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Topic: Non-iterative Learning Algorithms

Abstract:

This presentation will primarily focus on learning algorithms with reduced iterations or no iterations at all. Some of the algorithms have closed form solutions. Some of the algorithms do not adjust the structures once constructed. The main algorithms considered in this talk are randomized neural networks, kernel ridge regression and random forest. These non-iterative methods have attracted attention of researchers due to their high performance in terms of accuracy as well as their ability to train fast due to their non-iterative properties or closed form training solutions. For example, the random forest delivers excellent classification performance. The presentation will also include the basic methods as well as their state of the art realizations. These algorithms will be benchmarked using classification and time series forecasting. Future research directions will also be suggested.

Bio:

Ponnuthurai Nagarathnam Suganthan (or P N Suganthan) received the B.A degree, Postgraduate Certificate and M.A degree in Electrical and Information Engineering from the University of Cambridge, UK in 1990, 1992 and 1994, respectively. After completing his PhD research in 1995, he served as a pre-doctoral Research Assistant in the Dept of Electrical Engineering, University of Sydney in 1995-96 and a lecturer in the Dept of Computer Science and Electrical Engineering, University of Queensland in 1996-99. He moved to NTU in 1999. He is an Editorial Board Member of the Evolutionary Computation Journal, MIT Press (2013-2018). He is an associate editor of the IEEE Trans on Cybernetics (2012 -), IEEE Trans on Evolutionary Computation (2005 -), Information Sciences (Elsevier) (2009 -), Pattern Recognition (Elsevier) (2001 -), Applied Soft Computing (2018-) and Int. J. of Swarm Intelligence Research (2009 -) Journals. He is a founding co-editor-in-chief of Swarm and Evolutionary Computation (2010 -), an SCI Indexed Elsevier Journal. His co-authored SaDE paper (published in April 2009) won the "IEEE Trans. On Evolutionary Computation outstanding paper award" in 2012. His former PhD student, Dr Jane Jing Liang, won the IEEE CIS Outstanding PhD dissertation award, in 2014. His research interests include swarm and evolutionary algorithms, pattern recognition, big data, deep learning and applications of swarm, evolutionary & machine learning algorithms. He was selected as one of the highly cited researchers by Thomson Reuters in 2015, 2016, 2017, and 2018 in computer science. He served as the General Chair of the IEEE SSCI 2013. He has been a member of the IEEE since

1990 and Fellow since 2015. He was an elected AdCom member of the IEEE Computational Intelligence Society (CIS) in 2014-2016. He is an IEEE CIS distinguished lecturer (2018-2020).

Google Scholar:

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