

Call for Papers
Systems Science & Control Engineering
Special issue on “Deep Learning for Cognitive Psychology”

Guest Editors: Gunasekaran Manogaran, Hassan Qudrat-Ulla and Qin Xin

Important dates

Paper Submission Deadline	25-04-2020
Author notification	15-07-2020
Revised papers submission	15-08-2020
Final Acceptance	20-10-2020

Important notes

- Submission should be made via the “Submit an article” button on the journal homepage: www.tandfonline.com/tssc
- Please use the following code during submission to gain a 50% waiver on the Open Access Article Publishing Charge (APC): TSSC-2020-C3165
- The APC is \$600 USD
- Please also quote the special issue title during submission

Purpose:

Deep learning is one of the major disciplines within Artificial Intelligence (AI) that uses complex algorithms to make computer understand any task as what a human does. Neural networks are the base platform on top of which deep learning algorithms are developed. It can be easily said that most of the sophisticated and AI based systems use deep learning algorithms for feature extraction, understanding, classification and prediction. With the growing volumes of digital data which is available courtesy of several social media platforms, deep learning can serve as a vital catalyst in discovering new patterns and trends from these digital data. Deep learning concepts have been applied across a wide range of business and commercial activities such as medicine, e-commerce, stock market analysis and predictions, e-banking transactions, retail promotions etc. Deep learning can be applied in any space of digital finance and marketing. However, a sufficient amount of “training” data should be available. The ease and scalable aspects of deep learning principles make it an instantaneous choice for adapting into any domain for making decisions. Deep Learning can also be considered as an inter-disciplinary, since several other disciplines such as Computer Vision, Cognitive Science, Neural Networks, Data Mining, Natural Language Processing (NLP), robotics and mathematics can be accessed. All

these disciplines are fused together and thereby the intelligent agents are trained to understand and adapt to the surrounding environment according to the context.

Cognition can be defined as the process by which input from any sensory device is fetched, transformed, expanded, reduced, and recovered and finally being used. Cognition is instinctive and driven through stimulus and is more concerned with the stimulations received by different sense organs and these stimulations in turn shaping up into different actions. Cognitive psychology deals with the study of mind mapped processes such as listening, understanding, attentiveness, interest, use of language, memory, analytical thinking, learning, creative thoughts and problem solving. Cognitive psychology has been considered as one of the major research areas especially when it comes to learning and understanding the human behavior according to the stimulus input received by the sensory organ. This aspect has been imbibed into deep learning to study, understand and develop systems that can feed information from the stimulated input and transform these inputs into decisions. Several behavioral traits used to understand the deep learning functions have been coupled with in psychology to develop high end and sophisticated human cognitive functions. However, the multilayered nature and also the fact that deep learning neural networks are considered as statistical learners make it less adaptable and scalable.

The challenge especially when Deep Learning principles are applied for cognitive psychology lies with the fact that these stimulated inputs should be represented as suitable inputs to the Deep Learning based classifier and the mapping functions should be clearly defined and encoded based on these inputs. The success of Deep Learning based solutions for cognitive psychology is hugely reliant on the accuracy and decision-making capabilities of the cognitive mapping functions.

This special issue on Deep Learning for Cognitive Psychology serves as an excellent platform to exchange innovative, creative and novel ideas related to exploring the opportunities of applying Deep Learning principles across cognitive psychology space.

Scope and Topics:

The following topics are welcome but not restricted to:

- Review and analysis of implications of Deep Learning in cognitive psychology.
- Enhancing one shot word learning in cognitive psychology.
- Designing and developing effective Deep Learning based matching functions for cognitive psychology.
- Significance of Deep Learning in shape analysis and cognitive psychology.
- Application of different biases by Deep Learning networks for cognitive psychology.

- Matching network model architectures and Deep Learning based training for cognitive psychology.
- Modeling human word learning and its implication in human psychology.
- Stimulus data probing and analysis in cognitive psychology.
- Applications of deep learning to capture cognitive and psychological features.
- Deep Learning based psychological pattern analysis for wearable devices, sensors and phones.
- Deep Learning based Smart decision systems based on facial expressions and behavioral traits.
- Deep Learning based linguistic and speech analysis to study human behavior.
- Deep Learning based therapy to treat psychological disorders.
- Deep Learning inspired cognitive human behavioral analysis.
- Deep Learning based personality prediction and solutions to behavioral abnormalities.

