

CURRICULUM VITAE

Leonard D. Brown

Contact

Optical Sciences Center
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Education

Ph.D. Computer Science, University of Arizona, 2000-Present (In Progress)

Thesis: "Cohesive Multi-mode Visualization and Interaction in Augmented Virtual Environments"

Advisor: Dr. Hong Hua

Ph.D. Minor: Electrical Engineering

B.S. Computer Science, West Virginia University, 1995-1999

Undergraduate Research: "Virtual LitLand: A Virtual World Through the Eyes of *Porte Crayon*"

Advisor: Dr. Susan C. Warshauer

Summa Cum Laude

Professional Experience

Academic Appointments

1. Research Assistant, Aug. 2004 – Present
3DVIS Laboratory
Optical Sciences Center
University of Arizona

Research Focus: Exploring the continuum of 3D visualization through "Magic Lens" enabled devices in an Augmented Virtual Environment (AVE)

2. Visiting Scholar, June 2003 – Jan. 2004
3DVIS Laboratory
Department of Information & Computer Science
University of Hawai'i at Manoa

Research Focus: Design, formative evaluation, and extension of a tangible interface framework for augmented workspaces

3. Research Assistant, Aug. 2000 – Jan. 2003
Computer Vision & Robotics Laboratory
Beckman Institute for Advanced Science & Technology
University of Illinois at Urbana-Champaign

Research Focus: Engineering of an augmented environment testbed using Head-Mounted Projected Display (HMPD)

4. Research Assistant (Undergraduate), Dec. 1998 – July 2000
Center for Literary Computing
Department of English
West Virginia University

Research Focus: Creation of a virtual environment from the travel writings and illustrations of 19th century author D.H. Strother, *Porte Crayon*

Industry Experience

5. Computer Specialist (Internship), April 1998 – Dec. 1998
National Institutes for Occupational Safety & Health (NIOSH)
Centers for Disease Control & Prevention
Morgantown, WV 26505

Work Experience: Administration of IBM Enterprise System Architecture (ESA) mainframe & Sun Solaris Enterprise Server; Data archival; Maintenance of SyBase database front-ends; End-user support of SAS statistical analysis package

6. Systems Administrator, Aug. 1998 – Jan. 1999
Psychiatric Consultants, Inc.
Dr. Rafael Semidei, M.D.
Morgantown, WV 26505

Work Experience: Maintenance of Windows NT domain; Management and archival of patient records database; Windows NT end-user support

Research Interests

1. Human Computer Interaction (HCI):
Virtual Environments (VR)
Augmented Environments (AR)
3D Stereoscopic & Volumetric Displays
Tangible User Interfaces (TUI)
Human Factors & Usability Assessment
2. Computer Graphics:
Photo-realistic Rendering
Physically-based Modeling
Applications of Computational Geometry
3. Computer Vision:
Camera-based Autonomous Tracking
3D Scene Reconstruction
4. Multi-disciplinary Applications:
Medical Training & Diagnosis
Geographic Information Systems (GIS)
Planetary Sciences
Humanities & History

Publications

Refereed Journals

(Published)

1. Hua, Hong, Leonard D. Brown, and Chunyu Gao. "System and Interface Framework for SCAPE as a Collaborative Infrastructure." *Presence: Teleoperators & Virtual Environments*, vol. 13(2), MIT Press, p. 234-250, 2004.
2. Hua, Hong, Leonard D. Brown, and Chunyu Gao. "SCAPE: Supporting Stereoscopic Collaboration in Augmented and Projective Environments." *Computer Graphics & Applications*, vol. 24(1), IEEE Press, p. 66-75, 2004.
3. Brown, Leonard D, Hong Hua, and Chunyu Gao. "A Widget Framework for Augmented Interaction in SCAPE." *CHI Letters*, vol. 5(2); also in *Proceedings of International Symposium on User Interface Software & Technology (UIST)*, ACM Press, p. 1-10, 2003.

(Accepted / Submitted)

4. Brown, Leonard D. and Hong Hua. "Enabling a Continuum of 3D Visualization: Magic Lenses for Augmented Virtual Environments." *Computer Graphics & Applications*, IEEE Press (accepted in Q3 2005).
5. Brown, Leonard D. and Hong Hua. "The Magic WIM: Fusing Worlds in Miniature with Dynamic Multi-mode Display." *Presence: Teleoperators & Virtual Environments*, MIT Press (submitted in Q3 2005).

