SKILLS FRAMEWORK FOR INFOCOMM TECHNOLOGY
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE DOCUMENT

TSC Category	Development and Implementation					
TSC Title	Pattern Recognition Systems					
TSC Description	Develop and apply intelligent pattern recognition systems and techniques to analyse data and derive useful hidden patterns to solve problems					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
				ICT-DIT-4026-1.1	**ICT-DIT-5026-1.1**	
				Analyse data by deriving useful hidden patterns in the data, select and apply the most suitable pattern recognition techniques to solve problems and develop pattern recognition systems	Develop intelligent systems using machine learning techniques	
Knowledge				• Pattern recognition and machine learning techniques • Types of and steps in solving pattern recognition problems • Supervised learning and unsupervised learning • Data pre-processing with labelled and unlabelled data • Methods of pattern recognition using component analysis and dimension reduction • Deep neural networks for vision recognition problems • AI Ethics	• Pattern recognition and machine learning techniques • Neural networks, modelling and design • Deep neural networks and deep learning • Convolutional neural networks, architecture and applications • Recurrent neural networks, architecture and applications • Hybrid and ensemble approaches to problem solving • AI Ethics	
Abilities				• Model applied problems as pattern recognition tasks • Identify suitable pattern recognition techniques to solve the given problems	• Assess and compare the suitability of advanced pattern recognition and machine learning techniques across a range of problem domains • Apply deep learning and other advanced machine	

				• Solve classification and prediction problems with labelled data • Solve clustering and anomaly detection problems using unsupervised learning techniques • Assess and compare alternative pattern recognition methods for given tasks • Design and train deep neural network models for machine learning systems • Analyse the results and suggest the possible improvement	learning techniques to solve problems • Solve temporal sequential problems using recurrent neural networks • Build intelligent systems using deep learning and other advanced pattern recognition techniques • Design and implement signal processing methods using machine learning • Design and implement signal processing methods for signal processing tasks • Evaluate the performance of signal processing	
Range of Application						