

# Benjamin C. Lok

## *Curriculum Vitae – March 12, 2014*

### CONTACT

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CSE E544  
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University of Florida – P.O. Box 116120  
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### EMPLOYMENT

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(August 2009 – present) **Associate Professor** with tenure – Department of Computer and Information Science and Engineering, *University of Florida*  
(December 2012 – present) **Director** of the Digital Arts and Science Program – *University of Florida*  
(November 2012 – present) Adjunct Associate Professor – Department of Psychiatry and Health Behavior – *Georgia Health Sciences University*  
(August 2003 – August 2009) **Assistant Professor** – *University of Florida*  
(May 2011 – present) **Co-Founder**, *Shadow Health, Inc.*, Gainesville, FL  
  
(June 2006 – 2011) **Adjunct Associate Professor** – Department of Surgery, *Georgia Health Sciences University*  
(August 2002 – July 2003) **Post Doctoral Research Fellow** – *University of North Carolina at Charlotte*, Advisor: Professor Larry F. Hodges

### EDUCATION

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#### *University of North Carolina at Chapel Hill*

**Ph.D. in Computer Science** (May 2002), Advisor: Professor Frederick P. Brooks, Jr. (*Dissertation*: Interacting with Dynamic Real Objects in Virtual Environments)  
**M.S. in Computer Science** (May 1999), Advisor: Professor Gary Bishop

#### *University of Tulsa*

**B.S. in Computer Science** (*magna cum laude*), Minor in Mathematics (May 1997), Advisor: Professor Sujeet Sheno

### HONORS

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Keynote Speaker at 14th International Symposium on Visual Computing, Las Vegas, NV (2011)  
Director, Digital Arts and Sciences Program at the University of Florida  
General Co-Chair: IEEE Virtual Reality 2014, IEEE Virtual Reality 2013  
Steering Committee: IEEE Virtual Reality Conference (2009-present)  
Keynote Panelist: Software Engineer and Architecture for Realtime Interactive Systems Working Group – IEEE Virtual Reality 2013  
Keynote Speaker at 8<sup>th</sup> International Symposium on Visual Computing, Las Vegas, NV (2011)  
Program Co-Chair: IEEE Virtual Reality 2011, IEEE Virtual Reality 2010, ACM VRST 2009, IEEE/ACM ISMAR 2009 (Area Co-Chair)  
Speaker at the National Academy of Science Kavli France-US Frontiers of Science Symposium in Roscoff, France (2008)  
IEEE Virtual Reality 2008 Best Paper  
NSF Career Award (2007)  
University of Florida Student ACM Chapter's CISE Teacher of the Year (2005)  
ACM SIGGRAPH Symposium on Interactive 3D Graphics 2003 Top 3 Paper (2003)  
Link Foundation Fellowship in Advanced Simulation and Training (2001)  
National Science Foundation Fellowship (1997)  
Barry M. Goldwater Scholarship (1995)

### MENTORING

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PhD students (*Shivashankar Halan, Diego Rivera-Gutierrez, Andrew Robb, Michael Borish, Andrew Cordar*)  
Post-doctoral fellow (*Dr. Andrea Kleinsmith*)

#### *Post-Doctoral Fellows Alumni*

2012, *Dr. Regis Kopper* (Duke University)  
2011, *Dr. Aaron Kotranza*  
2010, *Dr. Yong Ho Hwang*

2008, *Dr. Andrew Rajj*

### **Ph.D. Alumni**

2013, *Dr. Joon Hao Chuah*, (Software development engineer I, Amazon.com)  
 2011, *Dr. Brent Rossen* (Software Development Engineer In Team, Microsoft)  
 2009, *Dr. Aaron Kotranza* (Chief Technology Officer, Shadow Learning, Inc.)  
 2009, *Dr. John Quarles* (Assistant Professor, University of Texas at San Antonio), LINK Fellow  
 2008, *Dr. Andrew Rajj* (Assistant Professor, University of South Florida)  
 2008, *Dr. Kyle Johnsen* (Assistant Professor, University of Georgia), HMMI Grad Student Mentor Award

### **M.S. Alumni**

2013, Guanyun Hu (Harman International)  
 2012, *Vaishnavi Krishnan* (VMWare)  
 2012, *Doaa El-Sheik*  
 2011, *Mallory McManamon* (Amazon)  
 2010, Shivashankar Halan (PhD program, University of Florida)  
 2009, *Ethan Blackwelder*  
 2009, *Lu Cao* (MFA program, University of Florida)  
 2005, *Cyrus Harrison* (Lawrence Livermore Research Labs)  
 2005, *George Mora* (Industry)

### **B.S. Alumni**

2009, *Willie Maddox* (Microsoft)  
 2008, *Harold Rodriguez* (GrooveShark.com)  
 2008, *Corey Forbus* (Industry)  
 2007, *Joshua Horton* (Ph.D. program, University of Florida)  
 2006, *Robert Dickerson* (Visiting Assistant Professor, College of William and Mary), (Ph.D., 2013, Virginia)  
 2005, *Aaron Kotranza* (Ph.D. program, University of Florida)  
 2005, *Sayed Hashimi* (Industry)  
 2005, *Art Homs* (Industry)  
 2005, *Andrew Joubert* (Industry)  
 2005, *Sam Preston* (Advanced Engineering Center at Old Dominion University)

## **FUNDING**

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**Extramural Grants (Total: \$7,045,242. PI: \$4,211,732, Co-PI: \$2,833,510, Consultant on grants that use my technology: \$1,195,650)**  
**Internal Grants (\$18,380)**

### **Current**

#### **PI of Grant**

**NSF, Medium Grant, (Co PIs: Lampotang, White, Wendling)**  
*HCC: Medium: Plug and Train: Mixed Reality Humans for Team Training*  
 07/01/2012 – 06/30/2016, Total: \$1,087,380

**NIH, R01 Grant, (1R01LM010813-01) (PI, 2<sup>nd</sup> PI: Cendan, Co-Is: Lind, Johnsen)**  
*Neurological Exams Teaching & Evaluation Using Virtual Patients*  
 09/01/2010 – 08/31/2015, Total: \$1,833,293

#### **Co-PI of Grant**

**Gold Foundation (PI: Foster [Georgia Health Sciences University])**  
*A Randomized Controlled Study Using Virtual Patients to Enhance Medical Students' Empathic Communication*  
 11/1/2012 – 10/31/13, \$25,000

**Veterans Administration, Rehabilitation Research and Development Grant (B0339-R) (PI: Levy [Veterans Administration])**

*Virtual Environments for Therapeutic Solutions (VETS) mTBI/PTSD Phase II*  
 5/1/2013 – 4/30/2016, \$750,000

**NIH, R21 Grant, (1R21LM010829-01A1) (PI: Quarles [UT-San Antonio])**  
*A Mixed Reality Conscious Sedation Simulator for Learning to Manage Variability*

4/1/2011 - 4/31/2014, \$369,473

**American Foundation of Suicide Prevention, (PI: Foster [Georgia Health Sciences University])**  
*Medical Students' Proficiency in Suicide Risk Assessment after Interaction with a Virtual Patient in Crisis*  
 \$30,000, starting 9/1/12

### Completed

**New Zealand Tertiary Education Commission, (Partner, PI: Billingham [University of Canterbury])**  
*Immersive Learning Through Virtual Reality*  
 1/1/2009 – 12/31/2011, Total: \$1,117,650 (funded students and travel to NZ)

**NIH, R01 Grant, (R01DE013208) (PI: Robinson [UF])**  
*Pain Treatment Decisions: Influence of Sex, Race, and Age*  
 9/1/2009 – 8/31/13, Total: \$1,095,473, NIH Score: 121 (top 1.9%)

**NSF, Medium Grant, (IIS- 0803652) (PI, Co-PIs: Lind, Ferdig)**  
*HCC-Medium: Mixed Reality Virtual Humans for Training*  
 9/1/2008 – 8/31/2013, Total: \$580,000

**NSF, Career Award, (IIS-0643557) (PI)**  
*Studying Diversity Issues with Immersive Virtual Humans*  
 8/1/2007 – 7/31/2013, \$405,695

**NSF, Research Experience for Undergraduates, (IIS-0733800) (PI)**  
*Studying Diversity Issues with Immersive Virtual Humans*  
 8/1/2007 – 7/31/2013, \$12,000

