

# **Human–Computer Interaction Series**

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Editors

# Frontiers in Pen and Touch

Impact of Pen and Touch Technology  
on Education

 Springer

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# Foreword

The 2016 Conference on Pen and Touch Technology in Education was the tenth annual iteration of this annual event. It was a special pleasure for me to chair the conference at Brown, where I also organized a workshop on pen computing in the spring of 2007 (see Fig. 1), the forerunner of WIPTTE (now renamed CPTTE). Some of this year's speakers and attendees participated in that first workshop. This year's conference combined both researchers and educators exchanging best practices. The conference featured the usual CPTTE blend of keynote speakers, research papers, presentations by practicing teachers about techniques they have found worthwhile in the classroom, and hands-on You-Try-It sessions. Participants also had ample opportunities to connect with one another to explore ideas, research applications, and practices, allowing for a stimulating cross-pollination between members of this diverse community.

Microsoft continues to dominate the field with its offering of hardware (Surface tablets and the large Surface Hubs); platform support for digital ink, pen, and touch interaction; and popular applications such as the OneNote family. Other manufacturers such as Samsung, Fujitsu, and Wacom continue to expand their product offerings, and even Apple, who eschewed the pen under Steve Job's leadership, has finally started offering the Apple Pencil for the iPad Pro models. Classroom adoption of tablets grows slowly but steadily but has not yet hit the knee of what we all still hope will be an exponential growth curve. As styli become more prevalent, there will be greater interest in expanding the minimalist interaction vocabulary popularized by the iPhone and its competitors (tap, swipe, pinch-zoom) by adding digital ink and character, gesture, and sketch recognition as first-class citizens. It is encouraging to see companies like Adobe putting increasing emphasis on tablets rather than just desktops. Our CPTTE keynoters and speakers, along with the resulting papers in this manuscript, provide us with inspiration and vision so we can continue building interest and community in this still young field.

We are grateful to the many sponsors who have so generously funded us this year and without whom this whole affair would have been impossible. Continuing their support from WIPTTE 2015 (and previous years) are Microsoft (Windows,



**Fig. 1** In 2007, a kick-off pen-centric computing workshop was held at Brown. Many of the people in the initial photograph attended CPTTE 2017 and are still involved in the pen-computing community

OneNote, Surface, and Research) as platinum-level sponsor, Fujitsu and Wacom as gold-level sponsors, and PDF Annotator as bronze-level sponsor. All are vital to the success of this conference. Thanks are also owed to host sponsor Brown University, in particular the Department of Computer Science and the Office of University Event and Conference Services.

It's a pleasure to acknowledge here the hard work put in by all of the members of the organizing committee. I especially want to acknowledge last year's organizer/chair Jonathan Grudin; program co-chairs Aaron Adler, Mark Payton, and Manoj Prasad; program committee member Eric Hamilton; past chair Tracy Hammond; conference coordinator Lisa Manekofsky; and the rest of the CPTTE 2016 Organizing Committee. The amount of work done by these folks has been well beyond reasonable, and we simply would not be here without their efforts.

Thank you all for contributing—welcome to what we hope you will find to be a stimulating exchange of ideas.

CPTTE 2016 Chair

Dr. Andy van Dam



**Dr. Andy van Dam:** Andries van Dam is the Thomas J. Watson Jr. university professor of technology and education and professor of computer science at Brown University. He has been a member of Brown's faculty since 1965, was a cofounder of Brown's Department of Computer Science and its first chairman from 1979 to 1985, and was also Brown's first vice president for research from 2002 to 2006. His research includes work on computer graphics; hypermedia systems; post-WIMP and natural user interfaces (NUI), including pen and touch computing; and educational software. He has been working for over four decades on systems for creating and reading electronic books with interactive illustrations for use in teaching and research. In 1967 Prof. van Dam cofounded ACM SICGRAPH (the precursor of SIGGRAPH) and from 1985 through 1987 was chairman of the Computing Research Association. He is a fellow of ACM, IEEE, and AAAS and a member of the National Academy of Engineering and the American Academy of Arts and Sciences. He has received the ACM Karl V. Karlstrom Outstanding Educator Award, the SIGGRAPH Steven A. Coons Award for Outstanding Creative Contributions to Computer Graphics, and the IEEE Centennial Medal and holds four honorary doctorates from Darmstadt Technical University in Germany, Swarthmore College, the University of Waterloo in Canada, and ETH Zurich. He has authored or coauthored over 100 papers and nine books, including *Fundamentals of Interactive Computer Graphics* and three editions of *Computer Graphics: Principles and Practice*.

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