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Title of the tutorial: Pattern based classification and decision making (with a case study on AI aspects of Knowledge Management)

Presenter: Prof. Parag Kulkarni, Ph.D.

Abstract of the tutorial: Classification is one of the major steps in all AI applications and decision-making. In all learning techniques and decision methods we need to classify various objects, behaviors and patterns. Classification is “feature based grouping” or a systematic arrangement of objects/articles into classes or groups.

The main objective of this tutorial is to provide complete overview of various classification techniques and discuss in detail the pattern based classification and decision-making. In this tutorial we will discuss pattern based classification algorithms in detail. We will talk about various pattern and behavior based methods used for text and image classification. The tutorial will also cover usage of various methods like SVM, intelligent feature extraction; feature based clustering for these applications. In this tutorial we will cover various issues in classification and how to overcome them. We will also discuss about various learning methodologies.

The pattern based classification and decision-making includes:

Extracting relevant features with priority and importance

Mapping these features to classes

Learning to extract the features and effective mapping

Intelligently classifying based on features to enable decision making

Providing decisions based on classification results and built in knowledge

The methods those can handle nonlinear behavior very effectively are also discussed in this tutorial. The tutorial will also present industrial applications of classification and case studies for classifying images and textual data. It will also throw some light on how these techniques can be extended for other applications in decision engineering.

Expected background for the audience: A basic understanding of Information systems and computers is recommended. No prior knowledge of classification and AI algorithms and advanced decision making techniques is needed.

Brief bio-data of the presenter: Parag Kulkarni is Chief Scientist and Director-Research and Strategic Development at Capsilon Research Labs, Pune. He is an alumnus of IIT and IIM. He has completed his Ph.D. in Computer Engineering from IIT Kharagpur. He has been working in IT industry for last 16 years. He has worked as Research head, operations head, GM and was involved in bringing up two startups to speed. Under his leadership and guidance one Singapore startup grown from five employees to 30 employees and launched its product to market successfully. His research and ideas in the

areas of image processing and clustering resulted in products those later became commercially successful.

He has more than 45 International publications and two patents pending in US PTO. He has written two books, many research articles and his one book on Decision science is in press. He is member of IASTED technical committee, WSEAS working committee, board of studies of two institutes and is guiding 8 Ph.D. students. He has conducted more than 20 tutorials at various international conferences and was a keynote speaker for three international conferences. He is also invited as a visiting faculty to conduct special sessions at IIMs, IITs, Symbiosis, FTMS, NICM Pune and Pune University. He is honored with the title of honorary professor by two prime institutes in Pune. He is involved in active research-work in the areas of mind maps, AI, Decision systems, knowledge management and forecasting.

Author of the books “Deliverance from success” and “IT strategy”, Parag has more than a decade long experience of product development in the area of decision systems and forecasting. His areas of research and product development include M-maps, text mining, image processing, Decision systems, forecasting, knowledge management, IT strategy, classification, distributed computing, AI and machine learning.