हैदराबाद विश्वविद्यालय
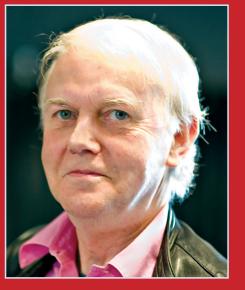# UNIVERSITY OF HYDERABAD

Distinguished Lecture

Pāṇini's Machine

by

Professor Gérard Huet

Emeritus Inria Paris

on

Thursday, November 7, 2019

at

03.00 pm

Venue

Sir C V Raman Auditorium

Vice-Chancellor will preside

About the Speaker

Prof. Gérard Huet is a French computer scientist, mathematician and a computational linguist. He has been Directeur de Recherches de Classe Exceptionnelle at Inria, Paris from 1989 to 2013, and has now the Emeritus status. He is known for his major and seminal contributions to type theory, programming language theory and to the theory of computation. He received, in July 2009, the prestigious EATCS Award. He was awarded the ACM-Sigplan Programming Languages Software Award in 2013 and the ACM Software Award in 2014 for his work on the Coq proof assistant.

From 2000 his main interest has been Computational Linguistics. He has developed various tools for the phonetical, morphological and lexical analysis of Sanskrit. An important contribution is the segmenter for Sanskrit. His research in the field of Sanskrit Computational Linguistics has led to a new paradigm for relational programming, inspired from Samuel Eilenberg's X-machines.

Abstract of the Lecture

Pāṇini's grammar may be thought of as the operations manual of an abstract computer. This machine performs the grammatical operations prescribed or permitted in the Aṣṭādhyāyī sūtras. It produces recursively a correct Sanskrit enunciation as a sign pairing the phonetic signifier and its signified sense. Its proper operation yields thus both the utterance as a phonetic stream and the intended meaning of a correct Sanskrit sentence. This view places Pāṇini as a precursor in a long list of illustrious automata inventors such as Turing, Babbage, Pascal, Jacquard, thus adding to his fame as a renowned linguist.

A synthetic presentation of the machine will show its modular structure, while a precise example will highlight details of its microcode. The speaker will briefly explain how formal devices used in Aṣṭādhyāyī are anticipating computer sciences control and data structures, and show a keen understanding of information theory. This point of view raises obvious interrogations, such as building a material Pāṇini machine, and investigating what would be a proper notion of program or programming language proper to operate this computing device at a macroscopic level. The talk will conclude by proposing possible answers to those questions.