



The background of the slide is a close-up photograph of water ripples, showing various shades of blue and white as the light reflects off the moving surface. The ripples create a sense of depth and movement, with some areas appearing more turbulent than others.

The Ripple Effect: How Nanni Transformed Careers and Communities

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Boston University

A Brief Timeline

UC San Diego

2005



ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

A Simulation Methodology for Reliability Analysis in Multi-Core SoCs

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ABSTRACT

Reliability has become a significant challenge for system design in new process technologies. Higher integration levels dramatically increase temperature and adducts. In this paper, we introduce a simulation methodology for multi-core SoCs.

1048

can adversely affect reliability by increasing the rate of hardware faults due to temperature cycling phenomena [15]. Power management techniques do not always succeed in eliminating the hot spots when the system is highly utilized.

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PACT: An Extensible Parallel Thermal Simulator for Emerging Integration and Cooling Technologies

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Abstract—Thermal analysis is an essential step that enables co-design of the computing system (i.e., integrated circuits and computer architectures) with the cooling system (e.g., heat sink). Existing thermal simulation tools are limited by several major challenges that prevent them from providing fast solutions to large problem sizes that are necessary to conduct standard-cell level thermal analysis or to evaluate new technologies or large chips. To overcome these challenges, we introduce a SPICE-based

degrade the performance of a chip but also generate larger subthreshold leakage power and cause reliability challenges [1]. Therefore, thermal analysis is an essential procedure for designing any chip. Conventional thermal analysis relies on the finite-element method (FEM)-based multiphysics simulators (e.g., COMSOL and ANSYS). However, such commercial simulators are computationally expensive and experience long

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Analysis and Optimization of MPSoC Reliability

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are, resulting in
present a sig-
rk for analyzing
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ort time scales,
the other hand.

TCAD Donald O. Pedersen Best Paper Award, 2024

A Brief Timeline

UC San Diego

**BOSTON
UNIVERSITY**

2005



2008



2009



1. Inspiration

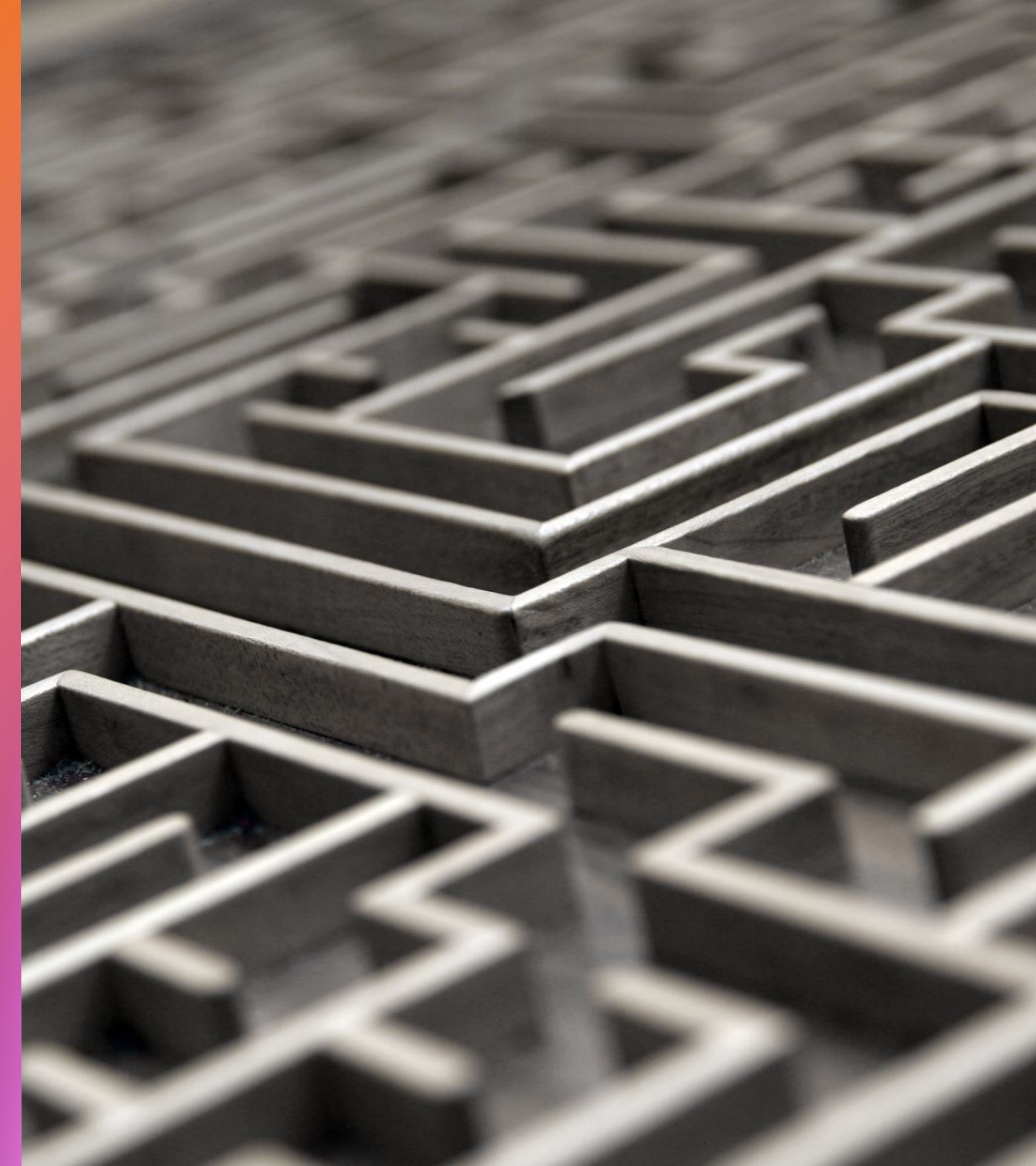
- Get inspired and inspire
- **How an academic life should be lived**
 - Innovation
 - Building things
 - Creating waves



2. Community

- People, people, people....
It's about the people!
- Support, organize, give back





3. Impact

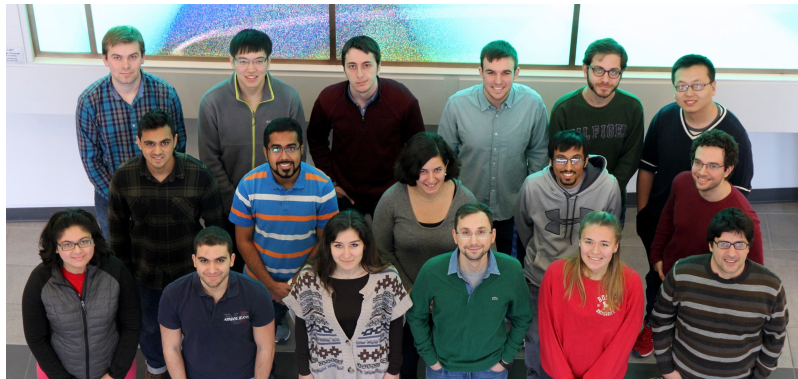
- Long-hauled, difficult problems
- Build on emerging trends (not jump on hypes)
- Revisit (old) problems, innovate



PEACLAB

CISE

CENTER FOR INFORMATION & SYSTEMS ENGINEERING



Energy-efficient and sustainable computing, data centers and power grid, AI-powered analytics for resilience, security, and efficiency in computers, systems with emerging technologies (3D, photonics, etc.)

15 PhD Alumni, numerous undergraduate researchers, outreach programs, and many collaborations