



The Information Science & Technology Center

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Colorado State University's
Information Science and Technology Center (ISTeC)
presents two lectures by



Dr. Anne Condon
Professor and Head
Department of Computer Science
University of British Columbia

ISTeC Distinguished Lecture

In conjunction with the
Electrical and Computer Engineering Department and
Computer Science Department Seminar Series

“Some How's and Why's of Programming DNA Molecules”

Monday September 23, 2013
Reception with refreshments: 10:30 am
Lecture: 11:00 am – 12:00 noon
Location: Morgan Library, Event Hall



Computer Science Department Special Seminar *Sponsored by ISTE*C

**“Experiences With Research Mentoring:
Why It's Important and How It Has Shaped My Own Career”**

Monday, September 23, 2013
Lecture and Discussion: 3:00 – 4:00 pm
Computer Science Building, Rm. 210

ISTeC (Information Science and Technology Center) is a university-wide organization for promoting, facilitating, and enhancing CSU's research, education, and outreach activities pertaining to the design and innovative application of computer, communication, and information systems. For more information please see ISTeC.ColoState.edu.

Abstracts

Some How's and Why's of Programming DNA Molecules

Programs that execute within cells or that create intricate structures at nano-scale resolution are now a reality – designed and implemented using DNA molecules. As the scale and variety of DNA programs expands, a rich theory of molecular programming is emerging.

Why might we program molecules? Molecular programming offers the promise of understanding and changing our world at staggeringly small scales, with applications to disease diagnosis and therapeutics. It also prompts us to broaden our views of computation and its role in producing order and complexity in living systems.

How can we program molecules? At a low level of abstraction, DNA programs are sequences of A, C, G and T bases that comprise DNA molecules, and changes in the pattern of complementary A-T and C-G base pairs reflect the execution of a program. Sets of chemical reactions provide a useful model for reasoning at a higher level about the capabilities and limitations of molecular programs.

In this talk I'll illustrate some why's and how's of DNA programming, and I'll describe research problems with a combinatorial and algorithmic flavor that arise in this field.

Experiences with research mentoring: Why it's Important and How it has Shaped my Own Career

Nico Habermann, former Head and first Dean of CMU's School of Computer Science who was widely recognized as a great research mentor, said: "*Focus on the students, since graduating great students means you'll produce great research, while focusing on the research may or may not produce great students.*"

I believe that strong research mentoring, from undergraduate through postdoctoral and junior faculty levels, is particularly important at this time in Computer Science for several reasons. For example, research mentoring can provide guidance and reassuring perspective in the face of setbacks such as unhelpful paper reviews from conferences with very low acceptance rates. Research mentoring can also offset feelings of isolation or of not belonging in our field. In this informal talk I'll describe some of my own experiences with research mentoring and will invite those present to share thoughts on best practices and ways to promote a strong mentoring culture in computer science.

Speaker Biography:

Dr. Anne Condon is Professor and Head of the Department of Computer Science at University of British Columbia. Her research in the areas of computational complexity and algorithms currently focus on ways to computationally predict nucleic acid structure and on molecular programming - the art and science of writing programs that are realized and executed by DNA or other molecules. Dr. Condon received her Bachelor's degree from University College Cork, Ireland in 1982, and her Ph.D. at the University of Washington in 1987, and was a faculty member at University of Wisconsin from 1987-1999. She is an ACM Fellow and a Fellow of the Royal Society of Canada. Dr. Condon is also a recipient of the Computing Research Association's Habermann Award for outstanding contributions aimed at increasing the numbers and successes of women in computing research.

To arrange a meeting with the speaker, please contact Christina Boucher (cboucher@colostate.edu)