

Bimal Balakrishnan, Ph.D.

Associate Professor (Tenured) & Chair
Director of Graduate Studies
Department of Architectural Studies
College of Human Environmental Sciences
University of Missouri

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EDUCATION

Ph.D. in Mass Communication & Graduate Minor in Applied Statistics, December 2008
Penn State University, University Park, PA

Master of Science in Architecture (Digital Design emphasis), May 2004
Penn State University, University Park, PA

Bachelor of Architecture, December 1998
University of Kerala, College of Engineering – Trivandrum, India

EMPLOYMENT HISTORY

Chair, Dept. of Architectural Studies
University of Missouri, July 2018 to present
Director of Graduate Studies
Doctoral and graduate faculty status
Founding director, Immersive Visualization Lab (iLab)

Associate Professor, Dept. of Architectural Studies,
University of Missouri, September 2014 to present

Assistant Professor, Dept. of Architectural Studies,
University of Missouri, August 2008 to August 2014

Research Assistant, College of Information Sciences and Technology,
Penn State University, August 2006 to July 2008
User Science and Engineering Lab &
Multi-Disciplinary Initiatives in Naturalistic Decision Systems (MINDS) Group
(Supervisor: Dr. Michael D. McNeese)

Research Assistant, College of Communications,
Penn State University, August 2003 to May 2006
Media Effects Research Lab
(Supervisor: Dr. S. Shyam Sundar)

Research Assistant, Department of Architecture,
Penn State University, August 2003 to May 2006
Immersive Environments Lab
(Supervisor: Dr. Loukas Kalisperis)

Research Assistant, Department of Architectural Engineering,
Penn State University, May 2005 to August 2005
Immersive Construction (iCon) Lab
(Supervisor: Dr. John Messner)

Teaching Assistant/ Instructor, Department of Architecture,
Penn State University, August 2003 to May 2006

Registered Architect, Independent Architectural Practice, India
Council of Architecture Reg. no. 99/24862, May 2000 to July 2001

Lecturer in Architecture, National Institute of Technology – Calicut, India
November 1999 to April 2000 (Short-term/ Adjunct appointment)

Registered Architect, Environmental Creations – Architects & Landscape Architects,
Thiruvananthapuram, India
January 1999 to June 2000

Architectural Intern, Environmental Creations – Architects & Landscape Architects,
Thiruvananthapuram, India
September 1997 to May 1998; January 1996 to January 1997

Architectural Intern, Matharoo Associates Architects, Ahmedabad, India
February 1997 to August 1997

AWARDS & HONORS

Teaching

Excellence in Education Award, University of Missouri, 2012.

Teaching with Technology Award, for Graduate and Professional Education, ET@MO,
University of Missouri, 2011-2012.

Superior Graduate Faculty Award, Graduate Student Association (GSA), University of
Missouri, 2012.

Research

Norman and Marilyn Pick Research Scholar, College of Human Environmental Sciences,
University of Missouri, 2017-2019.

Fellowship, Reynolds Journalism Institute, 2014-2015.

Distinguished Researcher Award, College of Human Environmental Sciences, University
of Missouri, 2013.

First Place, Faculty Research Poster, College of Human Environmental Sciences,
University of Missouri, 2010.

Top Student Paper Award, Instructional & Developmental Communication Division, International Communication Association, 2007.
with Keston Pierre.

Jung-Sook Lee Award for Top Student Paper, Communication Technology and Policy Division, Association of Educators in Journalism and Mass Communication, 2006.
with Edward Downs, Sampada Marathe & Sue-Ellen Hopfer.

Second Best Student Presentation Award, Computer Aided Architectural Design Research in Asia, 2006

Graham Endowed Fellowship, Graduate School, Penn State University, 2003-2004.

August Pohland – Alma Heinz Scholarship for best graduate thesis proposal, School of Architecture and Landscape Architecture, Penn State University, 2002.

