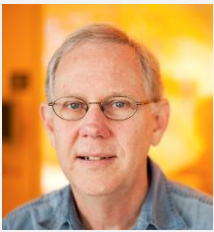# THE UNIVERSITY of ADELAIDE

Adelaide Power System Summer School (APSSS)

"APPLICATION OF ARTIFICIAL INTELLIGENCE IN POWER SYSTEMS AND SMART GRIDS"

Professor Ian Hiskens (keynote speaker), *University of Michigan at Ann Arbor*

IEEE Fellow, EA Fellow

Professor at the University of Wisconsin-Madison (2002-2008)

Visiting Professor at the University of Illinois at Urbana-Champaign (1999-2002)

Senior Lecturer at the University of Newcastle, Australia (1992-1999)

Professor Anna Scaglione, *Arizona State University*

IEEE Fellow

Distinguished Lecturer of the IEEE Signal Processing Society

Held academic position at the University of California, Davis

Visiting professor to Stanford University and EPFL

Assoc. Professor Spyros Chatzivasileiadis, *Technical University of Denmark (DTU)*

PhD, ETH Zurich (2013)

Postdoc fellow at MIT and Lawrence Berkeley National Lab (LBNL), the USA

Assist. Professor Zoltan Nagy, *University of Texas at Austin*

PhD, ETH Zurich (2011)

Visiting researcher at MIT in 2009 and postdoc at ETH Zurich

Co-founder of award-winning high-tech spin-off Femtotools in 2007.

Senior Lecturer Archie Chapman, *University of Queensland*

PhD, Uni. Southampton (2009)

Researcher at The University of Sydney for 8+ years

Advisor to PowerAsia in relation to the NEM, smart grids and decentralized electricity networks

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Three Student Awards

Full registration fee will be reimbursed to the awardees

1 Unit (2.5 ECTS)
credit for students

15 CPD hours
certificate for industry delegates

AU$ 550
for academic delegates

AU$ 1,200
for industry delegates

Lunchtime Poster Display

For all delegates to share their views, research, engineering works, challenges, solutions, and opportunities

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Taxes, light breakfast, lunch, and tea/coffee for four days as well as welcome dinner are included.

For more information, contact **Dr Ali Pourmousavi**: +61 8 8313 8311, theapsss@adelaide.edu.au

10-13 February, 2020   The University of Adelaide, North Terrace Campus, Adelaide, SA, Australia

ADELAIDE POWER SYSTEM SUMMER SCHOOL (APSSS)

APSSS 2020: "Application of Artificial Intelligence (AI) in power systems and smart grids"

10-13 February 2020
The University of Adelaide
North Terrace Campus
Adelaide, South Australia

About the event

Power system infrastructure, operation, planning, monitoring and maintenance are undergoing a tremendous transformation. Old practices are replacing with contemporary technology-based methods at a fast pace. The sheer magnitude of changes demands frequent in-depth training to learn about new practices and tools. This is felt strongly in South Australia with the largest penetration of intermittent renewable resources and the largest single/combined large-scale battery storage per capita in the world.

The inaugural Adelaide Power Systems Summer School (APSSS), which is planned to become an annual event, is designed to attract prominent scientists from around the globe to teach emerging practices, concepts, technologies and tools in power systems and smart grids engineering to the audience. It is designed to fulfil the learning requirements of students, researchers and engineers. The APSSS will present fundamental theories and demonstrate how such knowledge can be put into practice, resulting in a first-class learning experience. Every session involves *teaching* and *hands-on exercises* using *open-source tools*. Industry participants receive **15 CPD hours**.

In addition, APSSS provides a chance for networking with world-renowned scientists, industry practitioners and researchers, and peers from academia in Australia and abroad. In addition, the event fosters and encourages networking among all attendees through fun activities. "*Lunchtime poster display*," all delegates get a chance to introduce their research, immediate challenges, and future plans to their peers. Moreover, a half day "*winery tour*" in the mesmerising and picturesque Adelaide hills provides an excellent opportunity for everyone to socialise and relax towards the end of the school.

Speakers

We have 5 leading experts in the field to teach at APSSS 2020.

- Professor Ian Hiskens (*keynote speaker*), *University of Michigan at Ann Arbor, the USA*

- Professor Anna Scaglione, IEEE Fellow, *Arizona State University, the USA*

- Dr Spyros Chatzivasileiadis, *Associate Professor at the Technical University of Denmark (DTU), Denmark*

- Dr Zoltan Nagy, *Assistant professor at The University of Texas at Austin, the USA*

- Dr Archie Chapman, *Senior Lecturer at The University of Queensland, Australia*

For more detail, please check out our website[1].

