Laudatio David Harel

David Harel is remarkable scholar and certainly one of the most important computer scientists of our time. Therefore, I’m very happy to be able to serve as his honorary promotor.

Professor Harel’s career started at Tel-Aviv University where he completed his Master’s thesis in 1976 under the supervision of Turing Award winner Amir Pnueli. After this he moved to the Massachusetts Institute of Technology (MIT) in Cambridge where he finished his PhD in a record time of just 20 months (1978). Since 1980 he has been working at the Weizmann Institute of Science in Israel. Here, he also served for many years as Department Head and later also as Dean of the Faculty of Mathematics and Computer Science.

So, why did TU/e decide to grant this year’s honorary doctorate to David Harel?

It all started with a meeting of all full-time computer science professors in July last year. As is customary, all departments were asked for possible candidates for TU/e’s annual honorary doctorate. I proposed David Harel as a candidate. Then something remarkable happened. Not only were all professors aware of his work, also many where using his work directly or indirectly. This nicely illustrated his broad range of achievements in different areas. Therefore, the choice was easy and the department of Mathematics and Computer Science
proposed him as a candidate to the university’s board. What followed was a competition between different proposals from different departments. Finally, our proposal was chosen due to the outstanding qualities of David Harel.

Let me now elaborate on some of Harel’s main achievements.

He invented and developed the well-know Statecharts notation which combines formal semantics with an intuitive visual notation tailored towards reactive systems. Today, this notation is widely used by software developers all over the globe. However, in 1984 his ideas were quite controversial. His initial paper on Statecharts was rejected four times. Fortunately, this seminal paper was accepted in Science of Computer Programming in 1987 and is now one of the most cited papers in computer science. Statecharts were inspired by the problems Harel identified when working as a part-time consultant for the Israel Aircraft Industry (IAI). He noted a huge gap between the thick piles of paper documents and the actual work of programmers. Statecharts provided a more precise yet intuitive description that could serve as an interface between domain experts and programmers. In the remainder of his career he continued developing new ideas and tools to close this gap.

It is impossible to mention all of Harel’s contributions here. He worked on a wide variety of topics and managed to make important contributions on all of them. For example he worked on dynamic logic, computability, database theory, automata theory, the layout of diagrams, visual languages, modeling of bio systems, Live Sequence Charts (LSCs), etc. To illustrate the broad scope of his work it is nice to mention that he also worked on the synthesis and communication of smell. He was the first to invent a practical approach for electronically transmitting smell from one location to another.

Besides his important scientific contributions there are various other reasons to grant David Harel this degree. TU/e uses the slogan “where innovation starts” and our campus is sometimes referred to as “the land of the innovator”. Harel is a true innovator. Many of his ideas have been implemented in software and triggered new services, products, and startups. For example, he was involved in the development of Statemate, Rhapsody, the Play-Engine, and, more recently, PlayGo. He was also the co-founder of I-Logix, Inc. in 1984, which is now part of IBM. The strong link between solid
theoretical results and the actual realization of concrete systems fits very well with the engineering spirit of TU/e. Besides this he also promoted computer science via television, radio, and books for non-experts.

Professor Harel already received many honors. The list of awards he received in his career is so extensive that I do not even dare to make a selection. However, I’m very happy to be able to add a new item to this impressive list and award prof. David Harel with the title Doctor Honoris Causa from our university.

Prof.dr.ir. W.M.P. van der Aalst

Honorary Supervisor

28 April 2012