CES Chair for Embedded Systems

Prof. Dr. J. Henkel

Diplom- / Master- / Bachelorarbeit

Degradation Effects in Microprocessors

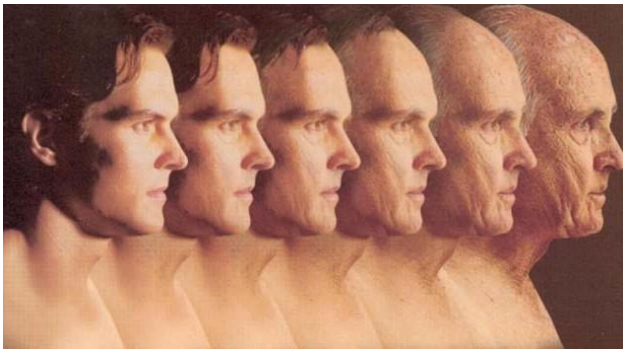
Technology Scaling enables us to achieve higher performance through smaller transistors and more complex logic circuits. To continue this trend, new materials along with new transistor types had to be introduced. Unfortunately, modern on-chip systems became increasingly susceptible to a wide range of degradation effects such as aging. Therefore, we need to study the reliability in the scope of these degradation as well as implement a mitigation techniques to increase the lifetime of processors.

Goals:

- Work on current research topics.
- Experience research first-hand by treating your thesis as a real contribution to the scientific community.
- Apply what you leaned so far at the computer science department towards problems arising from other fields.

Potential Thesis Topics

- Improve State-of-the-Art Reliability Estimations
- Work on new Aging mitigation techniques on either Software (OS/Application) or Hardware (FPGA)
- Implement Software or Hardware Reliability Monitors
- Studying the reliability of emerging technologies (Many-Core Systems, Low-Power Mobile Devices, etc.)



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Skills acquired with the Thesis

- Program a real project (software development/software architecture)
- Work in a research environment
- Technical writing

Skills required for the Thesis

- Programming skills in C, Perl or Python
- Knowledge of degradation effects and transistors is NOT required.

Start Date

Immediately or within a couple of months.

Language

The thesis can be written and presented in either English or German.

Supervision:

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