Seminar

Deep learning and its application on face recognition and medical image analysis

Time: Monday, April 24, 11am to 11:30am

Place: ICT3.98

Note: Further discussion is arranged from 11:30am to 1pm. ***A light lunch is provided from 12pm, please RSVP to Jasmine.McGee@newcastle.edu.au by tomorrow Friday April 21st.***

Title: Deep learning and its application on face recognition and medical image analysis

Speaker: Prof Linlin Shen, and his team members, Shenzhen University, China

Abstract

Deep learning has become famous in recent years. It achieves state of the art performance in many areas of artificial intelligence, and in computer vision and image processing. In this talk, professor Shen will give a brief introduction of deep learning and its application on face recognition and medical image analysis. Professor Shen and his team worked in face recognition and medical image analysis for years and gained a lot of scientific research achievement. In face recognition, they achieved the state of the art performance on The Facial Recognition Technology (FERET) Database. The accuracy was above 99% for all four subsets. The production has been used for security checks at train stations and the G20 summit at Hangzhou. In this area, the computer has outperformed the human. In cell image recognition, the team also achieved the state of art performance. The convolutional neural network (CNN) and fully connected network (FCN) based methods were the winners of the International Contest on Pattern Recognition Techniques for Indirect Immunofluorescence Images, held by ICIP 2013 and ICPR 2016. In chest x-ray radiographs recognition, the team also achieved best performance. The CNN based lung nodule detection method can detect 99% visible lung nodules when FPs per image was 0.4, which is already better than a radiologist. In closing, we will give a discussion of the future development of deep learning and its application.

Speakers' CV

Linlin Shen received the B.Sc. degree from Shanghai Jiaotong University, Shanghai, China, and the Ph.D. degree from the University of Nottingham, Nottingham, U.K. He was a Research Fellow with the University of Nottingham, working on MRI brain image processing. He is currently a Professor and the Director of the Computer Vision Institute, College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China. His research interests include Gabor wavelets, facial recognition, analysis/synthesis, and medical image processing.

Prof. Shen was listed as the Most Cited Chinese Researcher by Elsevier. He received the Most Cited Paper Award from the journal of Image and Vision Computing. His cell classification algorithms were the winners of the International Contest on Pattern Recognition Techniques for Indirect Immunofluorescence Images held by ICIP 2013 and ICPR 2016.

Yuexiang Li received a BEng in Telecommunications Engineering from Beijing University of Posts and Telecommunications in 2011, then an M.S. degree in Electronic Engineering from Hong Kong University of Science and Technology in 2012. In late 2012, he began his Ph.D in Electronic Engineering in University of Nottingham, Ningbo, China (UNNC) and graduated in 2016.

He joined computer vision institute, Shenzhen University, Shenzhen, China as Research Fellow in 2016. His research interests include bioelectronics engineering and machine learning. The principal aim of his work is to establish a robust monitoring system for cells using image processing techniques related to the area of pattern recognition and computer vision.

Xuechen Li received the B.Sc. degree in electric information engineering from Northwestern Polytechnical University, Xi'an, China, the M.S. degree in detection technology from Guangdong University of Technology, Guangzhou, China, and the Ph.D. degree in information technology from The University of Newcastle, Callaghan, NSW, Australia, in 2009, 2012, and 2016, respectively.

He is currently a post-doctor at the College of Computer Science and Software Engineering, Shenzhen University, Shenzhen, China. His research interests include medical image processing and machine learning and applications on CXR and CT images