GIAN
(GLOBAL INITIATIVE OF ACADEMIC NETWORKS)

(Global Initiative of Academic Network)

Artificial Intelligence for MR Brain Image Processing

(October 9, 2017-October 18, 2017)

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Overview

Brain diseases are one of the leading cause of death in people with different age groups across the globe. These diseases can be of different types such as cerebrovascular disease (stroke), neoplastic diseases (brain tumor), infectious diseases, and degenerative diseases. Almost all of the brain diseases cause serious issues in the human brain and sometimes prompt to death. Early detection of such diseases not only help the radiologist to treat better, but also reduces the mortality rate. As a consequence, many automated pathological brain detection systems (PBDS) have been proposed in past years in order to arrive at correct and quick clinical decisions.

Magnetic resonance imaging (MRI) is the most popular advanced neuroimaging used in both hospitals and institutes, due to its better resolution of brain tissues and its radiation-free properties as compared to traditional imaging modalities such as CT and X-ray. Nevertheless, to interpret a magnetic resonance (MR) images need the expertise from neurologists, physicians, and radiologists. Besides, manual interpretation suffers from fatigue and may be non-repeatable. They express thus a strong demand for detection, quantification and classification support tools in diagnostic and interventional procedures.

In past decades, artificial intelligence (AI) has been successfully applied to medical image processing to devise CAD systems for physicians' use and gaining importance across the globe. The goal of this course is to provide attendees with innovative, high-impact research evidence related to the evaluation and treatment of several brain diseases. This course will provide a detail description of the fundamentals of magnetic resonance image processing, and the latest advances of computer vision (CV) and AI applications in this field

Course participants will learn these topics through lectures and hands-on experiments. Also case studies and assignments will be shared to stimulate research motivation of participants.

Modules	A: **Fundamentals of brain MRI processing :** October 9 – October 11,2017 B: **Advances of AI and CV techniques in MRI :** October 12 – October 18, 2017 **Number of participants for the course will be limited to forty.**
You Should Attend If…	▪ You are graduate or undergraduate student in Electronics, Computer Science, Electrical, Biomedical Engineering, Mathematics, and Statistics. ▪ You are a clinical scientist working with medicine industry and healthcare domain or want to pursue your career in MRI analysis. ▪ You are a Ph.D. student or faculty from academic institution interested in developing automated systems for detection of pathological brain using advanced AI and CV algorithms.
Fees	The participation fees for taking the course is as follows: **Participants from abroad : US $500** **Industry/ Research Organizations : INR 10000** **Academic Institutions (Faculty): INR 5000** **Students: INR 2000** The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty

October 9, 2017- October 18, 2017

At

National Institute of Technology Rourkela

Course Co-ordinator (s)

Dr. Ratnakar Dash
Phone: +91-9861379338
E-mail: ratnakar@nitrkl.ac.in

Dr. Banshidhar Majhi
Phone: +91-9437221124
E-mail: bmajhi@nitrkl.ac.in

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Register yourself   at

http://www.gian.iitkgp.ac.in/GREGN/index

Dr. Yudong Zhang received his Ph.D. degree in Signal and Information Processing from Southeast University, China in 2010. From 2010 to 2012, he worked at Columbia University as a postdoc under the supervision of Prof. Zhengchao Dong. From 2012 to 2013, he worked as a research scientist at Columbia University and New York State Psychiatric Institute under supervision of Prof. Zhengchao Dong. At present, he is a full professor and doctoral advisor at School of computer science and technology at Nanjing Normal University. He also serves as the academic leader of "Jiangsu key laboratory of 3D printing equipment and manufacturing". His research interests focus on computer-aided diagnosis and biomedical image processing. Dr. Zhang was included in "2014-2016 Most Cited Chinese Researchers (Computer Science)" released by Elsevier. His fifteen papers were included in "ESI Highly Cited Papers". He won the "Emerald Citation of Excellence 2017". He is the senior member of IEEE and ACM. He is the author and co-author of over 110 SCI-indexed papers. Besides, he is the author of 12 EI-indexed papers. He authored one academic monograph, and coauthored 10 book chapters.

Dr. Ratnakar Dash received his PhD degree from National Institute of Technology, Rourkela, India, in 2012. He is currently working as assistant professor in the Department of Computer Science and Engineering at National Institute of Technology, Rourkela, India. His field of interests include signal processing, image processing, intrusion detection system, steganography, etc.

Dr. Banshidhar Majhi received his PhD from Sambalpur University, Odisha, India in 2001. He is currently working as a Professor in the Department of Computer Science and Engineering at National Institute of Technology, Rourkela, India. He also serves as the head in Centre for Computer Vision and Pattern Recognition, NIT Rourkela. His research interests include image processing, data compression, cryptography and security, parallel computing, soft computing, biomedical signal processing, and biometrics. He is the author and co-author of over 75 SCI-indexed journal papers. Besides, he has many conference papers and he holds 2 patents on his name. He is a professional member of IEEE, FIETE, LMCSI, IUPRAI, and FIE.