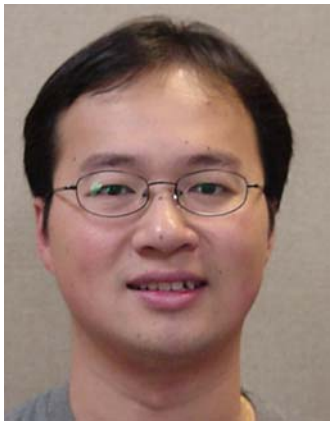
Alan C.H. Ling

Associate Professor of Computer Science



Education

B.Math., Combinatorics and Optimization, University of Waterloo,1994
M.Math., Combinatorics and Optimization, University of Waterloo, 1995
Ph.D., Combinatorics and Optimization, University of Waterloo, 1997

Research Areas

Combinatorics

Courses

Network Security
Theory of Computation
Computer Architecture
Quantum Computing
Operating System

Dr. Ling received his Ph.D. from the University of Waterloo when he was 23. Since then, he worked as a postdoctoral fellow at various universities. He was an assistant professor in the Michigan Technological University before joining the University of Vermont. Beside various academic experiences, he worked as a credit risk analyst for one year in the Bank of Montreal.

Dr. Ling's research is on combinatorics and its applications into computer science, and he has authored close to 100 journal publications. In his Ph.D. thesis, he pioneered a connection of a combinatorial object, called Steiner triple systems, with erasure codes that are used for redundant inexpensive disk arrays. By drawing the newfound connection, Chee, Colbourn and Ling managed to extend the existing results in the subject. Dr. Ling secured a research grant from the Army Research Office on disk arrays.

Another application of his work is found in bioinformatics. Dr. Ling has used a combinatorial object called balanced binary codes to construct the manufacturing probes for DNA microarray. DNA microarry is a new technology that builds various different DNA sequences into a DNA chip, and it allows a test of blood sample to be done at a fraction of the old cost and in a very time efficient manner. Dr. Ling's work allows the manufacturer to detect if the microarrays function correctly. Recently, Dr. Ling is focused on software testing using a combinatorial object known as covering arrays.

Dr. Ling's research has been recognized by the Institute of Combinatorics and Applications for awarding him a Kirkman medal for his excellent research records in his early career.

Dr. Ling grew up in Toronto. It was his dream to be a professor since he was in high school. He has been very pleased to be an Assistant Professor and now an Associate Professor at the University of Vermont.

Beside research, Dr. Ling is known to be a motivated teacher. He routinely helps out students whenever they need. He always replies to students' emails promptly, even at 11:00pm on Saturday nights.

Dr. Ling is always working in his office seven days a week and twelve hours a day in order to obtain the next research results, as well as preparing the next classes.

Awards

- Kirkman Medal (2002), Institute of Combinatorics and Applications.

Selected Publications:

- Y.M. Chee, C.J. Colbourn, A.C.H. Ling, Asymptotically optimal erasure-resilient codes for large disk arrays, *Discrete Applied Mathematics* 102 (2000), 3-36.
- C.J. Colbourn, A.C.H. Ling and M. Tompa,, Construction of optimal quality control for Oligo arrays, *Bioinformatics*, 18 (2002), 529-535.
- Y.M. Chee, A.C.H. Ling, S. Ling and H. Shen, The PBD-closure of constant nonzero-composition codes, *IEEE Trans. on Inform. Theory* (to appear).
- G. Ge, A.C. H. Ling, Y. Miao, A systematic construction for Radar arrays, *IEEE. Trans. on Inform. Theory* (to appear).
- P. Dukes and A.C.H. Ling, On the asymptotic existence of resolvable graph designs, *Can. Math. Bulletin* (to appear).