

Use of Memory in Data Dominated Electronic Systems

Video viewed on your mobile telephone is one example of how big multimedia and telecom applications can be used on battery powered, handheld units in the future. This requires that the memory usage of the application is optimized, however. Sivilingeniør Per Gunnar Kjeldsberg (34) from Trondheim has focused on this in his doctoral work at the Norwegian University of Science and Technology, NTNU.

Many electronic systems, for example in the multimedia and telecom domains, are data dominated. For this class of applications, data transfer and storage largely determine cost and performance parameters such as size (chip area), performance (speed), and power consumption.

In cooperation with IMEC in Leuven, Belgium, Kjeldsberg has developed a technique for estimation and optimization of memory use (RAM) for such systems. This is a vital part of a total design methodology focusing on data transfer and storage. A prototype software tool has been developed proving the feasibility and usefulness of the methodology. The tool has been employed on several representative applications, for example achieving a memory requirement of 257 memory locations compared to the 262400 locations needed by the application before optimization.

The title of the thesis is "Storage Requirement Estimation and Optimization for Data Intensive Applications". The work has been performed at Department of Physical Electronics, NTNU, with Prof. Einar J. Aas as supervisor, and with Prof. Francky Catthoor, IMEC, Belgium, as co-supervisor. The work is sponsored in part by the Norwegian Research Council and by EU's Marie Curie Fellowship.

Per Gunnar Kjeldsberg is sivilingeniør¹ (1992) from Faculty of Electrical Engineering and Computer Science, Norwegian Institute of Technology (now part of NTNU).

The thesis is submitted in partial fulfillment of the requirements for the degree Doktor Ingeniør. The defense will take place on March 23, 2001.

¹ Graduate degree in electrical engineering, microelectronics.