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Special Session on

Computational Intelligence in Renewable Energy

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Organisers:

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Aim and Scope:

Computational Intelligence (CI) in Renewable Energy is an exciting new interdisciplinary research area drawing together researchers from diverse fields. Recent advances in CI are being becoming increasingly useful for solving significant renewable energy and smart grid-related problems. All CI techniques (e.g. evolutionary computation, knowledge-based reasoning, vision, machine/deep learning) with applications in the realm of renewable/sustainable/green energy and smart grids are suitable for this special session.

More specifically, topics of interest include but are not limited to:

- Energy-related scheduling problems (e.g. smart appliance scheduling).
- Intelligent agents for trading energy.
- Robust renewable energy forecasting using CI techniques (e.g. solar, wind, hydro).
- CI applications in smart grids and the internet of energy.
- Complex design optimisation problems (e.g. wind farm layouts).
- Hybrid/electric vehicle applications of CI.
- Machine learning, data mining and big data techniques applied to massive energy datasets (e.g. non-intrusive load monitoring).
- Surrogate modelling of expensive energy-related evaluation functions.
- Multi-objective optimisation of expensive simulations to improve energy efficiency (e.g. building design optimisation).
- Deployment of CI-based energy systems for end-users.
- Aesthetic and other environmental impacts resulting from the use of CI in renewable energy.
- Open source toolkits and benchmarks for energy-related problems.

Michael Mayo is Senior Lecturer at the Department of Computer Science, University of Waikato, New Zealand. His research interests include evolutionary algorithms and machine learning, and their applications in areas such as renewable energy optimisation, image analysis and computational finance. He has serving as a PC member for several conferences including IES, AusAI, EvoStar and IEEE CEC.

Jeremiah Deng is Associate Professor at the Department of Information Science, University of Otago, New Zealand. His research interests are in machine learning and data mining, pattern recognition, and sensor networks. He has served as a Senior PC member to AusAI13, TPC co-chair of IVCNZ12, and TPC member of ACCV, ICNC, and ICC.