

Anthony Santella PhD

Image Analysis, Visualization, Graphics

Experience

- April 2008-present, Research Fellow. Memorial Sloan Kettering Cancer Center, NY, NY.
Research and development of image processing, large scale data analysis and visualization software for in vivo cell tracking. **Wrote and awarded NIH Individual Fellowship F32 GM091874-01**
- May 2005-April 2008, Self-employed as programmer, eye tracking consultant and fine artist. Web development (PHP, MySQL). Eye tracking experiment design and data analysis (VBA for Excel). Commission work and gallery exhibitions: www.anthonysantella.com
- Sept 1999-May 2005, Research/Teaching Assistant. Department of Computer Science and Center for Cognitive Science, Rutgers University, Piscataway, NJ, Advisor: Doug DeCarlo, dougdecarlo@gmail.com
CS and perceptual research, developed research software, planned and conducted recitations, designed assignments and provided student assistance for classes including software engineering, algorithms, computer graphics and artificial intelligence.
- July 2004-Sept 2004, Research Intern. Document Processing and Understanding Group
Microsoft Research, Redmond, WA. Supervisor: Maneesh Agrawala, maneesh@cs.berkeley.edu
Research/development in eye tracking based interaction and computational photography
- May 1998-Sept 2000 Part Time Programmer/Systems Administrator HELP USA homeless services, NY, NY.

Skills:

- Technical Writing
 - Contributions or primary authorship on numerous academic publications
 - Sole author of one and author of software aims section of a second funded NIH grant.
 - Reviewer for Siggraph, NPAR, CHI, Computational Aesthetics, Eye Tracking Research and Applications, ACM Transactions on Graphics, Computers and Graphics, The Visual Computer.
- Programming:
 - Extensive research experience implementing graphics, image processing and UI applications in Matlab (image processing and statistical toolboxes) and Java (Swing JAI, J2D). Experience with perl, C, C++, OpenGL, web development.
- Eye Tracking/Behavioral Research:
 - Experience using commercial eye tracking software and hardware by Tobii and ISCAN. Interpretation of eye tracking data and development of novel analysis algorithms.
 - Design, execution and statistical analysis for behavioral experiments.
- Biological Data analysis
 - Large-scale analysis of tracking results, high throughput phenotyping of motion behavior.

Education:

- New York University, College of Arts and Sciences, NY, NY
BA. in Computer Science Sept 1995-May 1999. Magna Cum Laude, Phi Beta Kappa
- Rutgers University, Department of Computer Science, New Brunswick, NJ
Ph.D. in Computer Science, Certificate in Cognitive Science, Sept 1999-May 2005
Thesis : The Art of Seeing: Non-Photorealistic Rendering and Visual Perception
Adviser: Doug DeCarlo

Publications:

- C. Pohl, M. Tiongson, J.L. Moore, A. Santella and Z. Bao. “Actomyosin-based Self-organization of cell internalization during *C. elegans* gastrulation.” *BMC Biology* 2012, 10:94. Contribution: cell tracking and design and programming of visualizations of cell shape changes.
- Y. Wu, A. Ghitani, R. Christensen, A. Santella, Z. Du, G. Rondeau, Z. Bao, D. Colón-Ramos, H. Shroff. “Inverted selective plane illumination microscopy (iSPIM) enables coupled cell identity lineaging and neurodevelopmental imaging in *Caenorhabditis elegans*” *PNAS* 2011 108 (43) 17708-17713. Contribution: cell tracking
- A. Santella, Z. Du, S. Nowotschin, A.K. Hadjantonakis and Z. Bao, “A hybrid blob-slice model for accurate and efficient detection of fluorescence labeled nuclei in 3D” *BMC Bioinformatics*, 2010, 11:580. Contribution: Design, coding, testing of nuclear detection method.
- P. J. Keller, A. D. Schmidt, A. Santella, K. Khairy, Z. Bao, J. Wittbrodt and E. H. K. Stelzer, “Fast, high-contrast imaging of animal development with scanned light sheet-based structured-illumination microscopy” *Nature Methods* 2010, 7, pp. 637–642. Contribution: Image analysis for generation of digital *Drosophila* embryo.
- Forrester Cole, Doug DeCarlo, Adam Finkelstein, Kenrick Kin, Keith Morley, and Anthony Santella, “Directing Gaze in 3D Models with Stylized Focus,” *Eurographics Symposium on Rendering*, June 2006 pp. 377-387. Contribution: Design and conduct of eye tracking evaluation study testing the ability of level of detail to focus attention in 3D renderings.
- A. Santella, M. Agrawala, D. DeCarlo, D. Salesin, and M. Cohen, “Gaze Based Interaction for Semi-Automatic Photo Cropping” In *CHI 2006*, pp. 771-780.2006. Contribution: Development of eye tracking based image cropping software (Matlab), design and conduct of forced choice validation study.
- A. Santella and D. DeCarlo, “Visual Interest and NPR: an Evaluation and Manifesto”. In *Proceedings of the Third International Symposium on Non-Photorealistic Animation and Rendering (NPAR) 2004*, pp 71-78. Contribution: design and execution of large scale eye tracking study of viewing behavior in images with locally varying detail.
- A. Santella and D. DeCarlo, “Robust Clustering of Eye Movement Recordings for Quantification of Visual Interest”. In *Proceedings of the Third Eye Tracking Research and Applications (ETRA) 2004*, pp 27-34. Contribution: Design and presentation of clustering technique tailored to eye tracking data.
- D. DeCarlo, A. Finkelstein, S. Rusinkiewicz and A. Santella, “Suggestive Contours for Conveying Shape”. In *ACM Transactions on Graphics*, 22(3) (SIGGRAPH 2003 Proceedings), pp 848-855. Contribution: Conceptual development, and contributed to software development (C++) of 3D line drawing style.
- D. DeCarlo and A. Santella, “Stylization and Abstraction of Photographs”. In *ACM Transactions on Graphics*, 21(3) (SIGGRAPH 2002 Proceedings), pp 769-776. An image from this paper was selected for the proceedings cover. Contribution: Development (Java, perl) of image analysis, rendering techniques and perceptual metrics for 2D stylized rendering filter with local detail control.
- Santella and D. DeCarlo, “Abstracted Painterly Renderings Using Eye-tracking Data”. In *Proceedings of the Second International Symposium on Non-Photorealistic Animation and Rendering (NPAR) 2002*, pp 75-82. Contribution: Development (Java) of rendering techniques and perceptual metrics.