Graduate Assistantship, Fall 2001 to Summer 2008, Penn State University

Design and Creativity

Creative Achievement Award, College of Arts and Architecture, Penn State University, 2004.

Eighth Rank (All India Ranking) with 98.8th percentile score in CEED 1999 (Common Entrance Exam for Design for admission to Master of Design (M. Des) programs in Product Design & Visual Communication at the Indian Institute of Technologies (IIT)

Editor's Choice, Emerging Architecture Awards, Architectural Review, UK for *Ashwinikumar Crematorium* at Surat, India
with Gurjith Singh Matharoo (lead designer), Komal Mehta and Rolf Seiler, 2003.

Winner, National Open Competition - Ashwinikumar Crematorium at Surat, India
with Gurjith Singh Matharoo (lead designer), Komal Mehta and Rolf Seiler, 1997.

RESEARCH

Peer Reviewed Publications (Full Papers)

- Kim, J. B., & Balakrishnan, B. (2019). *Visualize Smart Growth Development with Parametric BIM: A Case Study of Downtown Columbia Unified Plan*, in Proceedings of the Computer-Aided Architectural Design Futures (CAAD Futures) Conference, Daejeon, South Korea, June 26-29
- D'souza, N., **Balakrishnan, B.**, Dastmalchi, M., Hopfenblatt, J. & Kress, M. (2018). *iSTUDIO: An Interactive Form-making Environment for Architectural Pedagogy*, in Proceedings of the Biannual Conference of the Design Communication Association, 16-23.
- Hopfenblatt, J., & **Balakrishnan, B.** (2018). The "Nine-Square Grid" Revisited: 9-Cube VR, An Exploratory Virtual Reality Instruction Tool for Foundation Studios, in Proceedings of the annual conference of Computer Aided Architectural Design Research in Asia, 463-471

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- Rodgers, S., Wang, Z., Maras, M., Burgoyne, S., **Balakrishnan, B.**, Stemmler, J., & Schultz, J. (2018). Decoding Science: Development and Evaluation of a Science Communication Skills Training Program Using an Triangulated Framework, *Science Communication*, 40 (1), 3-32.
 - Sun, C., Edara, P., Qing, Z., **Balakrishnan, B.**, & Hopfenblatt, J. (2017). *Driving Simulator Study of J-Turn Acceleration-Deceleration Lane and U-turn Spacing Configurations*, Transportation Research Record: Journal of the Transportation Research Board, No. 2638, pp. 26-34.
 - **Balakrishnan, B.**, & Oprean, D. (2015). *Communication, Coordination and Collaboration: Media affordances and Team Performance in a Collaborative Design Environment*. In Martens, B., Wurzer, G., Grasl, T., Lorenz, W.E. & Schaffranek, R.(Eds.) Proceedings of the annual conference of the Education and Research in Computer Aided Architectural Design in Europe (eCAADe 2015), Vienna, Sept. 16-18., pp. 225-232.
 - **Balakrishnan, B.**, Kalisperis, L. N., & Oprean, D. (2015). *Visualizing Human-Environment Interactions: Integrating Concepts and Techniques from HCI, Human Factors and Media Psychology*. In Lecture Notes in Computers Science 9189, Springer, pp. 3-12.
 - Oprean, D., & **Balakrishnan, B.** (2013). *Quest for efficiency: Examining cognitive processes underlying the use of 3D modeling tools*. Published in the proceedings of the annual conference of Education and Research in Computer Aided Architectural Design in Europe (eCAADe), Delft, September 18-20, pp. 101-107.
 - **Balakrishnan, B.** (2012). *Crisis management*. In Mathew, V. G. (Ed.), Manorama Year Book 2012, pp. 915-918. (India's leading current affairs reference book in English)
 - **Balakrishnan, B.**, Oprean, D., Martin, B., & Smith, M. (2012). *Virtual reality: Factors determining spatial presence, comprehension and memory*. In Lin, Yu-Cheng, & Kang, S.J. (Eds.), Proceedings of the 12th International Conference on Construction Applications of Virtual Reality, pp. 451-459.
 - **Balakrishnan, B.**, Oprean, D., & Yoon, S. Y. (2012). *Analog to digital: Image based 3-d modeling and motion capture for architectural design and evaluation*. In Williams, J. K. (Ed.), Proceedings of the Biennial Conference of the Design Computing Association, pp. 09-13.
 - Chandrasekara, T., Yoon, S. Y., & **Balakrishnan, B.** (2012). *Digital orthographic projections in architectural representations: Augmented-reality based learning*. In Williams, J. K. (Ed.), Proceedings of the Biennial Conference of the Design Computing Association, pp. 50-62.
 - **Balakrishnan, B.**, & Kalisperis, L.N. (2012). *Me and my VE: Demonstration 5 - Building affordable VR environments for education and research*. In Human Factors and Ergonomics Society Annual Meeting Proceedings, 56, pp. 2515-2516.
 - Note: This paper accompanies the demonstration session of 5 virtual reality labs selected nationwide to present.

