

STEM Outreach with Computational Thinking & MatheMagic

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Date: Dec 11, 2015, MSTE Friday Talk

Venue: MSTE, UIUC



Abstract:

Getting students to embrace computational thinking and creative problem solving is not easy. But if done successfully, it can bring great benefits to the students now, and in the future. In this talk, I discuss how I use fun problems and activities to get students to unconsciously think about computational thinking. Some of these examples include MatheMagic, solving problems with graph coloring, CS UnPlugged activities (sorting networks, parity-based-puzzles, etc), creative use of induction, zero-knowledge proofs, pancake flipping problems. I hope that the talk will inspire interesting discussions and I look forward to learning new things.

Come with an open mind and a questioning attitude.

Brief Bio: Prof. Hon Wai LEONG (梁汉槐) is currently on sabbatical leave at UIUC. He received the B.Sc. in Mathematics from University of Malaya and Ph.D. degree in Computer Science from the University of Illinois at Urbana-Champaign (UIUC). He was assistant professor at UIUC in 1985, and joined the Department of Computer Science at the National University of Singapore in 1987. In his research, he designs efficient algorithms for optimization problems from many areas: design of computer circuits, transportation and logistics and computational biology. As a teacher, Prof. Leong specializes in finding simple ways to explain complicated subject matters. He also specializes in teaching computational thinking and mindset-change.

One of his passions is working with young people: giving outreach camps on computational thinking and creative problem solving, mentoring young student research projects, etc. In Singapore, he started the Singapore training program for the IOI (International Olympiad in Informatics). He is a member of ACM, IEEE, ISCB, and a Fellow of the Singapore Computer Society.

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