**USHHS, SAMSHA, (PI: McCance-Katz AAAP)**  
 7/1/2011 – 6/3/2014, \$166,667 (UF: \$72,086)) – Terminated after 1 year

**RORC, Pilot Grant, (Co-I, PI: Levy)**  
*Development of Virtual Humans for PTSD and mTBI*  
 9/1/2010 – 8/31/2011, \$38,443

**NIH, R03 Grant, (R03LM009646-01) (PI, 2<sup>nd</sup> PI: Cendan)**  
*Immersive Virtual Patients with Abnormal Clinical Conditions for Medical Student Training*  
 8/15/2008 – 8/14/2010, Total: \$137,014  
 Administrative Grant Award (9/29/2009-9/30/2010), Total: \$36,625

**NIH, R56 Grant, (Co-I, PI: Robinson)**  
*Pain Treatment Decisions: Influence of Sex, Race, and Age*  
 9/1/2008 – 8/31/09, Total: \$323,454

**Association of Surgical Education, CESERT Grant, (Consultant, PI: Lind)**  
*The Use of a Virtual Character-Enhanced Simulator to Teach and Assess Breast History and Examination Skills*  
 7/1/2008 – 6/30/2010, Total: \$78,000

**Drager Medical Contract (Co-PI, PI: Lampotang)**  
*Mixed Reality Simulation for Anesthesia Machine Training*  
 10/1/2008 – 9/30/2009, Total: \$35,000

**Medical College of Georgia Contract (PI)**  
*Virtual Humans to Teach Medical Communication Skills*  
 3/1/2007 – 5/31/2008, \$59,000

**Keele University Contract (PI)**  
*Virtual Humans to Teach Pharmacy Communication Skills*  
 4/1/2007 – 6/30/2007, \$56,000

**NSF CCF-0713983 (PI)**

*CPA (Gr&Vis): Student Panel at IEEE Virtual Reality 2007 Conference*  
3/1/2007 – 4/1/2007, \$4725

#### **Internal Grants (\$18,380)**

**2005 College of Public Health and Health Professions Contract**  
*Contract from Professor Michael Robinson on Virtual Humans for Pain Studies*  
2005, \$3,240

**2004 College of Medicine Education Center Grant (Co-PI, PI: Stevens, Lind)**  
*A Pilot Study to Examine the Use of Virtual Patient and Instructor in Teaching Medical Students Communication Skills using an Abdominal pain Scenario*  
6/1/2004-12/31/2004, \$4,900

**2004 Professor Sumi Helal Contract**  
*Distance Dining*  
2004, \$10,240

#### **PUBLICATIONS**

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\* - student supervised

AR – Acceptance Rate reported when known

#### **Edited Books**

1. *IEEE Transactions on Visualization and Computer Graphics*, Editors Interrante, V. **Lok, B.**, Majumder, A, Hirose, M., Volume 18, No. 7, 1013-1188.
2. *IEEE Transactions on Visualization and Computer Graphics*, Editors Kiyokawa, K., Klinker, G., and **Lok, B.** Volume 17, No. 9, ISSN 1193-1351..
3. *IEEE Transactions on Visualization and Computer Graphics*, Editors Thalmann, D. and **Lok, B.** Volume 17, No. 7, July 2011, ISSN 873-1032.

#### **Peer-Reviewed Journal Articles**

1. Johnson, T., Lyons, R., Kopper, R., Johnsen, K., Lok, B., and Cendan. (accepted). Virtual patient simulations and optimal social learning context: A replication of an aptitude-treatment interaction effect. *Medical Teacher*.
2. Rivera-Gutierrez, D., Ferdig, R., Li, J., Lok, B. "Getting the Point Across!: Exploring the Effects of Dynamic Virtual Humans in an Interactive Museum Exhibit on User Perceptions" to Appear in *IEEE Transactions on Visualization and Computer Graphics*.
3. Quarles, J., Lampotang, S., Fischler, I., Fishwick, P., and Lok, B. "Experiences in mixed reality-based collocated after action review" *Virtual Reality*, 13:3, Springer 2011, pp 239-252.
4. Chuah(g), J. Robb(g), A., White, C. Wendling, A., Lampotang, S., Kopper(p), R., **Lok, B.** Exploring Agent Physicality and Social Presence for Medical Team Training. (In Press) *Presence: Teleoperators and Virtual Environments*, Vol 22, No. 2, Spring 2013. (approx 18 pages)

5. Chuah(g), J., Black, E., and **Lok, B.** "Applying Mixed Reality to Simulate Vulnerable Populations for Practicing Clinical Communication Skills" *IEEE Transactions on Visualization and Computer Graphics*, 19 (4), 539-546.
6. Johnson, T., Lyons, R., Chuah(g), J., Kopper, R., **Lok, B.**, Cendan, J. Optimal learning in a virtual patient simulation of cranial nerve palsies: The interaction between social learning context and student aptitude. *Medical Teacher* 2013;35(1):e899-907.
7. Robb(g), A., Kopper(p), R., Ambani, R., Qayyum, F., Lind, D., Su, L., and **Lok, B.** "Leveraging Virtual Humans to Effectively Prepare Learners for Stressful Interpersonal Experiences." *IEEE Transactions on Visualization and Computer Graphics*, 19 (4), 662-670.
8. Wandner(g), L., Torres, C., Chuah(g), J., **Lok, B.**, Steven, G., and Robinson, M. "Pain Assessment and Treatment Decisions for Virtual Human Patients," (In Press) *Cyberpsychology, Behavior, and Social Networking*. April 2013, 577-588.
9. Wandner(g), L., Hirsh, A., Torres, C., **Lok, B.**, Scipio, C., Heft, M., and Robinson, M.. Using virtual human technology to capture dentists' decision policies about pain. *Journal of Dental Research*, 92 (4), 301-305.
10. Cendan, J., and **Lok, B.** "The use of virtual patients in medical school curricula." *Advances in Physiology Education*, March 2012, Vol. 36, No. 1, 48-53.
11. Ferdig, R., Schottke, K., Rivera-Gutierrez(g), D., & **Lok, B.** Assessing past, present, and future interactions with virtual patients. *International Journal of Games and Computer-Mediated Simulations*, 4(3), 20-37.
12. Lin, C., Laserna, C., Lind, D., Kalaria, C., Aryal, T., **Lok, B.**, Johnsen(g), K., Kotranza(g), A., Cendan, J., and Pruitt, J. "User response to the simulation of a virtual patient with cranial nerve injury", *Journal of Bio-Algorithms & Med-Systems*, Volume 8, No. 1, January 2012, 1-12.
13. Rossen(g), B. and **Lok, B.** "A Crowdsourcing Method to Develop Virtual Human Conversational Agents." *International Journal of Human-Computer Studies*, April 2012, Vol. 70, No. 4, 301-319.
14. Ezzell(g), Z., Fishwick, P. **Lok, B.**, Pitkin, A., Lampotang, S. "An ontology-enabled user interface for simulation model construction and visualization" *Journal of Simulation* 5(3): 147-156.
15. Kotranza(g), A., Lind, D., and **Lok, B.** "Real-time Evaluation and Visualization of Learner Performance in a Mixed Reality Environment for Clinical Breast Examination," *IEEE Transactions on Visualization and Computer Graphics*. July 2012, Vol. 18, No. 7, 1101-1114.
16. Filichia, L., Halan(g), S., Blackwelder(g), E., Rossen(g), B., **Lok, B.**, Korndorffer, J., Cendan, J. Description of Web-Enhanced Virtual Character Simulation System to Standardize Patient Hand-Offs. *Journal of Surgical Residents* 2011, 166(2):176-181.
17. Wendling, A., Halan(g), S., Tighe, P., Le, L., Euliano, T., and **Lok, B.** "Virtual humans versus standardized patients in presenting abnormal physical findings", *Academic Medicine*. 2011; 86(3): 384-388. (Impact Factor: 1.940, ranked #2 of 21 scientific journals of the AAMC).

