

NSF Workshop **Future**
Directions in Tensor-Based
Computation and Modeling

February 20-21, 2009

National Science Foundation

Organizer: Charles Van Loan

NSF PDs: Lenore Mullin (CCF), Frank Olken
(IIS)

Motivation

- Professional career on Tensors and n-d Arrays
 - Interpreters
 - Compilers
 - Hardware
 - Verification
- Great Mentors
 - Iverson
 - Perlis
 - Berkling

Motivation

- NSF Award for theoretical foundations
 - PFF 1992
 - Algebra of Arrays and Index Calculus
- Interview Talk for PD in CCF
 - Build a Program for Tensors/n-d Arrays
 - Domain specific languages and machines
 - Capitalize on Algorithms and Data Structures

Motivation

- Outreach at workshops and conferences
 - Raise awareness to the problems
 - No general way to reason about tensor-based computation
 - Advanced computational methods in physics
 - SIAM: Tensors and Architecture independence
 - Symbolic/Numeric Hybrids
 - Numeric Computing
 - Supercomputing

Motivation

- Presented a mini-symposium at the 2008 SIAM Annual meeting
 - Invited Charles Van Loan to organize this workshop
 - Invited Frank Olken to work with me
 - Here we are!!!
 - Identify what should be done from an infrastructure perspective to give to NSF to guide growth in all these venues

Welcome

Thank you for coming

Participate