Refereed Conferences

6. Hua, Hong, Leonard D. Brown, and Chunyu Gao. "A New Collaborative Infrastructure: SCAPE." In *Proceedings of IEEE Virtual Reality Conference (IEEE VR)*. IEEE Press, Los Angeles, p. 171-179, 2003. (Award: **Best Paper, Runner-Up**)
7. Hua, Hong, Chunyu Gao, and Leonard D. Brown. "A Testbed for Precise Registration, Natural Occlusion, and Interaction in an Augmented Environment Using Head-Mounted Projective Display." In *Proceedings of IEEE Virtual Reality Conference (IEEE VR)*. IEEE Press, Orlando, FL, p. 81-89, 2002.
8. Hua, Hong, Chunyu Gao, Leonard D. Brown, Narendra Ahuja, Frank Biocca, and Jannick P. Rolland. "Design of an Ultra-Light Head-Mounted Projective Display (HMPD) and its Applications in Augmented Collaborative Environments." In *Proceedings of SPIE*, v. 4660, 2002.
9. Hua, Hong, Chunyu Gao, Leonard D. Brown, and Jannick P. Rolland. "Using a Head-Mounted Projective Display in Interactive Augmented Environments." In *Proceedings of International Symposium on Augmented Reality (ISAR, now a part of ISMAR)*. IEEE Press, New York, p. 217-223, 2001.

Refereed Video Proceedings

10. Brown, Leonard D, Hong Hua, and Chunyu Gao. "SCAPE: A Collaborative Interface." In *Video Proceedings of International Symposium on User Interface Software & Technology (UIST)*, ACM Press, Vancouver, 2003.
11. Hua, Hong, Leonard D. Brown, and Chunyu Gao. "Head-Mounted Projective Display: Technology Showcase." In *Video Proceedings of IEEE Virtual Reality Conference (IEEE VR)*. IEEE Press, Orlando, FL, 2002.

Workshops & Short Talks

12. Brown, Leonard D. and Hong Hua. "Toward a Tangible Interface for Multi-Modal Interior Design Using SCAPE." In *Proceedings of IEEE Virtual Reality (IEEE VR) Workshop: Beyond Wand & Glove Based Interaction*, IEEE Press, Chicago, p. 79-83, 2004.
13. Hua, Hong, Leonard D. Brown, Chunyu Gao, Narendra Ahuja, and Jannick Rolland. "A Head-Mounted Projective Display and its Applications in Interactive Augmented Environments." In *Proceedings of ACM Conference on Computer Graphics & Interaction Techniques (SIGGRAPH) Technical Sketches and Applications*. ACM Press, Los Angeles, 2001.

Technical Reports

14. Bachta, Edward, Leonard D. Brown, Nathan Carr, James Decker, Xin Jiao, William Nagel, Stephen Zelinka, and John Hart. "The Design and Implementation of a Programming Infrastructure for the Integration and Application of Implicit Surface Research." UIUCDCS-R-2000, Dept. of Computer Science, University of Illinois at Urbana-Champaign, 2000.

Honors & Awards

1. Cover feature, *Presence: Teleoperators & Virtual Environments*, MIT Press, March 2004
2. Visiting Scholar, University of Hawai'i at Manoa, 2003
3. "Best Paper, Runner-Up" Award, *IEEE Virtual Reality 2003* Annual International Conference, March 2003
4. Recognition by *WVU Alumni Magazine* on research directions at the Center for Literary Computing, West Virginia University, Aug. 1999
5. Recognition by *Charleston Gazette* (Charleston, WV) and *Dominion Post* (Morgantown, WV) on novel application of virtual environments to regional history & literature (*Porte Crayon* Project), Jan & July 1999
6. Dean's List for Academic Achievement, West Virginia University, 1995-1999
7. Presidential Scholarship (Full Tuition), West Virginia University, 1995-1999

Professional Activities

1. Design, maintenance, and extension of SCAPE Toolkit, a cross-platform application programming interface for collaborative Augmented Virtual Environments (AVEs), with Dr. Hong Hua, University of Arizona, 2000-Present
2. Peer review of paper submissions to *IEEE ISMAR* and *ACM UIST* Annual International Conferences, with Dr. Hong Hua, University of Arizona, 2003-Present
3. Preliminary research in physically-based rendering of fluid droplets at rest on various surface substrates, with Dr. Yizhou Yu, University of Illinois, 2001
4. Design and implementation of a math library and toolkit to support implicit surface visualization and research, with Dr. John C. Hart, University of Illinois, 2000
5. Advising of computing technology purchases and acquisitions for Center for Literary Computing, with Dr. Susan C. Warshauer, West Virginia University, 1997-1999

Teaching & Outreach

1. Design and demonstration of programming projects for courses ICS 481 (Introduction to Computer Graphics) and ICS 681 (Topics in Computer Graphics), with Dr Hong Hua, University of Hawai'i, Fall & Spring 2003
2. Public talks and demonstration for Computer Vision and Robotics Lab at *Beckman Institute Annual Open House*, with Dr. Narendra Ahuja, University of Illinois, 2001-2003
3. Tutoring of undergraduate Computer Science students on programming languages, principles and design, with Cynthia Tanner (Head, Software Engineering Program), West Virginia University, 1998-1999

Society Memberships

1. Association for Computing Machinery (ACM)
2. Computer Society, Institute for Electrical and Electronics Engineers (IEEE)
3. Phi Kappa Phi (National Honor Society)
4. Upsilon Pi Epsilon (Computer Science Honorary)

Contacts

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