INTRODUCTION: MAXED OUT?

By Justin Solomon, *Managing Editor*

D uring the recent ACM SIGGRAPH conference for computer graphics (August 3-7 in New Orleans), Pixar vice president Rob Cook gave a particularly thought-provoking speech on the future of graphics as an area of research. Cook, the most recent winner of the Steven Anson Coons Award for Outstanding Contributions to Computer Graphics, highlighted the evolution of graphics from a fast-moving, speculative area of research to a massive enterprise with millions of dollars pouring in from entertainment, electronics, and other industries.

During this transformation, graphics research progressively became narrower. While older SIGGRAPHs may have been exciting venues to see technology unimaginable just a year earlier, more recent conferences have shown a convergence in the topics of interest to graphics researchers, who are presenting refinements and polishing techniques for existing approaches to graphics problems rather than sharing totally new ideas.

As a result, the papers at the conference have become narrower and less interesting to a general audience. In 2009, they focused on topics like rendering insects encased in amber and refining geometric structures already explored in previous papers. Several years ago, on the other hand, we saw the introduction of cloth simulation, a technique that formed the basis for several other innovative animation processes.
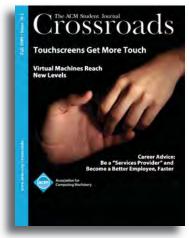
Although some of Cook's observations may have been particular to computer graphics, his impressions of the changing profile of graphics research reflect a similar story in other areas of interest to computer scientists.

The ubiquity of personal computing has moved the PC from a novelty or even curiosity to a less exciting computational tool. This shift in perspective necessarily changed researchers' outlooks and enthusiasm for computing as its own scientific endeavor.

Such a development brings with it several pertinent questions. On the whole, the history of computer science is miniscule when compared to that of more "established" fields, like physics or biology. If researchers are already afraid that their work will fall into obscurity in decades rather than centuries, is computer science likely to stagnate in the near future? Have all the relevant computer-related discoveries already been made?

As the next generation of computer scientists and professionals, we students are the only ones who can determine the future of our industry. I am optimistic that we have but scratched the surface of a rich and challenging field of research and engineering likely to offer up interesting problems for centuries to come.

It's true that the foundations of many subfields of computing have been laid out. Nobody would dare discount the importance of data structures, databases, and depth buffers. With these basics out of our way, however, we have the unique and exciting opportunity to use the tools in place to generate developments not just within our own areas of interest, but across computing and other disciplines.

Just as Rob Cook advocated expanding our conception of graphics to include "interactive techniques" and other settings not directly related to rendering increasingly complex images, we should look for the next generation of interesting problems not in laying groundwork but in solving real-world problems—theoretical or practical—in the larger scientific, mathematical, and engineering communities.

As the student members of the ACM, *Crossroads* readers already make up a self-identified group of the leaders of future developments in computing. Having observed the breadth and depth of our readers' work by reading their submissions to *Crossroads* and other venues, I have no doubt that the future of computing is in good hands. After all, in this issue alone we explore topics as diverse as virtualization, careers in video game development, and entering the workforce as a software engineer. Moreover, our readers' active participation in ACM chapters nationwide demonstrates their commitment to building the social networks and lines of communication necessary to make the next big discoveries in computer science.

As we continue to share the latest accomplishments of your peers in computing as well as news and career advice, we welcome your comments and suggestions via email, at **crossroads@acm.org**.

I wish you the best of luck in the 2009-2010 academic year. And please keep *Crossroads* posted as you continue to impress programmers and non-programmers alike with your talents and creativity solving tough computer problems.

Biography

Justin Solomon is an undergraduate at Stanford University double majoring in Computer Science and Mathematics. Along with his work as the managing editor for ACM Crossroads, *he participates in computer graphics research in collaboration with the Stanford Department of Computer Science and Pixar Animation Studios, competes in programming contests, and plays cello and piano.*

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