University of Florida | Department of Mathematics

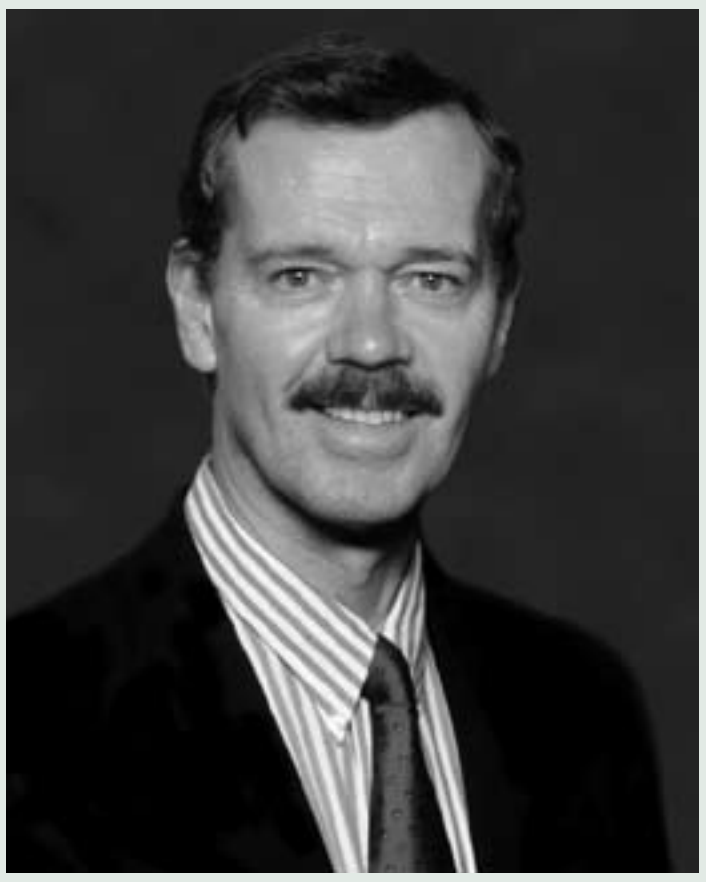
SPECIAL HISTORY LECTURE

History and Concepts of Computability

presented by

Dr. Robert Soare, Paul Snowden Russell Professor of Mathematics
and Computer Science, University of Chicago

Wednesday
November 1, 2006
4:05–4:55 p.m.
282 Reitz Union



Opening Remarks by Krishnaswami Alladi
Chair, Department of Mathematics
Refreshments: 3:30–4:00 outside of JWRU 282

Abstract: This lecture will trace the history and development of the concept of computability, its early emergence, its definition under Turing in 1936 and the notions of effective calculability and computable enumerability by other researchers. Although this definition of Turing machine computable functions is the one which convinced Gödel and is the most widely accepted today, it represents **closed** computability and is not the notion of most interest today in either theoretical research or practical applications. Most of these modern results, theoretical and practical, take place in a more general setting of **open** computing. This concept appeared almost accidentally at first, and took several decades to develop. It has often been underestimated, or ignored, even by experts, and has never been given the same status as Turing machines. It encompasses various computable approximations, such as machine learning and decision making under uncertainty, so prevalent in real world computing, such as the financial markets. It also includes the foundation of most results in computability theory, whether dealing with pure computability, or applications to other areas of logic and mathematics such as model theory, algebra, number theory, and differential geometry. During the second half of this talk, we develop the properties of open computing, its algorithmic, topological and definability properties. We present the case that it is the central topic in computability theory.

Robert Soare became Professor of Mathematics at the University of Chicago in 1975 and was Chair of the Department of Computer Science there from 1983–1987. His main research area is mathematical logic and particularly the theory of computability. He is a world expert on computably enumerable (c.e.) sets and degrees and his 1987 book continues to be the standard reference; an updated replacement is in preparation. Soare is well known for work on embeddings into the c.e. degrees and definability and automorphisms in the lattice of c.e. sets. He has also worked on the interaction of computability theory with model theory and algebraic structures and recently on applications of computability to differential geometry.

This History Lecture is part of the Special Year in Logic
For more events, please go to: http://www.math.ufl.edu/~jal/logicyear/

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