2023 VGTC Visualization Technical Achievement Award

Huamin Qu, Hong Kong University of Science and Technology

The 2023 VGTC Visualization Technical Achievement Award goes to Huamin Qu for his broad and influential contributions to all areas of visualization, including urban informatics and human-AI collaboration.

Huamin Qu is the dean of the Academy of Interdisciplinary Studies (AIS), the head of the Division of Emerging Interdisciplinary Areas (EMIA), and a chair professor in the Department of Computer Science and Engineering (CSE) at the Hong Kong University of Science and Technology (HKUST). He earned a BS in Mathematics from Xi'an Jiaotong University, China, and a Ph.D. in Computer Science from Stony Brook University, USA. He joined HKUST in 2004 and founded VisLab, which has grown to become one of the largest visualization labs in the world, with 3 postdocs and over 20 ongoing Ph.D. students.

He is a prolific and versatile researcher and has made important contributions to all subareas (SciVis, InfoVis, and VAST) of visualization. His early representative works include the development of the geometry-based edge-bundling technique for general graphs (Vis'08), and perception-based optimization for direct volume rendering (Vis'09), which won an honorable mention award. He has also developed a series of text visualization techniques such as TextFlow, Whisper, OpinionSeer, and FacetAtlas, enriching the methods for visualizing topic evolution and propagation in large-scale text corpora.

His most significant contribution is the development of novel visual analytics systems for a wide range of applications, including Urban Informatics, E-learning, Smart Manufacturing, Fintech, and Speech Training. Many of these systems have been adopted by industry and covered by news media like IEEE Spectrum, Japan NHK TV, Tech in Asia, and Southern China Morning Post. He has significantly expanded the scope of VAST, introduced new techniques, and developed many first-of-its-kind visual analytics systems (e.g., VisMOOC, WeSeer, LoyalTracker) for different application domains. He has published extensively in Urban Informatics and developed systems like SmartAdp, TelcoVis, and StreetVizor to analyze the complex, massive, and heterogeneous spatiotemporal data related to transportation, air quality, and urban planning.

His recent research focuses on human-AI collaboration, and he has made important contributions to explainable AI and AI for VIS. His representative works on explainable and trustworthy AI include RuleMatrix (VIS' 18), ATMSeer (CHI'19; covered by MIT News), VBridge (VIS'21; Honorable Mention), and "M^2Lens (VIS'21, Honorable Mention). His representative works on applying AI to data visualization include "Towards automated infographic design" (VIS'19), "Structure-Aware Visualization Retrieval" (CHI'22, Honorable Mention), KG4Vis (VIS'21, Honorable Mention). He has co-authored two recent surveys on AI for VIS, laying out the research agenda for this emerging and important topic.

He has published over 200 peer-reviewed papers, including 97 papers in the IEEE Transactions on Visualization and Computer Graphics (TVCG) and 18 papers in ACM CHI. He benefits tremendously by working with industry and with more than 400 coauthors from different fields all over the world. His research has been recognized by 14 best paper or honorable mention awards, 9 of which are from IEEE VIS or ACM CHI. He has received many other awards including AI 2000 Most Influential Scholar Award in Visualization, Huawei Distinguished Collaborator Award, IBM Faculty Award, and Higher Education Scientific and Technological Progress Award (Second Class) from the Ministry of Education of China. He actively serves the community and has been a paper co-chair for IEEE VIS'14, VIS'15, and VIS'18, and a program co-chair for IEEE PacificVis'11 and PacificVis'12. He has served on the steering committees of IEEE PacificVis and IEEE VAST and was a founding member of the IEEE VIS Steering Committee. He was inducted to the IEEE Visualization Academy in 2020. He has graduated 40 PhDs and more than 10 of them are now faculty members in China, the USA, and Singapore. It is worth mentioning that his student Aoyu Wu won the 2023 VGTC Visualization Dissertation Award, the first from Asia. Besides his students, he has influenced and nurtured many other junior researchers in China and has played a significant role in the rising of visualization research in Asia.