> **Click here to submit an EoI today. It only takes 2-3 minutes.**

FAQ

1- What is the event about?

It is a four-day *teaching* event with *hands-on experience* for first-class knowledge transfer as well as networking with the greatest scientists in the field.

2- Who should attend APSSS 2020?
The content of the lectures is designed to be as inclusive and general as possible. Engineers and researchers from the utility, consultancy, services and manufacturing companies learn several useful mathematical tools that can revolutionise their day-to-day works. CPD training certificate will be issued to attendees from the industry.

3- What do I learn?
APSSS 2020 delivers first-class teaching sessions on artificial intelligence (AI) and its application in power systems engineering. More specifically, *artificial neural network*, *deep learning*, *Markov models and Bayesian networks*, *model-based and model-free reinforcement learning*, *classification* and *clustering* will be taught in APSSS 2020.

4- What is the schedule?
APSSS 2020 will take place on February 10-13, 2020.

5- Where does the event take place?
APSSS 2020 will be held in the beautiful North Terrace Campus, the University of Adelaide, Adelaide, Australia.

6- How much is the registration fee?
AU$1,200 for industry delegates including GST. It does not involve accommodation and airfare expenses.

7- How should I register?
First, you need to submit an expression of interest. It will help the organising committee to learn about your background and immediate needs so that the teaching style and materials can be adjusted based on the best collective interests of the cohort. You will then be invited to register in the event

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[1] https://www.theapsss.com/

via email in a couple of days after submitting the EoI. It only takes 1-2 minutes to fill the EoI form.

8- Is poster mandatory to attend APSSS?
No, but we strongly suggest you seize the opportunity to showcase your immediate challenges and engineering/research products/solutions with your peers. Only **A1 portrait posters** are accepted. Posters will be publicly available on our website after the event.

FOR FURTHER ENQUIRIES

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DISCLAIMER

The information in this publication is current at the time of printing and subject to change. You can find updated information on https://www.theapsss.com/ or contact us at +61 8 8313 8311.

The University of Adelaide assumes no responsibility for the accuracy of information provided by the third parties.

SCHEDULE

* The program schedule is subject to slight changes. Please check out our website for the updated information.
** Light breakfast will be served every day from 8:30 AM to 9:00 AM, except Day 1 which starts from 8:10 AM to 8:40 AM.
*** Lunch and "lunchtime poster display" will be held every day from 12:00 PM to 1:30 PM, except for Day 3 and 4.
**** We will have five to six sessions of 50-minute lectures every day with 10 minutes coffee/tea break in between.

Day 1: Opening Remarks 8:40 AM – 9:00 AM	**Dr Ali Pourmousavi Kani** opens the first APSSS, share information about the school program, and housekeeping rules.	
Day 1: Keynote Speech 9:00 AM – 11:00 AM	**Professor Ian Hiskens** will deliver the keynote speech on the past, present, and future of AI in the power systems and smart grids.	
Day 1: Artificial Neural Network 11:10 AM – 12:00 PM	**Associate Professor Spyros Chatzivasileiadis** teaches the application of artificial neural networks in power systems operation.	
Day 1: Deep Learning 1:30 PM – 4:20 PM	**Associate Professor Spyros Chatzivasileiadis** teaches the application of deep learning in power systems operation.	
Day 1: Welcome Dinner 7:00 PM – 10:00 PM	**TBA.**	
Day 2: Markov Models and Bayesian Network 9:00 AM - 2:20 PM	**Professor Anna Scaglione** teaches Markov models and Bayesian network and their application in power system engineering.	
Day 2: Reinforcement Learning 2:30 PM - 4:20 PM	**Assist. Professor Zoltan Nagy** teaches model-free reinforcement learning and its application in demand response and smart grids.	
Day 3: Reinforcement Learning 9:00 AM - 11:50 PM	**Assist. Professor Zoltan Nagy** teaches model-based reinforcement learning and its application in demand response and smart grids.	
Day 3: Winery Tour 1:00 PM - 6:00 PM	Visiting three wineries with sample tasting in scenic McLaren Vale	
Day 4: Clustering Methods 9:00 AM - 11:50 PM	**Senior Lecturer Archie Chapman** teaches clustering methods and their application in power systems and smart grids.	
Day 4: Classification Techniques 1:00 PM - 1:50 PM	**Senior Lecturer Archie Chapman** teaches classification methods and their application in power systems and smart grids.	
Day 4: SAPN Workshop 2:00 PM - 4:00 PM	**SA Power Networks** will run a 2-hour workshop to explore AI-based solutions for real-world challenges that SAPN is faced.	
Day 4: School Wrap-up 4:10 PM - 4:30 PM	**Dr Ali Pourmousavi Kani** closes the first APSSS.	

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