18. Kotranza(g), A., Cendan, J., Johnsen(g), K., and **B. Lok**. "Simulation of a Virtual Patient with Cranial Nerve Injury Augments Physician-Learner Concern for Patient Safety," *Journal on Bio-Algorithms and Med-Systems*, Vol. 6, No. 11, 2010, 25-34.
19. Quarles(g), J., Lampotang, S., Fischler, I., Fishwick, P., and **B. Lok**, "A Mixed Reality Approach for Interactively Blending Dynamic Models with Corresponding Physical Phenomena" *ACM Transactions on Modeling and Computer Simulation*, Volume 20, Issue 4, October 2010, 1 -22.
20. Deladisma, A., Gupta, M., Kotranza, A., Bittner, B., Imam, T., Swinson, D., Gucwa, A., Nesbit, R., Lok, B., Pugh, C., and D. Lind (2008). "A Pilot Study to Integrate an Immersive Virtual Patient with a Breast Complaint and Breast Exam Simulator into a Surgery Clerkship", *American Journal of Surgery*, Volume 197, Issue 1 , January 2009, 102-106.
21. Kotranza(g), A., **Lok, B.**, Deladisma, A., Pugh, C., and D. Lind. "Mixed Reality Humans: Evaluating Behavior, Usability, and Acceptability." *IEEE Transactions on Visualization and Computer Graphics*. July/August 2009, Vol. 15, No. 3, 369-382.
22. Quarles(g), J., Lampotang, S., Fischler, I., Fishwick, P., and **B. Lok**, "Scaffolded Learning with Mixed Reality" *Computers and Graphics: Special Issue on Virtual Reality*, Volume 33, Issue 1, February 2009, 34-46.
23. Ferdig, R., Coutts, J., DiPietro, J., **Lok, B.**, and Davis, N. "Innovative Technologies for Multicultural Education Needs", *Multicultural Education and Technology Journal*, 1(1), 2007, 47-63.
24. Raij(g), A., Johnsen(g), K., Dickerson(&), R., **Lok, B.**, Cohen, M., Duerson, M., Pauley, R., Stevens, A., Wagner, P., and D. Lind. "Comparing Interpersonal Interactions with a Virtual Human to those with a Real Human," *IEEE Transactions on Visualization and Computer Graphics*, Vol .13, No. 3, May/June 2007, 443-457.
25. Deladisma, A., Cohen, M., Stevens, A., Wagner, P., **Lok, B.**, Bernard, T., Oxendine, C., Schumacher, L., Johnsen(g), K., Dickerson(&), R., Raij(g), A., Wells(g), R., Duerson, M., Harper, J., and D. Lind. "Do Medical Students Respond Empathetically to a Virtual Patient?" *The American Journal of Surgery*, Vol 193, Issue 6, 2007, 756-760.
26. **Lok, B.**, Ferdig, R., Raij(g), A., Johnsen(g), K., Dickerson (&), R. , Coutts, J., Stevens, A., and D. Lind. "Applying Virtual Reality in Medical Communication Education: Current Findings and Potential Teaching and Learning Benefits of Immersive Virtual Patients", *Journal of Virtual Reality*, Spring London, Vol. 10, No. 3-4, 2007, 185-195.
27. **Lok, B.** "Teaching Communication Skills with Virtual Humans" (Invited Article) *IEEE Computer Graphics and Applications*, Vol 26, No. 3, 2006, 10-13.
28. Johnsen(g), K., Dickerson(&), R., Raij(g), A., Harrison(g), C., **Lok, B.**, Stevens, A., and D. Lind. "Using Immersive Virtual Characters to Educate Medical Communication Skills," *Journal on Presence: Teleoperators and Virtual Environments*, Vol 15, No. 1, 2005, 33-46.
29. Stevens, A., Hernandez, J., Johnsen(g), K., Dickerson(&), R., Raij(g), A., Harrison(g), C. , DiPietro, M., Allen, B., Ferdig, R., Foti, S., Jackson, J., Shin, M., Cendan, J., Watson, R., Duerson, M., **Lok, B.**, Cohen, M., Wagner, P., and D. Lind. "The Use of Virtual Patients to

30. Teach Medical Students Communication Skills." *The American Journal of Surgery*, Jun; 191(6), 2005, 806-811.
31. Zambaka, C., **Lok, B.**, Babu, S., Xiao, D., Ulinski, A. and L. Hodges (2005). "Path Visualizations and Cognition in Virtual Environments," *IEEE Transactions on Visualization and Computer Graphics*, 11.6: 694-705. (AR: 11%)
32. **Lok, B.** (2004). "Towards Merging Real and Virtual Spaces," *Communications of the ACM*, August 2004, 47.8: 48-53.
33. **Lok, B.**, Naik, S., Whitton, M., and F. Brooks. "Effects of Interaction Modality and Avatar Fidelity on Task Performance and Sense of Presence in Virtual Environments," *Journal on Presence: Teleoperators and Virtual Environments*, Vol. 12, No. 6, 2003, 615-628.

#### Refereed Conference Proceedings

1. Jendrusch, J., Lampotang, S., Lizdas, D., Gravenstein, N., Ham, D., Lok, B., Quarles, J., "Virtual Humans for Inter-Ethnic Variability Training in Sedation and Analgesia" in the Proceedings of NextMed / Medicine Meets Virtual Reality 21 (NextMed / MMVR21), February 19-22 2014, Manhattan Beach, CA, IOS Press.
2. Chuah(g), J., Robb(g), A., White, C., Wendling, A., Lampotang, S., Kopper(p), R., and **Lok, B.** "Increasing Agent Physicality to Raise Social Presence and Elicit Realistic Behavior" (short paper) in *Proceedings of IEEE Virtual Reality 2012*, 19-22.
3. Chuah, J., and **Lok, B.** Experiences in Using a Smartphone as a Virtual Reality Interaction Device. In *Workshop on Off-The-Shelf Virtual Reality*, Orange County, CA. 2012. (5 pages)
4. Krishnan(g), V., Foster, A., Kopper(p), R., and Lok, B. "Virtual Human Personality Masks: A Human Computation Approach to Modeling Verbal Personalities in Virtual Human" (short paper), *Intelligent Virtual Agents*, 2012, 146-152.
5. Rivera-Gutierrez(g), D., Welch, G., Lincoln, P., Whitton, M., Cendan, J., Chesnutt, D., Fuchs, H., and **Lok, B.** Shader lamps virtual patients: the physical representation of virtual patients. *Medicine Meets Virtual Reality 19 - NextMed, Studies in Health Technology and Informatics*, IOS Press, 2012, 173:372-378.
6. DiPietro, J., Maddox, W., Rivera-Gutierrez(g), D., and **Lok, B.** "Investigating perceptions of avatars in an interactive digital simulation, " Annual Meeting of the American Educational Research Association. New Orleans, LA. (AR: 38%) (presentation only, no conference proceedings) .
7. Halan, S.(g), Rossen(g), B., Cendan, J., and **Lok, B.** "High Score! - Motivation Strategies for User Participation in Virtual Human Development", 10th International Conference on Intelligent Virtual Agents (IVA 2010), Philadelphia, Pennsylvania, Sept. 20-22, 2010 - LNCS Proceedings, 482-488.
8. Johnsen(g), K., Beck, D., and **Lok, B.** "The Impact of a Mixed Reality Display Configuration on User Behavior with a Virtual Human.", 10th International Conference on Intelligent Virtual Agents (IVA 2010), Philadelphia, Pennsylvania, Sept. 20-22, 2010 - LNCS Proceedings, 42-48.
9. Rossen, B.(g), Cendan, J., and **Lok, B.**, "Using Virtual Humans to Bootstrap the Creation of Other Virtual Humans", 10th International Conference on Intelligent Virtual Agents (IVA 2010), Philadelphia, Pennsylvania, Sept. 20-22, 2010 - LNCS Proceedings, 392-398.

