Health Innovation Ecosystem Seminar

Date: **Wednesday 27 March 2019, 1-2pm, Room 1.112, Clipstone Bldg, 115 New Cavendish Street**

Tile: **Artificial neural network algorithms for Healthcare Decision Systems and Diagnostic Image Processing**

Speaker: **Tahmina Zebin**, PhD, Research Fellow, Health Innovation Ecosystem, University of Westminster

Abstract:

The tremendous success of statistical and deep machine learning algorithms in recent years intersects with a time of increased use of electronic medical records and diagnostic imaging. As part of the Health Innovation Ecosystem, we developed a few artificial neural network algorithms to provide automated modelling for two exemplar scenarios. In the first scenario, we will cover the lung shape recognition from CT scans from LUNA16 dataset to train two variants (2D and 3D) of supervised Convolutional Neural Network. In the second scenario, an Autoencoder model that determines the short and long 'length-of-stay' for each patient at time of admission will be presented. The Length of stay model is developed from a publicly available Electronic Health Record dataset. The python-based implementation stages for the two exemplar scenarios will be discussed in detail during this talk.

Bio:

Tahmina Zebin received her first degree in Electronics and Communication Engineering from University of Dhaka, Bangladesh and completed her M.Sc. in Digital Image and Signal Processing from the University of Manchester in 2012. She also won the National Instruments Prize for her M.Sc. Dissertation and was the recipient of the Presidents Doctoral Scholarship (2013-2016) for conducting her Ph.D. at the same university. Her current research interests include advanced image and signal processing, Risk prediction statistical and deep machine learning algorithms for the different application domain.

Before coming to University of Westminster, Tahmina worked as a postdoctoral research associate in Health Data science on the EPSRC funded project 'Wearable Clinic: Self, Help and Care' at the University of Manchester. Her work was aimed at identifying behavioural phenotypes (sedentary behaviour, rhythmic/regular activities, fitness/frailty issues, weight gain/loss) for individuals suffering from serious mental illness and chronic Kidney Disease and then creating novel algorithms for adaptive, personalized care planning from real-time wearable sensor data and predicted risk factor. She has experience in dealing with UK Biobank physical activity dataset and its baseline characteristics.