

# Distinguished Lecture Series in Computer Science

## Monday, March 3, 2008



## Frances Allen

**Fran Allen** is an IBM Fellow Emerita at the T. J. Watson Research Laboratory with a specialty in compilers and program optimization for high performance computers. Soon after joining IBM Research in 1957 as a programmer with a University of Michigan master's degree in mathematics, she found a single technical goal that would drive her career. That goal was and still is to enable both programmer productivity and application performance in the solution of problems on computers. Her work towards this goal led to Allen being named the recipient of ACM's 2006 Turing Award "For pioneering contributions to the theory and practice of

optimizing compiler techniques that laid the foundation for modern optimizing compilers and automatic parallel execution."

She is a member of the American Philosophical Society and the National Academy of Engineers and is a Fellow of the American Academy of Arts and Sciences, ACM, IEEE and the Computer History Museum. She has served on numerous national technology boards including CISE at the National Science Foundation and CSTB for the National Research Council. Allen is also an active mentor, advocate for technical women in computing, environmentalist and explorer.

## Schedule of Events

10:30 a.m. **Registration,**  
Cleary Alumni & Friends Center

4:30 p.m. **Registration**  
Cleary Alumni & Friends Center

11 a.m. **Symposium**  
**Parallel Computers Will Be  
Everywhere: How will we use them?**

5 p.m. **Keynote**  
**Languages, Compilers and  
High Performance Systems:  
A Personal Perspective**

Multi-core computers are ushering in a new era of parallelism everywhere. As more cores (and parallelism) are added, the potential performance of the hardware will continue to increase. But how will users and applications take advantage of all the parallelism? Some people believe this question identifies one of the biggest challenges computer science has ever faced. I agree but I also believe that it offers a great opportunity. The talk will focus on the role programming languages and compilers must play to achieve both application performance and programmer productivity. The speaker's personal experiences with languages and compilers for high performance systems will provide the basis for her observations. The talk is intended to encourage the exploration of new approaches towards making parallel systems more efficient and much easier to use.

The talk will describe a related sequence of projects including some early, very bold projects that profoundly influenced the field even as some of them failed. Since the speaker was directly involved with several of these projects and very familiar with all of them, the talk will include a personal perspective of what worked and what didn't, the historical threads of some ideas, lessons learned and artifacts existing in systems today that we may want to reexamine. The talk will conclude by briefly describing the current challenge of universal parallel computing and suggesting some approaches for working on it.

Noon **Reception for Frances Allen**  
Cleary Alumni & Friends Center

6 p.m. **Informal Questions/Social**  
Cleary Alumni & Friends Center

For further  
information  
about the  
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