

Title: **Computational Manga: When Training Data is Scarce**

Speaker: Tien-Tsin Wong  
Professor  
Dept. of Computer Science & Engineering  
The Chinese University of Hong Kong



Abstract:

Deep learning has been demonstrated to be an effective tool for solving many problems that are ambiguous in nature. It outperforms many tailormade solutions and offers stable results, in a real-time speed. It seems to be an ultimate solution for many hard problems. However, its major drawback is its high dependency on training data, because it transforms the problem from “method” to “data.” In many cases, training data is scarce or hard/impractical to obtain.

In this talk, I will discuss how we utilize the deep learning for computational manga applications in the past few years at CUHK. In some of these projects, we face the problem of lacking groundtruth training data. One example is dealing with screentone. We have worked on computational manga for many years. A key problem we want to solve since the beginning is to remove the screentones that manga artists typically used to enrich the manga. Removing the screentones can significantly ease the digital migration from paper to digital platform. However, the definition of screentones by itself is ambiguous and cannot be easily defined by mathematical equations. More importantly, we do not have the unscreened manga as groundtruth, as it is prohibitively expensive to manually trace the structural lines from legacy manga. We shall describe how we overcome the problem of data scarcity. I will also discuss how to extend our strategy on data scarcity to sketch colorization.

Biography:

Tien-Tsin Wong is known with his pioneer in Computational Manga, Image-based Relighting, Ambient Occlusion (Dust Accumulation Simulation), Sphere Maps, and GPGPU for Evolutionary Computing. He graduated from the Chinese University of Hong Kong in 1992 with a B.Sc. degree in Computer Science. He obtained his M.Phil. and Ph.D. degrees in Computer Science from the same university in 1994 and 1998 respectively. He was with HKUST in 1998. In August 1999, he joined the Computer Science & Engineering Department of the Chinese University of Hong Kong. He is currently a Professor. He is also the director of Digital Visual Entertainment Laboratory at CUHK Shenzhen Research Institute (CUSZRI). He is an ACM Senior Member and a HKIE Fellow. He received the IEEE Transactions on Multimedia Prize Paper Award 2005 and the Young Researcher Award 2004.

He was the Academic Committee of Microsoft Digital Cartoon and Animation Laboratory in Beijing Film Academy, visiting professor in both South China University of China and School of Computer Science and Technology at Tianjin University. He has actively involved (as Program Committee) in several international prestigious conferences, including SIGGRAPH Asia (2009, 2010, 2012, 2013, 2018) and SIGGRAPH (2019), Eurographics (2007-2009, 2011, 2019), Pacific Graphics (2000-2005, 2007-2019), ACM I3D (2010-2013), ICCV 2009, and IEEE Virtual Reality 2011.

His main research interests include computer graphics, computational manga, computational perception, machine learning for graphics, precomputed lighting, image-based rendering, GPU techniques, medical visualization, multimedia compression, and computer vision. More information about him can be found at <http://www.cse.cuhk.edu.hk/~ttwong/>