10. Kotranza(g), A., Lind, D., Pugh, C., and **B. Lok**. "Real-time In-situ Visual Feedback of Task Performance in Mixed Environments for Learning Joint Psychomotor-Cognitive Tasks." Proceedings of the 8th IEEE/ACM International Symposium on Mixed and Augmented Reality (ISMAR 2009). 125-134 (AR: 20%)
11. Rossen(g), B., Lind, D., and **B. Lok**. "Human-centered Distributed Conversational Modeling: Efficient Modeling of Robust Virtual Human Conversations" (short paper) 9th International Conference on Intelligent Virtual Agents 2009, Amsterdam, Netherlands, Sept. 14-16, 2009, 474-481.
12. Kotranza(g), A., Johnsen, K., Cendan, J., Miller, B., Lind, D., and **B. Lok**. "Virtual Multi-Tools for Hand and Tool-Based Interaction with Life-Size Virtual Human Agents.", *Proceedings of IEEE Symposium on 3D User Interfaces 2009*, Lafayette, LA, March 14-15, 2009, pp. 23-30.
13. Kotranza(g), A., **Lok, B.**, Pugh, C., and D. Lind, "Virtual Humans That Touch Back: Enhancing Nonverbal Communication with Virtual Humans through Bidirectional Touch," (short paper) In Proceedings of *IEEE Virtual Reality 2009*. Lafayette, LA, March 14-18, 2009, pp. 175-178.
14. Raij(g), A., Kotranza(g), A., Lind, D., and **B. Lok**. "Virtual Experiences for Social Perspective Taking" (short paper) *Proceedings of IEEE Virtual Reality 2009*. Lafayette, LA, March 14-18, 2009, pp. 99-102.
15. Deladisma, A., Johnsen(g), K., Raij(g), A., Rossen(g), B., Kotranza(g), A., Kalapurakal, M., Szlam, S., Bittner, J., Sinwson, D., **Lok, B.**, and D. Lind. Medical student satisfaction using a virtual patient system to learn history-taking and communication skills. *Medicine Meets Virtual Reality 16*, 2008; 132: 101-5.
16. Doerner, R., **Lok, B.**, Broll, W (2011). "Social Gaming and Learning Applications: A Driving Force for the Future of Virtual and Augmented Reality?" in Brunett, Guido; Coquillart, Sabine; Welch, Greg (Eds.): *Virtual Realities - Dagstuhl Seminar 2008*, Springer, Wien, New York, 2011 (ISBN 978-3-211-99177-0), pp. 51-76.
17. Johnsen(g), K. and **B. Lok**. An Evaluation of Immersive Displays for Virtual Human Experiences. *IEEE Virtual Reality 2008*, (short paper) March 10-12, Reno, NV, 133-136. (AR: 26.1%)
18. Kotranza(g), A., Deladisma, A., Lind, D., Pugh, C., and **B. Lok**. "Virtual Human + Tangible Interface = Mixed Reality Human. An Initial Exploration with a Virtual Breast Exam Patient." *IEEE Virtual Reality 2008*, March 10-12, Reno, NV, 99-106. **Best Paper Award**. (AR: 26.1%)
19. Quarles(g), J., Lampotang, S., Fischler, I., Fishwick, P., and **B. Lok**. "Tangible User Interfaces Compensate for Low Spatial Cognition" *IEEE 3D User Interfaces 2008*, March 8-9, Reno, NV, 11-18.
20. Quarles(g), J., Lampotang, S., Fischler, I., Fishwick, P., and **B. Lok**. "Mixed Reality Merges Abstract and Concrete Knowledge" *IEEE Virtual Reality 2008*, March 10-12, Reno, NV, 27-34. (AR: 26.1%)
21. Quarles(g), J., Lampotang, S., Fischler, I., Fishwick, P., and **B. Lok**. "A Mixed Reality System for Enabling Collocated After Action Review", *7th IEEE and ACM International Symposium on*



22. *Mixed and Augmented Reality - ISMAR 2008*, Sept 15-18, Cambridge, UK. (AR: 23.7%), 107-116.
23. Raij(g), A., and **B. Lok**. "IPSVIZ: An After-Action Review Tool for Human-Virtual Human Experiences" *IEEE Virtual Reality 2008*, March 10-12, Reno, NV, 91-98. (AR: 26.1%)
24. Rodriguez, H.(&), Lind, D., D. Beck, and **B. Lok**. "Audio Analysis of Human/Virtual-Human Interaction" (short paper) *Intelligent Virtual Agents 2008*, Sept. 1-3, Tokyo, JP, 154-161.
25. Rossen(g), B., Johnsen(g), K., Deladisma, A., Lind, D., and **B. Lok**. "Virtual Humans Elicit Skin-Tone Bias Consistent with Real-World Skin-Tone Biases" (short paper) *Intelligent Virtual Agents 2008*, Sept. 1-3, Tokyo, JP, 237-244.
26. Johnsen(g), K., Raij(g), A., Stevens, A., D. Lind and **B. Lok**. "The Validity of a Virtual Human Experience for Interpersonal Skills Education" in *Proceedings of the SIGCHI conference on Human Factors in Computing Systems*, ACM Press, New York, NY, 2007, 1049-1058.
27. Kotranza(g), A., Quarels(g), J., Wang(g), X., and **B. Lok**. "Mixed Reality: Are Two Hands Better Than One?" (short paper) *Proceedings of ACM Symposium on Virtual Reality Software and Technology (VRST) 2006*, Nov. 1-3, Limassol, Cyprus, 31-34. (AR: 52% including short papers)
28. Dickerson(&), R., Johnsen(g), K., Raij(g), A., **Lok, B.**, Stevens, A., Bernard, T., and D. Lind. "Virtual Patients: Assessment of Synthesized Versus Recorded Speech," *Medicine Meets Virtual Reality 14*, 2006, 114-119.
29. Raij(g), A., Johnsen(g), K., Dickerson(&), R., **Lok, B.**, Cohen, M., Stevens, A., Bernard, T., Oxendine, C., Wagner, P., Lind, D. "Interpersonal Scenarios: Virtual  $\approx$  Real?" *IEEE Virtual Reality 2006*, 59-66.
30. Wang(g), X., Kotranza(g), A., Quarles(g), J., **Lok, B.**, and D. Allen. "A Pipeline for Rapidly Incorporating Real Objects into a Mixed Environment," *4th IEEE and ACM International Symposium on Mixed and Augmented Reality*, Vienna, Austria, 2005, 170-173.
31. Dickerson(&), R., Johnsen(g), K., Raij(g), A., **Lok, B.**, Hernandez, J., Stevens, A., and D. Lind. "Evaluating a Script-Based Approach to Simulating Patient-Doctor Interaction," *SCS 2005 International Conference on Human-Computer Interface Advances for Modeling and Simulating*, 79-84.
32. Johnsen(g), K., Dickerson(&), R., Raij(g), A., **Lok, B.**, Jackson, J., Shin, M., Hernandez, J., Stevens, A., and D. Lind. "Experiences in Using Immersive Virtual Characters to Educate Medical Communication Skills," *IEEE Virtual Reality 2005*, Bonn, Germany, March 2005, 179-186.
33. Wang(g), X., Kotranza(g), A., Quarles(g), J., **Lok, B.**, and D. Allen. "Rapidly Incorporating Real Objects for Evaluation of Engineering Designs in a Mixed Reality Environment," *New Directions in 3D User Interfaces Workshop, IEEE Virtual Reality 2005*, Bonn, Germany. (4 pages)
34. Whitton, M., **Lok, B.**, Insko, B., and F. Brooks. "Integrating Real and Virtual Objects" (Invited Paper) *1st International Conference on Virtual Reality 2005*, Las Vegas, NV July 22-27, 2005, 70 (on CD-ROM ISBN 0-8058-5807-5), 10 pages.