- D'souza, N., **Balakrishnan, B.**, & Dicker, J. (2012). *Transparency: Literal, phenomenal, digital*. In Goulthorpe, M., & Murphy, A. (Eds.), *Digital Aptitudes + Other Openings*, Proceedings of the Annual Conference of Association of the Collegiate Schools of Architecture, Boston, MA, March 1-4, pp. 708-715.
- **Balakrishnan, B.**, & Sundar, S.S. (2011). *Where am I? How can I get there? Impact of navigability and narrative transportation on spatial presence*. *Human-Computer Interaction*, 26 (3), pp. 161-204.
- **Balakrishnan, B.** (2010). *Design communication in architectural history courses*. In Proceedings of the Biennial conference of the Design Communication Association, Bozeman, MT, September 4-7.
- **Balakrishnan, B.**, & Kalisperis, L.N., (2009). *Design visualization: A media effects approach*. *International Journal of Architectural Computing*, 7(3), pp. 415-427.
- Muramoto, K., Jemtrud, M., Kumar, S., **Balakrishnan, B.** & Wiley, D. (2009). *A Cyber-enabled collaborative design studio*. *International Journal of Architectural Computing*, 7(2), pp. 267-288.
- **Balakrishnan, B.**, Pfaff, M., Adibhatla, V., & McNeese, M. D. (2009). *NeoCITIES Geo-tools: Assessing impact of perceptual anchoring and spatially annotated chat on geo-collaboration*. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 53, pp. 294-298.
- Adibhatla, V., McNeese, M. D., Shapiro, A. & **Balakrishnan, B.** (2009). *Design and development of a transactive memory system prototype for geo-collaborative crisis management*. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 53(4), pp. 389-393.
- Muramoto, K., Jemtrud, M., Kumar, S., **Balakrishnan, B.** & Wiley, D. (2008). *Emerging technologies in a tele-collaborative design studio between the Pennsylvania State University and Carleton University*. *Journal of Information Technology in Construction (ITcon)*, 13, pp. 660-673.
- **Balakrishnan, B.**, Kalisperis, L.N., & Muramoto, K. (2007). *Spatial presence: Explication from an architectural point of view*. In Lilley, B., & Beesley, P. (Eds.), *Expanding Bodies: Art, Cities, Environment* Proceedings of the annual conference of Association of Computer-Aided Design in Architecture (ACADIA), Halifax, NS, October 4-7, pp. 120-127.
- **Balakrishnan, B.**, Kalisperis, L.N., & Muramoto, K. (2007). *Implications of representation-presentation distinction in developing a presentation environment for CAAD*. Published in the proceedings of the annual conference of Education and Research in Computer Aided Architectural Design in Europe (eCAADe), Frankfurt am Main, September 26-29, pp. 133-139.
- Kalisperis, L.N., Muramoto, K., **Balakrishnan, B.**, Nikolic, D., & Zikic, N. (2006). *Evaluating relative impact of virtual reality system variables on architectural design comprehension*. In Bourdakis, V., & Charitos, D. (Eds.), *Communicating Space(s)*, Proceedings of the annual conference of Education and Research in Computer

Aided Architectural Design in Europe (eCAADe), Volos, Greece, September 6-9, pp. 66-73.

