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## Precision Aquaculture- challanges and sustainability

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**P**recision Aquaculture relies on using advanced digital technology techniques to bring much needed sophistication in the aquaculture industry. There are at least three aspects that are critical to the success of the precision aquaculture system. These are Sensors, data analytics and control - together they can provide sufficient support for developing a framework for precision farm management. Various control engineering mathematical models exist that can provide a deterministic estimate of feature variables. However, these models can deliver much more useful information when these are combined with real-time data from sensors to provide better estimates than it is possible to obtain with either sensors or models alone. In this paper we explore these two aspects of the system looking at the existing systems in various countries (UK, China, Brazil) and at the future of technology. A novel Neural Network based time series forecasting system is presented that uses data from sensors in the aquaculture farm to support the development of early warning systems. The presented system is an improvement on existing systems achieved through linear interpolation and moving average filtering methods of data. It constructs the final system using ensemble empirical mode decomposition (EEMD)-based LSTM (long short-term memory) neural network (NN). This hybrid construction of the model improves accuracy of forecast. Finally, this talk also shines light on sustainability aspects of the precision aquaculture system by performing a broad multi-criterion analysis.

### Biography:

Tahmina Ajmal has background in electronics, sensors, and data analytics. She completed her PhD from University of Essex and joined University of Bedfordshire in October 2010 as Lecturer in Engineering. She has researched in various aspects of electronic engineering, but her focus has been on the application of digital technology to improve sustainability. Now she is increasingly working with Social Sciences on topics of sustainable digital transformation for society and businesses. Her recent projects are in aquaculture and reducing food waste. She has a large