35. **Lok, B.**, Naik, S., Whitton, M., and F. Brooks (2004). "Experiences in Extemporaneous Incorporation of Real Objects in Immersive Virtual Environments," *Beyond Glove and Wand Based Interaction Workshop, IEEE Virtual Reality 2004*, Chicago, IL. (4 pages)
36. Zambaka, C., **Lok, B.**, Babu, S., Xiao, D., Ulinski, A. and L. Hodges (2004). "Effects of Travel Technique on Cognition in Virtual Environments," *IEEE Virtual Reality 2004*, Chicago, IL, 149-156, 286.
37. **Lok, B.**, Naik, S., Whitton, M., and F. Brooks. "Incorporating Dynamic Real Objects into Virtual Environments," *Proceedings of ACM SIGGRAPH 2003*, 701. (Abridged version of ACM 2003 Symposium on Interactive 3D Graphics paper, one of three selected for representation)
38. **Lok, B.**, Naik, S., Whitton, M., and F. Brooks. "Incorporating Dynamic Real Objects into Virtual Environments," *ACM 2003 Symposium on Interactive 3D Graphics*, Monterey, CA (April 28-30), ACM SIGGRAPH: 31-41. Images in Communications of the ACM, July 2003, 46.7: 48.
39. **Lok, B.**, Naik, S., Whitton, M., and F. Brooks. "Effects of Handling Real Objects and Avatar Fidelity on Cognitive Task Performance in Virtual Environments," *IEEE Virtual Reality 2003*, Los Angeles, CA (March 22-26), IEEE: 125-132.
40. Mortensen, J., Vinayagamoorthy, V., Slater, M., Steed, A., **Lok, B.**, and M. Whitton (2002), "Collaboration in Tele-Immersive Environments," *Eighth Eurographics Workshop on Virtual Environments 2002*, Barcelona, Spain, May 2002: 30-31.
41. **Lok, B.** "Online Model Reconstruction for Interactive Virtual Environments," *ACM 2001 Symposium on Interactive 3D Graphics*, Chapel Hill, NC (March 19-21): 69-72, 248.
42. **Lok, B.**, Bauer, S., Monacello, C., Finnerty, S., and S. Shenoi (1997). "An Organizational Framework for Distributed Medical Information," *Third Joint Conference on Information Systems '97*, 50-51.
43. **Lok, B.**, Bauer, S., Monacello, C., Finnerty, S., and S. Shenoi (1997). "A Hypermedia System for Breast Cancer Screening," *Mid-America Symposium of Emerging Computing Technologies*.

#### Software:

1. Peden, M., Chuah, J. (g), Kotranza, A. (f), Johnsen, K., **Lok, B.**, Cendan, J., NERVE- 2: A Three Dimensional Patient Simulation of Oculomotor Nerve Palsy. In., vol. [www.mededportal.org/publication/8383](http://www.mededportal.org/publication/8383).: American Association of Medical Colleges, MedEdPortal; 2010 (Available: <http://services.aamc.org/30/mededportal/servlet/s/segment/mededportal/?subid=8383>)
2. Peden M, Johnsen, K., **Lok, B.** NERVE-A three dimensional patient simulation for evaluating cranial nerve function. In., vol. [www.mededportal.org/publication/8255](http://www.mededportal.org/publication/8255).: American Association of Medical Colleges, MedEdPortal; 2011. Chuah, J. Robb, A., White, C. Wendling, A., Lampotang, S., Kopper, R., Lok, B. Exploring Agent Physicality and Social Presence for Medical Team Training. (to appear) Presence: Teleoperators and Virtual Environments.

#### Magazine and Book Chapters/Articles/Editorships

1. Doerner, R., Lok, B., Broll, W (2011). "Social Gaming and Learning Applications: A Driving Force for the Future of Virtual and Augmented Reality?" in Brunett, Guido; Coquillart, Sabine; Welch, Greg (Eds.): *Virtual Realities - Dagstuhl Seminar 2008*, Springer, Wien, New York, 2011 (ISBN 978-3-211-99177-0), pp. 51-76
2. Lind, D. and **B. Lok** (2006). The Role of Virtual Patients in Medical Education: Teaching Tool Versus Technological Trend. (Invited Article) *Focus on Surgical Education* 2006. 23(1), 28-29.
3. *Proceedings of the 2005 SCS Human-Computer Interface Advances for Modeling and Simulation (SIMCHI '05)* (2005) Eds. Fishwick, P. and **B. Lok**, 2005.
4. **Lok, B.** (2004). "Human Computer Interaction in Three Dimensional Computer Graphics." *Encyclopedia of Human Computer Interaction*. Ed. William Bainbridge. Barrington, MA: Berkshire, 2004.
5. **Lok, B.** and L. Hodges (2004). "Human Computer Interaction in Virtual Reality." *Encyclopedia of Human Computer Interaction*. Ed. William Bainbridge. Barrington, MA: Berkshire, 2004.
6. **Lok, B.** (2003). "Evaluation and Application of Algorithms for a Hybrid Environment System." *Energy, Simulation Training, Ocean Engineering and Instrumentation, Research Papers of the Link Foundation Fellows*. Ed. Brian Thompson. New York: University of Rochester Press, 2003, 3:149-175.

#### Abstracts/Poster/Presentations

1. Jendrusch, J., Lampotang, S., Lizdas, D., Gravenstein, N., Ham, D., Lok, B., and Quarles, J. "Virtual Humans for Inter-Ethnic Variability Training in Sedation and Analgesia," (accepted for presentation, submitted for publication) *Proceedings of 21st Medicine Meets Virtual Reality Conference (MMVR21)* 2014

2. Ambani, R., Robb, A., Qayyum, F., Sensenig, R., Barkan, I., Tiko-Okoye, C., **Lok, B.**, Lind, D. A Novel Mixed Reality Human Simulator Improves Medical Student Comfort and Competence in Digital Rectal Exam. *Association for Society for Simulation in Healthcare Meeting*, Orlando, FL Jan, 2013.
3. Chuah, J. (g), Black, E., Kelly, M., Thompson, L., **Lok, B.** Applying mixed reality to simulate protected populations for practicing clinical communications skills. Paper presentation at the *2013 Pediatric Academic Societies' Annual Meeting*, Washington, D.C., May 5, 2013.
4. Johnson, T., Lyons, R., Chuah, J., Kopper, R., **Lok, B.**, Cendan, J.. Medical students prefer unguided over guided communication for history-taking rehearsal in a virtual patient environment. Poster presented at the *13th International Meeting on Simulation in Healthcare*, January 26-30, 2013, Orlando, FL.
5. Moran, R., El Shaik, D., Black, E.W., **Lok, B.** Preparing for low probability encounters with high consequence: Using a screen-based virtual human program to simulate uncommon pediatric cases. Platform presentation at the *2013 Pediatric Academic Societies' Annual Meeting*, Washington, D.C., May 5, 2013.
6. Torres, C., Wandner, L., Alqudah, A., Hirsh, A., **Lok, B.**, & Robinson, M. (2013, May). Pain assessment and treatment decisions among students in the United States and Jordan. Poster session presented at the *32nd Annual Scientific Meeting of the American Pain Society*, New Orleans, LA.
7. Wandner, L., George, S., **Lok, B.**, Torres, C., Chuah, J., Robinson, M. (May, 2013). Pain decisions based on pain behaviors of virtual humans. Poster session to be presented at the *32nd Annual Scientific Meeting of the American Pain Society*, New Orleans, LA.
8. Barkan, I., Qayyum, F., Greenawald, L., Ambani, R., Robb, A. (g), Sensenig, R., Tiko-Okoye, C., Qvavadze, T., **Lok, B.**, Lind, D. An Innovative, Interactive Russian-Speaking Virtual Patient with a Breast Complaint. *Russian American Medical Association (RAMA) Meeting* in Philadelphia, November 2012.