- **Balakrishnan, B.**, Kalisperis, L.N., & Sundar, S.S. (2006). *Capturing affect and cognition in architectural visualization: A case for integrating 3-dimensional visualization and psychophysiology*. In Bourdakis, V., & Charitos, D. (Eds.), *Communicating Space(s)*, Proceedings of the annual conference of Education and Research in Computer Aided Architectural Design in Europe (eCAADe), Volos, Greece, September 6-9, pp. 664-669.
- **Balakrishnan, B.**, Kalisperis, L.N., Muramoto, K., & Otto, G.H. (2006). *A multimodal approach towards virtual reality for architectural design [re]presentation*. In Kaga, A., & Naka, R. (Eds.), *Rhythm and Harmony in the Bit-Sphere*, Proceedings of the annual conference of the association for Computer-Aided Architectural Design and Research in Asia (CAADRIA 2006), Kumamoto, Japan, March 30 - April 2, pp. 513-519.
 - Winner - Second best presentation award
- **Balakrishnan, B.**, Kalisperis, L.N., & Muramoto, K. (2005). *Evaluating workflow and modeling strategies for pen computing in beginning design studio*. In Duarte, J. P., Dulca-Soares, G., & Zampaio, A. Z. (Eds.), *Digital Design: Quest for New Paradigms*, Proceedings of the annual conference of Education and Research in Computer Aided Architectural Design in Europe (eCAADe 2005), Lisbon, Portugal, September 20-24, pp. 163-170.

Publications under review

- Siddicky, S.F., King, G., **Balakrishnan, B.**, & Hoffman, M. (under review) *Objective Kinematic Evaluation of Simulated Endotracheal Intubation Skill Using Marker-based Motion Analysis*, *IEEE Journal of Biomedical and Health Informatics*
- Naderi, E., Balakrishnan, B., Khosravi, Z., (under review). *The Impact of Attention on User Experience in the Virtual Environments: The Mediating Role of Sense of Presence in Virtual Reality*
- Naderi, E., Naderi, I, & Balakrishnan, B. (under review). *The Interactive Effects of Product Design and Environment Congruence on Consumers' Cognitive and Affective Responses*. Presentation at the 22nd Academy of Marketing Science World Marketing Congress, Edinburgh, UK, July 9-12.
- Oprean, D., & Balakrishnan (under review). *From engagement to user experience: A theoretical perspective towards learning with immersive technology informed by the spatial disciplines*. Schmidt, M., A. Tawfik., Y. Earnshaw, I. Jahnke (Eds). *From engagement to user experience: A theoretical perspective towards learning with immersive technology informed by the spatial disciplines*. Ed Tech Books

Peer reviewed creative/technology exhibits

- Hopfenblatt, J., & **Balakrishnan, B.** (2018). *Oculus NextGen*, Facebook Headquarters, Menlo Park CA

- **Balakrishnan, B.**, Hopfenblatt, J., & Oprean, D. (2016). "Immersing designers in their design" Exhibit Showcasing Virtual Reality and Augmented Projects from the Immersive Visualization Lab at the 2016 Immersive Reality Symposium at Penn State.
- **Balakrishnan, B.** & Kalisperis, L. N. (2012). "Virtual Reality Projects in Architecture", Demonstration at the Annual Conference of Human Factors and Ergonomic Society
 - One of the 5 labs chosen nationwide based on peer review

