorithms for Optimized Power Generation in a Microgrid.*" in IEEE Transactions on Smart Grid, 2014. **(IF: 10.275)**

Conferences

1. M. Shah, J. Li and **M. Liu***. "*On Scalable Design for User-Centric Multi-Modal Shared E-Mobility Systems using MILP and Modified Dijkstra's Algorithm*" in Proceedings of the IEEE Symposium Series on Computational Intelligence (SSCI), 2025.
2. F. Chiumento and **M. Liu***. "*Leveraging Multimodal Models for Enhanced Neuroimaging Diagnostics in Alzheimer's Disease*" in Proceedings of the IEEE International Conference on Big Data, 2024.
3. Y. Ding, S. Yan, M. Shah, H. Fang, J. Li and **M. Liu***. "*Data-driven Energy Consumption Modelling for Electric Micromobility using an Open Dataset*" in Proceedings of the IEEE Transportation Electrification Conference & Expo, 2024.
4. S. Yan, S. Zhu, J. Fernandez, E. Sanchez, Y. Gu, N. O'Connor and **M. Liu***. "*Breathing Green: Maximising Health and Environmental Benefits for Active Transportation Users Leveraging Large Scale Air Quality Data*" in Proceedings of the IEEE 26th International Conference on Intelligent Transportation (ITSC), 2023.
5. H. Nguyen, S. Zhu and **M. Liu***. "*Graph-PHPA: Graph-based Proactive Horizontal Pod Autoscaling for Microservices using LSTM-GNN*" in Proceedings of the 11th IEEE International Conference on Cloud Networking (CLOUDNET), 2022.
6. H. Wu and **M. Liu***. "*Lane-GNN: Integrating GNN for Predicting Drivers' Lane Change Intention*" in Proceedings of the 25th IEEE International Conference on Intelligent Transportation Systems (ITSC), 2022.
7. S. Yan, **M. Liu*** and N. O'Connor. "*Parking Behaviour Analysis of Shared E-Bike Users Based on a Real-World Dataset–A Case Study in Dublin, Ireland*" in Proceedings of the 95th IEEE Vehicular Technology Conference (VTC2022-Spring), 2022.
8. C. Muli, S. Park and **M. Liu***. "*A Comparative Study on Energy Consumption Models for Drones*" in Proceedings of the Global IoT Summit, 2022.
9. **M. Liu***. "*Fed-BEV: A Federated Learning Framework for Modelling Energy Consumption of Battery Electric Vehicles*", in Proceedings of the 94th Vehicular Technology Conference (VTC2021-Fall), 2021.

10. H. Lee, **M. Liu**, H. Riaz, N. Rajasekaren, M. Scriney and A. F. Smeaton. " *Attention Based Video Summaries of Live Online Zoom Classes*", in AAAI-2021 Workshop on AI Education: "Imagining Post-COVID Education with AI" (TIPCE-2021), 2021.

11. H. Wu, N. O'Connor, J. Bruton and **M. Liu**. "*An ADMM-based Optimal Transmission Frequency Management System for IoT Edge Intelligence*" in Proceedings of the 7th IEEE World Forum on Internet of Things (WF-IoT), 2021.

12. Z. Chen, H. Wu, N. O'Connor and **M. Liu**. "*A Comparative Study of Using Spatial-Temporal Graph Convolutional Networks for Predicting Availability of Bike Sharing Schemes*" in Proceedings of the 24th IEEE International Conference on Intelligent Transportation Systems (ITSC), 2021.

13. B. Chen, Y. Zhang, G. Iosifidis and **M. Liu**. "*Reinforcement Learning on Computational Resource Allocation of Cloud-based Wireless Networks*, in Proceedings of the 6th IEEE World Forum on Internet of Things, 2020.

14. **M. Liu**, Y. Gu, E. Crisostomi and R. Shorten. "*Identification of new patterns in urban traffic flows*" in Proceedings of 2018 International Conference on Control Technology and Applications (CCTA), 2018.

15. **M. Liu**, Y. Gu, J. Monteil, J. Epperlein, S. Zhuk and R. Shorten. "*Route Prediction Through Bayesian Classification with Markov Chains*", in Proceedings of the 21st IEEE International Conference on Intelligent Transportation Systems, 2018.

16. **M. Liu***, R. H. Ordóñez-Hurtado, F. Wirth, Y. Gu, E. Crisostomi, and R. Shorten. "*An intelligent speed advisory system for electric vehicles*" Proceedings of 2015 International Conference on Connected Vehicles and Expo (ICCVE), pp. 84-88, 2015.

17. **M. Liu***, E. Crisostomi, Y. Gu and R. Shorten. "*Optimal Distributed Consensus Algorithm for Fair V2G Power Dispatch in a Microgrid*" Proceedings of 2014 IEEE International Electric Vehicle Conference (IEVC), pp. 1-7, 2014

18. Y. Gu, **M. Liu**, E. Crisostomi and R. Shorten. "*Optimised Consensus for Highway Speed Limits via Intelligent Speed Advisory Systems*" Proceedings of 2014 International Conference on Connected Vehicles and Expo (ICCVE), pp. 1052-1053, 2014.

19. **M. Liu***, P. McNamara, R. Shorten and S. McLoone. "*Distributed Consensus Charging for Current Unbalance Reduction*" Proceedings of 18th IFAC World Congress, vol. 47, no. 3, pp. 3146-3151, 2014.

20. **M. Liu***, S. Stüdli, R. Middleton, S. McLoone, R. Shorten and J. Braslavsky. "*On-Off based Charging Strategies for EVs Connected to a Low Voltage Distribution Network*" Proceedings of 2013 IEEE Asia-Pacific Power and Energy Engineering Conference (APPEEC), pp. 1-6, 2013.

21. **M. Liu***, W. Griggs, C. King, F. Wirth, P.Borrel and R. Shorten. "*Applying a QoS-based Fleet Dimension Method to Reduce Fleet Emissions*" Proceedings of 2013 International Conference on Connected Vehicles and Expo (ICCVE), pp. 732-733, 2013.

22. **M. Liu***, P. McNamara and S. McLoone. "*Fair Charging Strategies for EVs Connected to a Low-Voltage Distribution Network*" Proceedings of the 4th IEEE/PES Innovative Smart Grid Technologies Europe (ISGT EUROPE), pp. 1-5, 2013.

23. **M. Liu***, E. Crisostomi, M. Raugi and R. Shorten. "*Optimal Distributed Power Generation for Thermal and Electrical Scheduling in a Microgrid*" Proceedings of the 4th IEEE/PES Innovative Smart Grid Technologies Europe (ISGT EUROPE), pp. 1-5, 2013.

24. **M. Liu*** and S. McLoone. "*Investigation of AIMD based EV Charging Strategies for EVs Connected to a Low-Voltage Distribution Network*" Intelligent Computing for Sustainable Energy and Environment, pp. 433-441, 2012.