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Dr. Gunasekaran Manogaran is an honorary Editor of ICSES Interdisciplinary Transactions on Cloud Computing, IoT, and Big Data. He is currently working as a Big Data Scientist in University of California, Davis, USA. He is a visiting scientist in Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China. He received his PhD from the Vellore Institute of Technology University, India. He received his Bachelor of Engineering and Master of Technology from Anna University and Vellore Institute of Technology University respectively. He has worked as a Research Assistant for a project on spatial data mining funded by Indian Council of Medical Research, Government of India. His current research interests include data mining, big data analytics and soft computing. He is the author/co-author of papers in conferences, book chapters and journals. He got an award for young investigator from India and Southeast Asia by Bill and Melinda Gates Foundation, USA. He is a member of International Society for Infectious Diseases and Machine Intelligence Research labs. He is on the reviewer board of

several international journals and has been a member of the program committee for several international/national conferences and workshops. He currently serves on Technical Program Committee for 2018 IEEE International Conference on Consumer Electronics (ICCE) in Las Vegas, USA. He is the guest editor for various international journals including IEEE, Springer, Elsevier, Inderscience, IGI, Taylor & Francis and Emerald publishing. He is a Co-Investigator for the project entitled "Agent Based Modeling of HIV epidemic in state of Telangana, India" funded by Pitt Public Health, Pittsburgh University, USA.

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Dr. Hassan Qudrat-Ullah earned his Ph. D. (Decision Sciences) in 2002 from NUS Business School, National University of Singapore. Hassan did post-doctoral fellowship at Carnegie Mellon University, USA, in 2002-2003 before joining York University in 2003. His research contributions from 2011 to 2014 include two books Better Decision Making in Complex, Dynamics Tasks (Springer, 2014), and an edited volume Energy Policy Modeling in 21st Century (Springer, 2013); he also contributed seven journal articles, two book chapters and he has also been invited to several conference proceedings and invited talks. His journal articles are published in such journals as Decision Support Systems, Energy (2 articles), Telecommunication Systems, and International Journal of Technology Management. Hassan's research interests include dynamic decision making, system dynamics modeling, computer-simulated interactive learning environments, and energy planning models. Hassan's work has been published in Energy, Energy Policy, Decision Support Systems, Computers & Education, and Simulation & Gaming. He is the Editor-in-Chief of International Journal of Complexity in Applied Science and Technology and Associate Editor of International Journal of Global Energy Issues. He has published more than 70 research items and has been cited around 900 times. He has Google scholar h-index of 16 i10-index of 20; his Research Gate score is 24.39. He has received Excellence in Teaching Award, Excellence in Research Award and 2016-17 Dean's Award for Distinction in Research at York University.

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Dr. Qin Xin graduated with his Ph.D in Department of Computer Science at University of Liverpool, UK in December 2004. Currently, he is working as a professor of Computer Science in the Faculty of Science and Technology at the University of the Faroe Islands (UoFI), Faroe Islands. Prior to joining UoFI, he had held variant research positions in world leading universities and research laboratory including Senior Research Fellowship at Universite Catholique de Louvain, Belgium, Research Scientist/Postdoctoral Research Fellowship at Simula Research Laboratory, Norway and Postdoctoral Research Fellowship at University of Bergen, Norway. His main research focus is on design and analysis of sequential, parallel and distributed algorithms for various communication and optimization problems in wireless communication networks, as well as cryptography and digital currencies including quantum money. Moreover, he also investigates the combinatorial optimization problems with applications in Bioinformatics, Data Mining and Space Research. Currently, he is serving on Management Committee Board of Denmark for several EU ICT projects and has produced more than 70 peer reviewed scientific papers. His works have been published in leading international conferences and journals, such as ICALP, ACM PODC, SWAT, IEEE MASS, ISAAC, SIROCCO, IEEE ICC, Algorithmica, Theoretical Computer Science, Distributed Computing, IEEE Transactions on Computers, Journal of Parallel and Distributed Computing, IEEE Transactions on Dielectrics and Electrical Insulation, and Advances in Space Research. He has been very actively involved in the services for the community in terms of acting (or acted) on various positions (e.g., Session Chair, Member of Technical Program Committee, Symposium Organizer and Local Organization Co-chair) for numerous international leading conferences in the fields of distributed computing, wireless communications and ubiquitous intelligence and computing, including IEEE MASS, IEEE LCN, ACM SAC, IEEE ICC, IEEE Globecom, IEEE WCNC, IEEE VTC, IFIP NPC, IEEE Sarnoff and so on. He is the Organizing Committee Chair for the 17th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT 2020, Torshavn, Faroe Islands). Currently, he also serves on the editorial board for more than ten international journals.