Peer Reviewed Conference Papers and Poster Presentations

- Naderi, E., Balakrishnan, B. & Khosravi, Z. (2019). *The Impact of Attention on User Experience in the Virtual Environments: The Mediating Role of Sense of Presence in Virtual Reality*. Human Computer Interaction International, Orlando, FL, July 26-31.
- Schultz, J., Balakrishnan, B., Stemmler, J. T., Rodgers, S. L., & Burgoyne, S. (2019, May). *SciCom meets SciTS. Interdisciplinary teamwork for science communication training. International Network for the Science of Team Science*. Lansing, MI, May 20-23.
- Hopfenblatt, J., Balakrishnan, B., & Dastmalchi, M. (2019). Experiential and technical considerations in developing virtual reality simulations for interior spaces. Paper presented at the Annual Conference of Interior Design Educators Council, Charlotte, NC, March 6-10.
- Dastmalchi, M. Balakrishnan., B., Walsh, R.M., & Hopfenblatt, J. (2019) Contradictory Discourse in Interior Design Critique. Paper presented at the Annual Conference of Interior Design Educators Council, Charlotte, NC, March 6-10.
- Naderi, E., Balakrishnan, B., Khosravi, Z., (2019). The Impact of Attention on User Experience in the Virtual Environments: The Mediating Role of Sense of Presence in Virtual Reality. Presentation at the 21st International Conference on Human-Computer Interaction. Orlando, FL, July 26-31.
- Marshall, J. M., **Balakrishnan, B.**, Hopfenblatt, J., & Farmer, R. (2019). Comparison of Presenting a Virtual Reality Environment with Different Interfaces on Sense of Presence, Realism, and Movement. Society for Simulation in Healthcare. San Antonio: Society for Simulation in Healthcare. Orlando, FL, January 26-30.
- Mongeon, M., **Balakrishnan, B.**, & Hopfenblatt, J. (2018, April). The Impact of Stereoscopy, Interactivity, and Product Type on Perceptions of 3D Advertising. Midwestern Psychological Association Conference. Chicago, IL: Midwestern Psychological Association Conference.
- Farmer, R.N., Khosravi, Z., Naderi, E., **Balakrishnan, B.**, Marshall, J.M. (2017). *Exploring Realism and Sense of Presence in Immersive Virtual Reality Training*. Presentation at the Annual Meeting of the Society for Education in Anesthesia, Jacksonville, FL, April 27-30.

- **Balakrishnan, B.** (2017). MidWest BioInformatics Conference, What does virtual reality and motion capture offer healthcare? (forthcoming, 2017), Kansas City, MO – April 13-14.
 - Invited Lecture
- Sun, C., Edara, P., Qing, Z., **Balakrishnan, B.**, & Hopfenblatt, J. (2017). *Driving Simulator Study of J-Turn Acceleration-Deceleration Lane and U-turn Spacing Configurations*. Presentation at the 97th Annual Meeting of the Transportation Research Board of the National Academies, Washington D.C., January 7-11.
- **Balakrishnan, B.** (2016). Pennsylvania and Friends Spatial Cognition Symposium, Spatial Ideation for Design: Potential of Emerging 3-D Technologies (2016). University Park, PA – May 20-22
 - Invited Keynote Presentation
- Hoffman, M.A., Siddicky, S.F., **Balakrishnan, B.**, & King, G.W. (2016). 3D Motion Analysis of Clinical Performance: A New Big Data Opportunity. Presentation at the American Medical Informatics Association Joint Summit, San Francisco, CA, Mar 21-24.
- D'souza, N., Kutty, A., Nanda, U., **Balakrishnan, B.**, & Dobkins, K. (2015). Use of Neuroscience Concepts and Measurements in Environment Behavior Research: Challenges and Opportunities. Symposium Presentation at the Annual Conference of Environment Design Research Association, Los Angeles, CA, May 27-30.
- D'souza, N., & **Balakrishnan, B.** (2014). Mizzou International Symposium on Creativity and New Media: Studying Media Affordances and Design Creativity. Poster presented at the International Conference on Design Computing and Cognition Conference, London, June 23-25.
- **Balakrishnan, B.**, Oprean, D., Schrimpf, B. (2013). *Motion capture and ergonomic Evaluation of Architectural Spaces*. Paper presented at the 44th Environmental Design Research Association Conference (EDRA), Providence, RI, May 28-June 1.
- Sohn, M-H., Ha-Brookshire, **Balakrishnan, B.**, D'souza, N., Hawley, J., Parsons, J., Stealey, J. (2013). *Interdisciplinary teaching strategy: Creating digital/virtual student project showcases*. Paper presented at the Annual Conference of International Textile and Apparel Association (ITAA), New Orleans, October 15-18.
- D'souza, N., Yoon, S.-Y., **Balakrishnan, B.**, Oprean, D., Chandrasekhara, T., Vo, N., Lin, Y.-F. (2011). *Virtual environments-Virtual behavior*. Symposium presented at the 42nd Environmental Design Research Association Conference (EDRA), Chicago, May 25-28.
- Wise, K., Yoon, S.-Y., **Balakrishnan, B.**, Alhabash, S., & Polivanaya, V. (2010). *Testing color theory: How different color combinations affect physiological and self-report measures of emotion*. Poster presented to the annual conference of the Society for Psychophysiological Research (SPR). Portland, Oregon. Sept. 29-Oct 3.
- D'souza, N., **Balakrishnan, B.**, Yoon, S.-Y., & Oprean, D. (2010). *The environment-behavior paradox in virtual environments*. Symposium presented at the 41th

