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

TSC Category	Development and Implementation					
TSC Title	Text Analytics and Processing					
TSC Description	Identify, extract and analyse text data using text analytics solutions to discover themes, patterns and trends					
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
				ICT-DIT-4029-1.1	**ICT-DIT-5029-1.1**	**ICT-DIT-6029-1.1**
				Analyse text data to discover themes, patterns and trends to improve business processes and decision making	Implement advanced machine learning techniques in building natural language processing (NLP) models for performing common text processing tasks	Design and implement systems that can interact with users using spoken or written natural language
Knowledge				• Text analytics tasks, applications areas, tools and their features • Cross-Industry Standard Process for Data Mining (CRISP-DM) in text analytics • Text mining process and pre-processing • Information extraction methods • Concept clustering • Text link analysis • Categorisation methods and rules • Core concepts and tasks in sentiment mining • Applications, difficulties and solutions for sentiment mining • Sentiment detection and classification	• Application areas of NLP • NLP and deep learning • Deep learning foundations • Matrix calculus for deep learning • Backpropagation • Pros and cons of count and prediction-based Word Embedding • Word embedding algorithms • Similarity measures • Text classification, regularisation and loss function • Language models and recurrent neural networks (RNN) • Encoder-decodeer models • Memory networks	• Conversational user interfaces (UIs) • Common roles and applications with conversational UIs • Main concepts, architecture and components of conversational UIs • Conversation design • Natural language understanding techniques • Response generation • Conversational UI with speech • Systems that can interact with users including chatbots and virtual assistants

				• Topic and aspect extraction • Sentiment summarisation and visualisation	• NLP and bayesian methods • Parsing	
Abilities				• Identify text analytics solutions and platform requirements based on the business requirements and analytical objectives • Define the metadata and corpus for the data to be imported into the text analytics repository • Develop standardised sets of text analytics artifacts with the relevant stakeholders • Develop term-document frequency matrices to enable look-up of text and documents within the corpus • Modify the text analytics solutions to ensure that it produces the expected results • Define the processes to perform text analytics based on the business requirements and text analytics artifacts • Detect and classify sentiments in textual data from social media	• Identify common tasks associated with text data • Represent text data word as embeddings and reviews similarity measures for word semantics • Model text as n-gram language models and RNN • Determine the machine learning approach suitable for text data analytics • Train the model by monitoring and tweaking its sub-components • Determine the strategies to be used to augment memory networks	• Determine the roles that systems with conversational UI can play in fielded applications • Identify and analyse the main components and the architectures of conversational interfaces • Design conversational UI following practical methodologies and strategies • Develop applications with conversational UI using traditional and machine learning approaches • Generate responses to the users through natural language generation • Evaluate the performance of the conversational UI using appropriate metrics • Handle speech input and output for conversational UI using prevalent techniques

				• Find out what the sentiments are about by identifying the targets and their aspects • Summarise, visualise and present sentiment monitoring for management support		
Range of Application						