Keynotes
Explainable Machine Learning

Prof. Shixia Liu
Tsinghua University
April 10 (Tuesday), 13:30

Abstract
Machine learning has demonstrated being highly successful at solving many real-world artificial intelligence and data mining problems ranging from information retrieval. However, most users often treat the machine learning model as a “black box” because of its incomprehensible functions and unclear working mechanism. Without a clear understanding of how and why the model works, the development of high-performance models typically relies on a time-consuming trial-and-error procedure. This talk presents the major challenges of interactive machine learning and exemplifies the solutions with several visual analytics techniques and examples, including model understanding and diagnosis.

Bio
Shixia Liu is an associate professor at Tsinghua University. Her research interests include visual text analytics, visual social analytics, visual behavior analytics, graph visualization, and tree visualization. Before joining Tsinghua University, she worked as a lead researcher at Microsoft Research Asia and a research staff member at IBM China Research Lab. Shixia is one of the Papers Co-Chairs of IEEE VAST 2016 and 2017. She is an associate of IEEE Transactions on Visualization and Computer Graphics and is on the editorial board of Information Visualization. She was the guest editor of ACM Transactions on Intelligent Systems and Technology and Tsinghua Science and Technology. She was the program co-chair of PacificVis 2014 and VINCI 2012. Shixia was in the Steering Committee of VINCI 2013. She is on the organizing committee of IEEE VIS 2015 and 2014. She is/was in the Program Committee for CHI 2018, InfoVis 2015, 2014, VAST 2015, 2014, KDD 2015, 2014, 2013, ACM Multimedia 2009, SDM 2008, ACM IUI 2011, 2009, PacificVis 2008, 2009, 2010, 2011, PAKDD 2013, VISAPP 2012, 2011, VINCI 2011.

Chair
Issei Fujishiro (Keio University)
Visualization Accelerates Data-Driven Developmental Biology

Dr. Shuichi Onami
RIKEN Quantitative Biology Center
April 11 (Wednesday), 10:20

Abstract
Recent advancements in live imaging technologies and those in bioimage informatics technologies have enabled quantitative measurement of spatiotemporal dynamics of biosystems. The resultant accumulation of quantitative data of various biosystems dynamics, combined with single-cell resolution and/or whole-genome level gene expression data now provides new opportunities in biology, i.e., data-driven biology. In this talk, I will overview this new direction in biology by showing our on-going researches on animal development. I will discuss novel computational method to deduce quantitative model of animal development by using a large collection of quantitative data of nuclear dynamics in animal development. I will also discuss how visualization can contribute to data-driven biology by showing our collaborative works with scientists in visualization field.

Bio
Shuichi Onami received his D.V.M. from The University of Tokyo in 1994, and received his Ph.D. from Department of the Genetics, The Graduate University for Advanced Studies in 1998. He worked as a researcher and then group leader in ERATO Kitano Symbiotic Systems Project at Japan Science and Technology Corporation (1999–2001), and became independent as an associate professor at Keio University (2002–2006). He joined RIKEN Genomic Sciences Center as a senior scientist in 2006, and became a team leader at RIKEN Advanced Science Institute in 2008. Since 2011, he is a team leader at RIKEN Quantitative Biology Center. He invented an automated system for measuring cell division dynamics in C. elegans embryos and pioneered quantitative modeling in C. elegans embryo. His current research interests include mathematical modeling of animal development, knowledge extraction from a large-scale high-dimensional biological data, and their applications to human biology.

Chair
Shuichi Onami (RIKEN Quantitative Biology Center)
Immersive Analytics: Interactive Data Analysis Using the Surfaces and Spaces Around Us

Prof. Tim Dwyer
Monash University
April 12 (Thursday), 9:30 am

Abstract
The goal of immersive analytics is to remove barriers between people, their data, and the tools they use for analysis. It aims to support data understanding and decision making everywhere and by everyone; working individually or collaboratively in collocated or distributed groups. It aims to make tools that are intuitive, engaging and make the best possible use of all sensory channels. While this may be achieved through the use of immersive virtual environment technologies, data physicalisation, natural interfaces or responsive analytics, the field of immersive analytics is not restricted to the use of such technologies. Immersive Analytics was initiated as a field of research at Monash University in 2014. In this talk I will discuss ongoing Immersive Analytics research at Monash University and elsewhere in this now global initiative.

Bio
Tim Dwyer received his PhD on “Two and a Half Dimensional Visualisation of Relational Networks” from the University of Sydney in 2005. He was a post-doctoral Research Fellow at Monash University from 2005 to 2008, then a Visiting Researcher at Microsoft Research, USA in 2008-2009. From 2009 to 2012 he worked as a Senior Software Development Engineer with the Visual Studio product group at Microsoft, USA. A highlight of this period was shipping the Code Map software dependency visualisation tool with Visual Studio 2012. In late 2012 he returned to Monash University as a Larkins Fellow where he now co-directs the Immersive Analytics Initiative and is a founding member of the Monash Adaptive Visualisation Lab.

Chair
Shigeo Takahashi (University of Aizu)