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## Public Seminar on Application of Artificial Intelligence in Geo-data modeling

By **Dr. Pijush Samui**

National Institute of Technology, Patna

### Synopsis:

The rapid advance in information processing systems in recent decades directed engineering research towards the development of Artificial Intelligence (AI) that can model natural phenomena automatically. In AI, a process of training is used to build up a model of the particular system, from which it is hoped to deduce responses of the system for situations that have yet to be observed. AI learns the input output relationship from the data itself. The quantity and quality of the data govern the performance of AI. In this lecture, it is planned to discuss several AI tools [Artificial Neural Network(ANN); Adaptive Neuro Fuzzy Inference System(ANFIS); Support Vector Machine(SVM); Relevance Vector Machine(RVM); Least Square Support Vector Machine(LSSVM); Genetic Programming (GP); Multivariate Adaptive Regression Spline(MARS); Minimax Probability Machine Regression(MPMR); Extreme Learning Machine(ELM); Deep Learning(DL); Emotional Neural Network(ENN); Gaussian Process Regression(GPR); Random Forest(RM) and Functional Network(FN)] applicable to geotechnical engineering domain. Various examples will be given to show the working procedures of AI models in different fields of geotechnical engineering such as pile foundation; liquefaction; shallow foundation; slope stability; reliability; site characterization; tunneling; geoenvironmental; retaining wall; etc. Sensitivity analysis will be described to determine the effects of inputs of a particular problem. The details methodologies of various AI techniques will be discussed. Examples will be given to show the procedure of use of AI techniques in geotechnical engineering. Many AI techniques will give the solution of a particular problem in form of equation. The advantages, robustness, transparency, knowledge extraction, extrapolation, and uncertainty of AI techniques will be also described.

### About the Speaker:

Pijush Samui is working as an associate professor in civil engineering department at NIT Patna, India. He graduated in 2000, with a B.Tech. in Civil Engineering from Indian Institute of Engineering Science and Technology, Shibpur, India. He received his M.Sc. in Geotechnical Earthquake Engineering from Indian Institute of Science, Bangalore, India (2004). He holds a Ph.D. in Geotechnical Earthquake Engineering (2008) from Indian Institute of Science, Bangalore, India. He was a postdoctoral fellow at University of Pittsburgh (USA) (2008-2009) and Tampere University of Technology (Finland) (2009- 2010). In 2010, Dr. Pijush joined in the Center for Disaster Mitigation and Management at VIT University as an Associate Professor. He was promoted to full Professor in 2012. Dr. Pijush is the recipient of the prestigious CIMO fellowship (2009) from Finland, for his integrated research on the design of railway embankment. He was awarded Shamsheer Prakash Research Award (2011) by IIT Roorkee for his innovative research on the application of Artificial Intelligence in designing civil engineering structure. He was selected as the recipient of IGS Sardar Resham Singh Memorial Award – 2013 for his innovative research on infrastructure project. He was elected Fellow of International Congress of Disaster Management in 2010. He served as a guest in disaster advance journal. He also serves as an editorial board member in several international journals. He has been selected as an adjunct professor at Ton Duc Thang University (Ho Chi Minh City, Vietnam). He has been Visiting Professor at Far East Federal University (Russia).

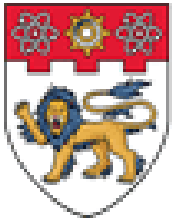
**Date:** 2 September 2019 ( Monday )

