Kenichi Kanatani
Professor Emeritus, Okayama University

Prof. Kenichi Kanatani

Biography:
Kenichi Kanatani received his B.S., M.S, and Ph.D. in applied mathematics from the University of Tokyo, Japan, in 1972, 1974, and 1979, respectively. After serving as Professor of computer science at Gunma University, Japan, and Okayama University, Japan, he retired in 2013 and is now Professor Emeritus of Okayama University. He is the author of ``Group-Theoretical Methods in Image Understanding" (Springer, 1990), ``Geometric Computation for Machine Vision" (Oxford University Press, 1993), ``Statistical Optimization for Geometric Computation: Theory and Practice" (Elsevier Science, 1996), ``Understanding Geometric Algebra: Hamilton, Grassmann, and Clifford for Computer Vision and Graphics (CRC Press, 2015), ``Ellipse Fitting for Computer Vision: Implementation and Applications" (Morgan & Claypool, 2016), and ``Guide to 3D Vision Computation: Geometric Analysis and Implementation" (Springer 2016). He is a Fellow of IEICE, IEEE, and IAPR.

Speech Title:
Learning Mathematics while Seeing it: Ellipse Fitting

Abstract:
Optimal estimation of parameters from image and sensor data plays a fundamental role in today's intelligent applications such as computer vision and robotics. For this, we model sensor noise as random variables and apply statistical optimization principles. However, this involves highly abstract mathematical techniques, which are very difficult to learn for students and researchers who are mainly interested in practical applications. In my talk, I show that ``ellipse fitting" to image data provides a very good means to learn such principles, because we can ``see" ellipses depicted on displays. Also, ellipse fitting contains all necessary ingredients of statistical optimization techniques that apply to many different problems in computer vision and robotics.