UNIVERSITY *of* WISCONSIN
LA CROSSE

Distinguished Lecture Series in Computer Science
Monday, February 19, 2007

Jeannette M. Wing, Ph.D.

Jeannette M. Wing, Ph.D., is the president's professor of computer science and the head of the computer science department at Carnegie Mellon University. She received her S.B. and S.M. degrees in electrical engineering and computer science in 1979 and her Ph.D. degree in computer science in 1983, all from the Massachusetts Institute of Technology.

Wing's general research interests are in the areas of specification and verification, concurrent and distributed systems, and programming languages. Her current focus is on the foundations of trustworthy computing.

Wing has published extensively in top journals and major conferences and has given over 200 invited, keynote and distinguished lectures. She was or is on the editorial board of nine journals, including the *Journal for the ACM*.

Wing is a member of many advisory boards, including: the Networking and Information Technology (NITRD) Technical Advisory Group to the President's Council of Advisors on Science and Technology (PCAST), the National Academies of Sciences's Computer Science and Telecommunications Board, Microsoft's Trustworthy Computing Academic Advisory Board, and the Intel Research Pittsburgh's Advisory Board. She is a member-at-large on ACM Council. She was a member of the DARPA Information Science and Technology (ISAT) Board and the National Science Foundation Scientific Advisory Board. She was on faculty at the University of Southern California, and has worked at USC/Information Sciences Institute and Xerox Palo Alto Research Laboratories. She spent a sabbatical at MIT in 1992 and at Microsoft Research 2002-03. She has consulted for Digital Equipment Corporation, the Mellon Institute (Carnegie Mellon Research Institute), System Development Corporation, and the Jet Propulsion Laboratory. She is a member of AAAS, ACM, IEEE, Sigma Xi, Phi Beta Kappa, Tau Beta Pi, and Eta Kappa Nu. Wing is an ACM Fellow and an IEEE Fellow.

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Schedule of Events

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

11 a.m.   Symposium
"Automatic Generation and Analysis of Attack Graphs"

Attack graphs represent the ways in which an adversary can exploit vulnerabilities to break into a system. System administrators analyze these attack graphs to understand where their system's weaknesses lie and to help decide which security measures will be effective to deploy. In practice, attack graphs are produced manually by Red Teams. Construction by hand, however, is tedious, error-prone, and impractical for attack graphs larger than 100 nodes. In this talk, Wing presents a technique, based on model checking, for generating attack graphs automatically. She also describes different analyses that system administrators can perform in trading off one security measure for another. These analyses can answer questions such as "Given a set of measures, what is a minimum subset needed to make this system safe?" This work is joint with Somesh Jha and Oleg Sheyner.

Noon   Reception for Jeannette M. Wing, Ph.D.
Cleary Alumni & Friends Center

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

5 p.m.   Keynote
"Computational Thinking: Thinking Like a Computer Scientist"
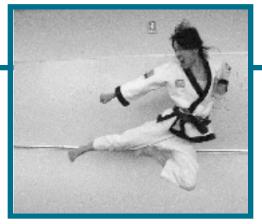
Wing's vision for the 21st Century: Computational thinking will be a fundamental skill used by everyone in the world. To reading, writing, and arithmetic, we should add computational thinking to every child's analytical ability. Computational thinking involves solving problems, designing systems and understanding human behavior by drawing on the concepts fundamental to computer science. Thinking like a computer scientist means more than being able to program a computer. It requires thinking at multiple levels of abstraction. In this talk Wing will give many examples of computational thinking, argue that it has already influenced other disciplines, and promote the idea that teaching computational thinking can inspire future generations to enter the field of computer science.

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

For further information about the lecture contact:
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Jeannette M. Wing, Ph.D., is a contender on the job and off. She's a third-degree black belt and certified teacher in Tang Soo Do martial arts.

Co-sponsored by the University of Wisconsin-La Crosse Foundation Inc., Department of Computer Science, College of Science and Health