**Time:** 2:30pm – 3:30pm ( *Registration starts at 2:15pm* )

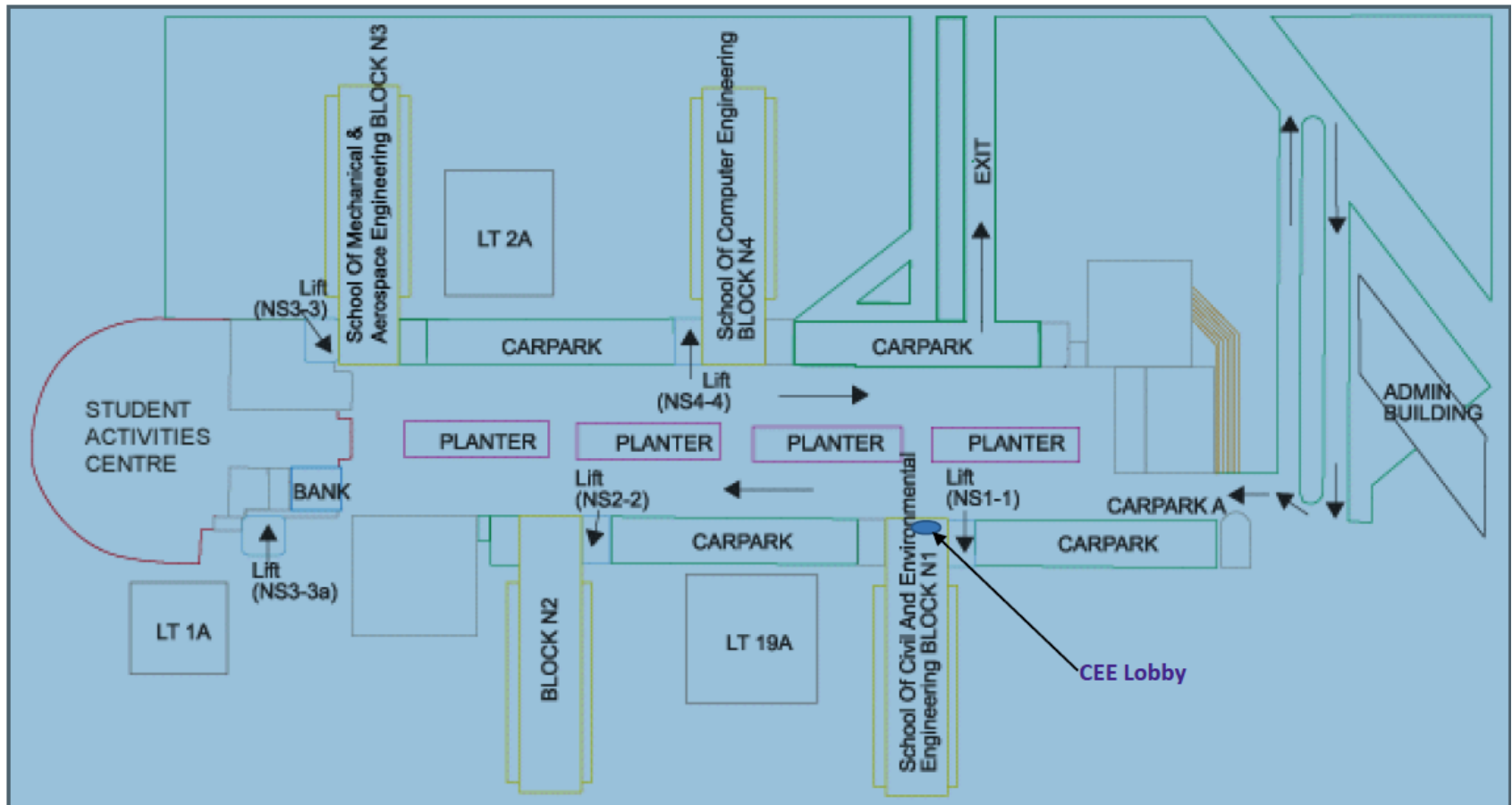
**Venue:** CEE Seminar Room A, Block N1, Level B1, N1-B1B-06 ( see [map](#) )

School of CEE, Nanyang Technological University





## Seminar Room A



From CEE Lobby, walk till end of aisle and take the first passenger lift to Basement 1. Enter from ICRM entrance to Seminar Room A.

### Floorplan - N1\_B1\_B