9. Chuah(g), J., Robb(g), A., White, C., Wendling, A., Lampotang, S., Kopper(p), R., **Lok, B.** Using virtual humans for medical team training. Poster presented at the *University of Florida College of Medicine Celebration of Research*, March 19, 2012.
10. Chuah(g), J., Robb(g), A., White, C., Wendling, A., Lampotang, S., Kopper(p), R., **Lok, B.** Using virtual humans for medical team training. Poster presented at the *University of Florida Department of Anesthesiology Celebration of Research*, May 10, 2012.
11. Chuah, J. (g), **Lok, B.** Hybrid Virtual-Physical Entities. Poster. *International Symposium on Mixed and Augmented Reality (ISMAR)*. Atlanta, GA. 2012.
12. Lyons, R., Johnson, T., Kotranza(g), A., **Lok, B.**, Cendan, J. (2012). Using virtual patients to simulate cranial nerve palsies: Student reactions and evaluation of curricular placement. *Simulation in Healthcare Conference*, San Diego, CA.
13. Lyons, R., Khalil, M., Johnson, T., **Lok, B.** and Cendan, J. (April 2012). Team-Based Learners Compared to Individuals Develop Greater Knowledge with Less Reported Cognitive Demand from a Neurologic Simulator. *5th International Cognitive Load Theory Conference*, Tallahassee, FL.
14. Lyons, R., Cendan, J., **Lok, B.** (April 2012). Optimizing Simulation Using Virtual Patients with Complex Neurologic Conditions. *27th Annual Meeting of the Society for Industrial and Organizational Psychology*, San Diego, CA.
15. Wandner, L., Heft, M., Lok, B., Hirsh, A., George, S., Horgas, A., Atchinson, J., Torres, C., & Robinson, M. (2012, August). Healthcare professionals' pain assessment and treatment decisions using virtual human technology. Poster session presented at the *14th World Congress on Pain*, Milan, Italy.
16. Wandner, L., Hirsh, A., Torres, C., Lok, B., Scipio, C., Heft, M., Robinson, M. (June, 2012). Using virtual human technology to assess pain treatment decision biases. Poster session presented at the *90th General Session and Exhibition of the International Association for Dental Research*, Iguacu Falls, Brazil.
17. Wandner, L., Hirsh, A., Torres, C., Lok, B., Scipio, C., Heft, M. Robinson, M. (2012). Using virtual human technology to assess pain treatment decision biases. Abstract #160384, *Journal of Dental Research*, 91 (Special Issue B).
18. Bogert, K., Gallman, E., Pruitt, J., Lind, D., Peden, M., Kotranza, A., Lok, B., Cendan, J., Johnsen, K. "An interactive virtualization tool for student-centered learning of CN II & III pupil exam. Poster and Demonstration at the *International Association for Medical Science Educators 2011 Conference*.
19. Cendan, J., Lyons, R., Chuah(g), J., Johnson, T., Khalil, M., and **Lok, B.** Understanding the relationship between cognitive load and learning in a technical medical education environment. *AAMC Modernizing Medicine*, MedEdPortal Abstract Session, Denver, CO, November, 2011.
20. Johnson, J., Brown, S., Lord, T., Rosson, B., Laserna, C., Park, M., Kotranza, A., **Lok, B.**, Lind, D. Internal Medicine Residents and a Mixed Reality Human Breast Simulator. Presented to the *Southern Group on Educational Affairs*, Houston, TX April, 2011.

21. Sims, S., Chuah, J., **Lok, B.**, Cendan, J. Evaluation of the Virtual Standardized Patient (VSP) Educational Tool for Enhanced Medical Student Skills. Poster. *Association for professors of gynecology and obstetrics (APGO)/Council on Resident Education in Obstetrics/Gynecology (CREOG) meeting 2011*. March, 2011.
22. Wier, J., Carrick, J., Rossen(g), B., Laserno, C., Park, M., Nesbit, R., Lind, J., Kotranza, A., **Lok, B.**, Lind, D. Integration of a Mixed Reality Patient Breast Simulator into a Surgery Clerkship. Presented to the *Association for Surgical Education Meeting*, Boston, MA, March, 2011.
23. DiPietro, J., Ferdig, R., Cao, L., Blackwelder, E., Shivashankar, S., **Lok, B.** (2010). Mixed-reality simulations for education: Teaching and learning through virtual character interactions. American Educational Research Association (AERA) Conference. Denver, CO.
24. Foster, A., Noseworthy, L., Shah, H., Lind, D., **Lok, B.**, Chuah(g), J., Rossen(g), B., "Evaluation of Medical Student Interaction with a Bipolar Virtual Patient Scenario Written by a Peer Support Specialist – a Pilot Study", *ADMSEP 2010*, Jackson Hole, WY, June 17-19, 2010.
25. Foster, A., Noseworthy, L., Lind, D., Shah, H., **Lok, B.**, Chuah(g), J., Rossen(g), B. "The Use of Interactive Virtual Patients in an Integrated Psychiatry-Neuroanatomy Course and a Psychiatry Clerkship". *ADMSEP 2010*, Jackson Hole, WY, June 17-19, 2010.
26. Gucwa, A., Kotranza, A., Raji, A., Rossen(g), B., Beatty, J., Laserna, C., Park, M., Brown, S., Pugh, C., Johnsen, K., **Lok, B.**, Lind, D. Use of a Mixed Reality Simulator and a Feedback System to Enhance Breast Exam Skills. Presented at the *Fifth Annual Academic Surgical Congress*, San Antonio, TX, February 2010.
27. Johnsen, K., Rossen, B. (g), Beck, D., **Lok, B.**, Lind, D. "Show Some Respect! The Impact of Technological Factors on the Treatment of Virtual Humans in Conversational Training Systems". *Poster at IEEE Virtual Reality 2010*.
28. Kalaria, C., Lin, C., Johnsen, K., Lind, D., Kotranza, A., Laserna, C., Aryal, T., Shah, H., Pruitt, J., Miller, B., Cendan, J., and **Lok, B.** "Teaching cranial nerve examination using a virtual patient and the Nintendo Wiimote™: preliminary evaluation." *Neurology*. vol. 74, no. 9, supp. 2, pp. A25.
29. Lind, D., Kalaria, C., Lin, C., Aryal, T., Laserna, C., Shah, H., Lord, T., Pruitt, J., **Lok, B.**, Kotranza, K., Cendan, J., Miller, B., and Johnsen, K. "Teaching Cranial Nerve Examination Using a Virtual Patient and the Nintendo Wiimote™: Preliminary Evaluation. Proceedings of the *International Meeting on Simulation in Healthcare 2010*.
30. Chuah, J. (g), Rossen, B. (g), **Lok, B.** Automated Generation of Emotive Virtual Humans. Poster. *9th International Conference on Intelligent Virtual Agents (IVA)*, Amsterdam, Netherlands, 2009.
31. Gucwa, A., Kotranza(g), A., Raji(g), A., Rossen(g), B., Beatty, J., Laserna, C., Park, M., Pugh, C., **Lok, B.**, Johnsen, K., and D. Lind. "The Use of a Mixed Reality Breast Simulator with an Innovative Feedback System (Touch Map) to Enhance Breast Examination Skills," *Association for Surgical Education Annual Meeting 2009*, Salt Lake City. April 28th - April 30th 2009.

32. Gucwa, A., Beatty, J., Deladisma, A., Kotranza(g), A., Raij(g), A., Shah, H., Fox, P., Gehlot, A., Kruse, E., McLoughlin, J., **Lok, B.**, Pugh, C., and D. Lind. "A Pilot Study to Evaluate the Use of Mixed Reality technology as a Tool for Assessing Medical Students' Communication Skills", *9th Annual International Meeting on Simulation in Healthcare (IMSH)*, Lake Buena Vista, FL. January 10-14, 2009.
33. Lind, D., **Lok, B.**, Johnsen, K., Wagner, P., Huff, T. The Use of Life-Sized, Immersive Virtual Clinical Scenarios to Teach Health Professions Students Communication Skills. Abstract submitted to the *American Academy for Communication in Healthcare Meeting*, Miami Beach, Florida, October 4-7, 2009.
34. Cendan, J., Miller, B., Wang(g), X., Horton(&), J., and **B. Lok**. "Development of Virtual Patient with Fixed Cranial Nerve Pathology." *Southern Group on Education Affairs 2008*, April 3-5, Nashville, TN.
35. Craig, J., Deladisma, A., Gupta, M., Bittner, J., Johnsen(g), K., **Lok, B.**, and D. Lind. "Novel Integration of a Life-Sized, Immersive Virtual Instructor with a Mannequin-Based Procedural Simulator to Teach Central Venous Catheterization." *8th Annual International Meeting on Simulation in Healthcare*. San Diego, CA. Jan 13-16, 2008.
36. Davenport, R., Mann, W., Lutz, B., Shaw, L., and **Lok, B.** "Perceived personal robotic technology needs among elders with mobility impairments" *International Conference on Aging, Disability and Independence (ICADI)*, St. Petersburg, Florida, Feb 21-23, 2008.
37. Deladisma, A., Imam, T., Kotranza(g), A., Raij(g), A. \*, Bittner, J., **Lok, B.**, Pugh, C., and D. Lind. "The Use of Mixed Reality Humans to Teach Clinical Skills" *47th Annual Conference on Research in Medical Education (RIME)*, October 31-November 5th, 2008, San Antonio, TX.
38. Deladisma, A. Kotranza(g), A., Shah, H., Fox, P., Gucwa, A., Roseen, B., Imam, T., Wang, S., Pugh, C., Lok, B., and Lind, D. The Use of a Mixed Reality Breast Simulator with an Innovative Feedback System (Touch Map) to Teach Breast History-Taking and Physical Examination Skills. Abstract presented to the *San Antonio Breast Meeting* (December 2008).
39. Deladisma, A., Gupta, M., Kotranza(g), A. \*, Bittner, J., Imam, T., Swinson, D., Nesbit, R., **Lok, B.**, Pugh, C., D. Lind. "A Pilot Study to Integrate an Immersive Virtual Patient with a Breast Complaint and Breast Exam Simulator into a Medical Student Surgery Clerkship." *Association for Surgical Education, Surgical Education Week 2008*.
40. Gupta, M., Deladisma, A., Kotranza(g), A. \*, Craig, J., Bittner, J., Johnsen(g), K., **Lok, B.**, and D. Lind. "The Use of a Virtual Character-Enhanced Simulator to Teach Breast History and Examination Skills." *8th Annual International Meeting on Simulation in Healthcare*. San Diego, CA. Jan 13-16, 2008.
41. Gucwa, A., Beatty, J., Shah, H., Deladisma, A., Kotranza(g), A., Raij(g), A., **Lok, B.**, Pugh, C., Lind, D. The Use of a Mixed Reality Human Interaction to Assess Empathy. Abstract presented to the *Society for Simulation in Healthcare Meeting*, Sept 2008.
42. Gucwa, A., Beatty, J., Kotranza(g), A., Rossen(g), B., Pugh, C., **Lok, B.**, and D. Lind "Gender Differences Among Students Undergoing a Mixed Reality Simulation in Breast History-Taking and Physical Examination" *Association of Women Surgeons 2008*.

