Mathematics Enrichment Camp 2018

Saturday 18 August
8.30am to 1.30pm
NUS, Faculty of Science
Lecture Theatre 34 (Block S17 Level 3)

Register by 5 August at https://tinyurl.com/y8mn2wxs

- This event is suitable for pre-university students.
- Registration is on first-come-first-served basis and will only be confirmed after payment is received.
- The Registration Fee per person is S$10 (GST inclusive) and this includes 1 tea break and lunch.
- Cancellations are not refundable although participants can be substituted.
- For further information, please contact Ms Lynette Wong at matwongl@nus.edu.sg or Ms Chan Lai Chee at matclc@nus.edu.sg

Programme

8.30am	Registration begins. Please be seated by 9.00am
9.05 am	Welcome Address by Head, Department of Mathematics Introduction to the Department of Mathematics

Let the fun begin!

3 enrichment talks, interesting videos,
and pop quizzes with prizes to be won!

So, pay attention and may the fastest fingers win!

9.30 am	Video 1: Map of Mathematics
	Talk 1: Fun with shapes Archimedes style
	Quiz Time!
10.15 am	*Refreshments*
10.45 am	Video 2: Geometry
	Talk 2: To Hit or not to Hit
	Quiz Time!
11.30 am	Video 3: Cryptography
	Talk 3: Intelligent Eye for Driverless Cars
	Quiz Time!
12.15 pm	*Lunch*

Talk Synopsis and Speaker Profile

Fun with shapes Archimedes style   *by Prof Denny Leung*

Prof Denny Leung will explain Archimedes' method for relating the volumes of the sphere, cone and cylinder by balancing them against each other. If time permits, Prof Leung will also talk about comparing the surface areas of the sphere and the cylinder.

Prof Denny Leung is Associate Professor of Mathematics at NUS. He likes pictures and shapes more often than numbers and equations.

To Hit or not to Hit   *by Dr Ng Kah Loon*

If you have ever played a game of blackjack, you would know that one of the most fundamental decision in the game is whether to request for an extra card in an attempt to get "closer" to the total of 21. Mathematics plays an important part in the making of such a decision and is also pivotal in how the rules of the game have changed over the years.
The talk will present some historical developments of the game and a simple introduction to how one can apply Mathematics to study the game and play it better.

Dr Ng Kah Loon received his Ph.D. in Mathematics from NUS in 2004. His research interest is in the application of Graph Theory to other areas outside Mathematics. He has a strong interest in teaching and has won many teaching awards at the Faculty and University level. He is currently jointly appointed in the Faculty's Deanery as an Assistant Dean in the Undergraduate Studies Section.

Intelligent Eye for Driverless Cars   *by Prof Ji Hui*

Camera-based vision system is the primary tool of driverless car to perceive the world. It is the key to a variety of essential tasks in autonomous driving: lane finding, road curvature estimation, obstacle detection and classification, traffic sign detection and classification, and more. In other words, it is an intelligent eye to provide the driverless car the perception of the environment to make the driving decision. As the driving usually happens in a highly dynamic scene, it is very challenging to have a reliable vision system that execute the job flawlessly. This talk will expose the audience the mathematical model of the machine vision systems for autonomous driving, as well as how modern mathematics is playing an essential role in the development of intelligent eye for driverless cars.

Prof Ji Hui received his B.Sc. in Mathematics from Nanjing University, M.Sc. in Applied Mathematics from NUS, and Ph.D. in Computer Science from University of Maryland at College Park. He joined NUS as an assistant professor in 2006 and is currently an Associate Professor in mathematics. His research interest is in mathematical modeling and computational methods that solve practical problems in the fields of computer vision and imaging science.