43. Shah, H., Fox, P., Rossen(g), B., Deladisma, A., Lord, T., Gehlot, A., Mouna, A., Rossen, B., Betty, J., Gucwa, A., **Lok, B.**, Lind D. The Use of Web-Based Interactive Virtual Clinical Scenarios (Virtual People Factory) as an Educational Tool to Introduce History-Taking Skills. Abstract presented to the *Society for Simulation in Healthcare Meeting*, Sept 2008.
44. Deladisma, A., Mack, D., Bernard, T., Oxendine, C. Szlam, S., Wagner, P., Kruse, E., **Lok, B.**, and D. Lind. "Virtual Patients Reduce Anxiety and Enhance Learning when Teaching Medical Student Sexual-History Taking Skills", *Association for Surgical Education 2007 Surgical Education Week*. (Same as Mack et al. 07 abstract)
45. Mack, D., Deladisma, A., Bernard, T., Oxendine, C., **Lok, B.**, and D. Lind. "Virtual Patients Reduce Anxiety and Enhance Learning when Teaching Medical Student Sexual-History Taking Skills", *Society for Simulation in Healthcare*. (Research Abstract Award 2nd place Education)
46. Bernard, T., Stevens, A., Wagner, P., Bernard, N., Schumacher, L., Johnsen(g), K., Dickerson(&), R., Raij(g), A., **Lok, B.**, Duerson, M., Cohen, M. and D. Lind. "A Multi-Institutional Pilot Study to Evaluate the Use of Virtual Patients to Teach Health Professions Students History-Taking and Communication Skills." *Society of Medical Simulation Meeting*. (Ranked #1 out of 104 accepted)
47. Cohen, M., Stevens, A., Wagner, P., **Lok, B.**, Bernard, T., Oxendine, C. Schumacher, L., Johnsen(g), K., Dickerson(&), R., Raij(g), A., Ross, R. Duerson, M., Parimala, J., and D. Lind. "How Comparable are Medical Student Empathetic Interactions in a Similar Virtual Patient/Standardized Patient Abdominal Pain Scenario?" *Southern Group on Education Affairs 2006*.
48. Deladisma, A., Cohen, M., Stevens, A., Wagner, P., **Lok, B.**, Bernard, T., Oxendine, C., Schumacher, L., Johnsen(g), K., Dickerson(&), R., Raij(g), A., Wells(g), R., Duerson, M., Harper, J., and D. Lind. "Is There a Difference in the Empathetic Response of Health Professions to Standardize Patients and Virtual Patients?" *Association of Surgical Education 2006*. (Clinical Research Award 2nd place, same as ASE abstract)
49. Stevens, A., Cohen, M., Johnsen(g), K., Dickerson(&), R., Raij(g), A., Wells(g), R., Oxendine, C., Wagner, P., Bernard, T., Cendan, J., Duerson, M., Pauly, R., **Lok, B.**, and D. Lind, "Implementing a Virtual Patient (VP) into the Medical School Curriculum at the University of Florida (UF) " *Southern Group on Education Affairs 2006*.
50. Babu, S., Zambaka, C., Jackson, J., Chung, T., **Lok, B.**, Shin, M., and L. Hodges. Virtual Human Physiotherapist Framework for Personalized Training and Rehabilitation (poster). *Graphics Interface 2005*, Victoria, British Columbia, Canada, May 9-11, 2005.
51. Stevens, A., Hernandez, J., Johnsen(g), K., Dickerson(&), R., Raij(g), A., Jackson, J., Shin, M., Cendan, J., Duerson, M., **Lok, B.**, and D. Lind (2005). The Use of Virtual Patients to Teach Medical Students Communication Skills. *Association of Surgical Education 2005*.
52. Stevens, A., Hernandez, J., Johnsen(g), K., Dickerson(&), R., Raij(g), A., Jackson, J., Shin, M., Cendan, J., Duerson, M., **Lok, B.**, and D. Lind (2005). The Use of Virtual Patients to Teach Medical Students Communication Skills. *Southern Group on Education Affairs 2005*. (Ranked #1)

53. Cendan, J., **Lok, B.**, Harrison, C., Johnsen, K., Dickerson, R., Shin, M., Stevens, A., Duerson, M., Lind, D. "Multimodal Interaction with Life-Sized Virtual Characters for Training and Education" *Florida Technology Transfer Conference, 2004.*
54. Cendan, J., **Lok, B.**, Harrison, C., Johnsen, K., Dickerson, R., Shin, M., Stevens, A., Duerson, M., Lind, D. "The Use of Virtual Patients and Instructors to Teach Clinical Presentations", 4th Annual Medical Education Week, College of Medicine, University of Florida, 2004.

#### Dissertation

**Lok, B.** (2002). Interacting with Dynamic Real Objects in Virtual Environments. Ph.D. Dissertation, Department of Computer Science, University of North Carolina at Chapel Hill.

#### SERVICE and ACTIVITIES

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- **Steering Committee:**
  - IEEE Virtual Reality (2009-present)
- **General Co-Chair:**
  - IEEE Virtual Reality 2014 (Minnesota)
  - IEEE Virtual Reality 2013 (Orlando)
- **Program Co-Chair:**
  - IEEE Virtual Reality 2011 (Singapore)
  - IEEE Virtual Reality 2010 (Boston, MA)
  - ACM Symposium on Virtual Reality Software and Technology 2009 (Kyoto, Japan)
  - IEEE ISMAR 2009 Area Chair (Orlando, FL)
  - GameOn North America '07 (Gainesville, FL)
  - Human-Computer Interaction Advances in Modeling and Simulation - Society for Computer Simulation Western Multiconference 2005 (New Orleans, LA)
- **Journal Associate Editor**
  - ACM Computing Surveys
  - Frontiers in Virtual Environments
  - International Journal of Human-Computer Studies
  - Simulation: Transactions of the Society for Modeling and Simulation
- **Program Committee:**
  - IEEE Virtual Reality (2003-2011)
  - IEEE 3D User Interfaces (2011)
  - IEEE ISMAR (2004-2006, 2008-2009)
  - International Conference on Intelligent Virtual Agents (IVA) (2009-2010)
  - ACM Symposium on Virtual Reality Software and Technology (2007-2010)
  - INTUITION Workshop & Conference on Virtual Reality and Virtual Environments (2007-2009)
  - Visual Learning Conference (2007-2010)
  - Eurographics Symposium on Virtual Environments (2007)
  - International Symposium on Visual Computing (2007-2010)
- **Panels Chair:** IEEE Virtual Reality 2007
- **Videos Chair:** IEEE Virtual Reality 2009
- **Posters Chair:** IEEE ISMAR 2006, ACM VRST 2007, IEEE Virtual Reality 2010
- **Tutorials Chair:** IEEE Virtual Reality 2006
- **Session Chair:** IEEE Virtual Reality (2007-2004), WMC SIMCHI 2005
- **Best Paper Award Committee:** IEEE Virtual Reality (2004-2005)
- **Conference Reviewer:** (In addition to the above conferences), SIGGRAPH (2008), Eurographics Symposium on Virtual Environments, IEEE Visualization, Pacific Graphics
- **Journal Reviewer:**
  - Journal on Presence: Teleoperators and Virtual Environments
  - IEEE Transactions on Computer Graphics and Visualization
  - ACM Transactions on Modeling and Computer Simulation
  - Transactions on Simulation and Modeling
  - Journal on Graphics Tools
  - SIGGRAPH (Transactions on Graphics)
  - International Journal of Human-Computer Studies
  - Journal of Virtual Reality and Broadcasting
  - Journal of Expert Review of Medical Devices
- **Book Reviewer:** McGraw-Hill Publishing, Cambridge University Press



- **Proposal Review Panels:** National Science Foundation (2004, 2007, 2008, 2009, 2011, 2012, 2013, 2013)
- **Invited Panels:**
  - Keynote Panelist: Software Engineer and Architecture for Realtime Interactive Systems Working Group – IEEE Virtual Reality 2013
  - Avatar/Virtual Human Workshop – Department of Defense, Marina Del Ray, California, April, 2009. (One of two groups invited from academia)
  - Virtual Worlds and Virtual Humans – *France-US Frontiers of Science Symposium, National Academy of Science*, Roscoff, France, November, 2008
  - OSCEs and Virtual Patient Simulations in Pharmacy Education: International Experiences and Research Findings – *2008 Joint American Association on College of Pharmacy/ Association of Faculties of Pharmacy in Canada Annual Meeting*, Chicago, IL, July 22, 2008.
  - Medical and Healthcare Simulation Future Mapping Session – *National Center of Simulation*, Orlando, FL, May, 2008
  - User Studies in VR: What Can We Learn From Them and What Are They Good For? - *IEEE Virtual Reality 2008*, March, 2008
  - Student Panel: Building the Future of and a Career in VR - *IEEE Virtual Reality 2007*, March 2007
  - VR Support of Clinical Applications: Collaboration, Politics, & Ethics - *IEEE Virtual Reality 2007*, March, 2007
  - Bridging Simulation and HCI – *SIMCHI '05*, January 2006

## TEACHING

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### University of Florida

*Spring 2013: Human Computer Interaction (Undergrad/Grad)*

*Spring 2012: Human Computer Interaction (Undergrad/Grad)*

*Fall 2011: Parental Leave*

*Spring 2011: Sabbatical*

*Fall 2010: Human Computer Interaction (33 Undergrad/Grad)*

*Spring 2010: Human Computer Interaction (42 Undergrad/Grad)*

*Spring 2009: Virtual Environments (CAP6930/4930) (7 Undergrad/Grad)*

*Fall 2008: Human Computer Interaction (CAP6930/4930) (37 Undergrad/Grad)*

*Spring 2008: Computational Structures in Computer Graphics (CAP4730), (38 Undergraduates)*

*Fall 2007: Virtual Environments (4 university course) (CAP6930/4930) (4 Undergrad/Grad)*

*Fall 2007: Human Computer Interaction (CAP6930/4930) (15 Undergrad/Grad)*

*Spring 2007: Advanced Computer Graphics and Virtual Environments (CAP6930/4930) (5 Grad)*

*Fall 2006: Human Computer Interaction (CAP6930/4930) (9 Grad)*

*Spring 2006: Computational Structures in Computer Graphics (CAP4730), (46 Undergraduates)*

*Fall 2005: Design and Creation of Virtual Environments (CIS6930/4930), (19 Undergrad/Grad)*

*Spring 2005: Computational Structures in Computer Graphics (CAP4730), (51 Undergraduates)*

*Fall 2004: Human Computer Interaction (CAP6930/4930), (21 Undergrad/Grad)*

*Spring 2004: Computational Structures in Computer Graphics (CAP4730), (55 Undergraduates)*

*Fall 2003: Design and Creation of Virtual Environments (CIS6930/4930), (19 Undergrad/Grad)*

### University of North Carolina at Charlotte

*Spring 2003: Design and Analysis of Algorithms (ITCS2215), (40 Undergraduates)*

### University of North Carolina at Chapel Hill

*Fall 2000: Introduction to Computer Graphics (COMP136), (12 Undergrad/Grad)*

## PATENTS

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PCT/US2010/050393 REAL-TIME FEEDBACK OF TASK PERFORMANCE. International Filing Date: 9/27/10.

PCT/US10/023877 COMMUNICATION AND SKILLS TRAINING USING INTERACTIVE VIRTUAL HUMANS.

International Filing Date: 2/13/09.

PCT/US-2010-0159434-A1 MIXED SIMULATOR AND USES THEREOF.

## CONSULTING

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September 2009 – August 2011 – SimCoach, University of Southern California (ICT)

## INVITED TALKS

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### International

Virtual Worlds and Virtual Humans – France-US Frontiers of Science Symposium, National Academy of Science, Roscoff, France, November, 2008  
 Virtual Realities Dagstuhl Seminar, Schloss Dagstuhl (Germany), 2008  
 Invited Short Course: Virtual Environments, Jaypee Institute of Information Technology, New Delhi, India, March 24th-28th, 2008.  
 Vision Imaging and Virtual Environments Research Group, University of College London (2005)

### National

University of Central Florida, Florida Interactive Entertainment Academy (2014)  
 Full Sail University (2014)  
 University of Minnesota, Department of Computer Science (2013)  
 University of Virginia, College of Medicine Educational Grand Rounds (2012)  
 ACM, University of Tulsa (2012)  
 National Rx Drug Abuse Summit (2012)  
 College of Nursing, University of Central Florida (2011)  
 College of Medicine and Nursing, University of South Florida (2011)  
 AAAP Annual Meeting, Scottsdale, AZ (2011)  
 Keynote, 8th International Symposium on Visual Computing, Las Vegas, NV. (2011)  
 Tufts Health Care Institute Program on Opioid Risk Management, Boston, MA. (2011)  
 Tulsa Undergraduate Research Challenge, University of Tulsa (2010)  
 Northwestern University (2010)  
 Tulsa Undergraduate Research Challenge, University of Tulsa (2008)  
 Northwestern University (2008)  
 Department Seminar, University of Georgia (2007)  
 Education Grand Rounds, Medical College of Georgia (2007)  
 Invited Lecture Series, Medical College of Georgia (2007)  
 Institute of Creative Technologies, University of Southern California (2006)  
 College of Medicine, University of Southern California (2006)  
 Graduate Computer Science Colloquium Series, University of North Carolina at Charlotte (2005)  
 Computer Science Colloquium Series, University of North Carolina at Chapel Hill (2005)  
 Computer Science Colloquium Series, Old Dominion University (2005)  
 Virginia Tech Virtual Environments Research Group, Virginia Polytechnic University (2004)  
 Center for Information Security, University of Tulsa (2004)  
 Tulsa Undergraduate Research Challenge Reception, University of Tulsa (2004)  
 Human-Interface Laboratory, University of Washington (2003)

### State

Florida Research Consortium, Technology Transfer Consortium (2004)

### Local

The Dynamo: UF Chapter of the Roosevelt Institute (keynote) (2010)  
 UF Health Sciences Center Symposium (2010)  
 Simulation Faculty Learning Community Seminars (2008)  
 First Fridays Lecture Series, Sigma Xi Honor Society (2007)  
 Pain Research Forum, Department of Health and Human Performance (2007)  
 Cognitive Forum, Department of Psychology (2007)  
 Geriatric Education Group (2005)  
 Association of Digital Art and Media (2005)  
 School of Education Human-Computer Interaction Course (2004)  
 Center for Learning and Simulation (2004)  
 Introduction to Digital Arts and Science Course (2004)  
 Center for Neurological Science (2004)  
 Medical Educational Grand Rounds (2004)  
 Gainesville VA Hospital, Brain Rehabilitation Research Center (2004)  
 G2V2, University of Florida, (2003)

### REFERENCES

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Comments: Distinguished Professor