Environmental Design Research Association Conference (EDRA), Washington D.C., June 2-6.

- Yoon, S.-Y., Wise, K., & **Balakrishnan, B.** (2010). *Evaluating emotional effects of color environments: The Case for Computer Simulations and Psychophysiological Measures*.
Presentation at the 41th Environmental Design Research Association Conference (EDRA), Washington DC, June 2-6.
- **Balakrishnan, B** & Sundar, S. (2009). *Where am I? How can I get there? Impact of navigability and narrative transportation on spatial presence*. Paper presented at the annual conference of the International Communication Association (ICA), Chicago, May 21-25.
- **Balakrishnan, B.**, & Adibhatla, V. (2008). *NeoCITIES transactive memory system for geo-collaboration in emergency crisis management*. Poster presented at the Annual Department of Homeland Security University Summit, Washington D. C., March 19-20.
- Muramoto, K., Jemtrud, M., Kumar, S., **Balakrishnan, B.** & Wiley, D. (2007). *Emerging technologies in a tele-collaborative design studio between Pennsylvania State University and Carleton University*. Paper presented at the CON VR 2007 - annual conference of Virtual Reality in Construction, University Park, PA, October 22-23.
- **Balakrishnan, B.** & Pierre, K. (2007). *Towards a human-centered approach towards instructional technology: Role of presence and engagement on student satisfaction in online courses*. Paper presented at the annual conference of the International Communication Association (ICA), San Francisco, May 24-28.
 - Top student paper in Instructional & Developmental Communication Division.
- **Balakrishnan, B.**, Nikolic, D., & Zikic, N. (2007). *"Where am I?" - Impact of display and content variables on spatial presence and comprehension in virtual environments*. Paper presented at the annual conference of the International Communication Association (ICA), San Francisco, May 24-28.
- Downs, E.P., **Balakrishnan, B.**, Marathe, S., & Hopfer, S. (2006). *Can Billie-Jo sell wine? The effect of social category cues and rich media in e-commerce websites*. Paper presented at the annual conference of the Association for Education in Journalism and Mass Communication (AEJMC), San Francisco, USA, August 10 – 13.
 - Winner Jung-Sook Lee award for top student paper in the Communication Technology & Policy Division.
- **Balakrishnan, B.**, & Pierre, K. (2005). *Towards a human-centered approach towards instructional technology: Role of social presence, interactivity and engagement on student satisfaction in online courses*. Poster presented at the annual conference of the Association for Education in Journalism and Mass Communication (AEJMC 2005), San Antonio, USA, August 10 – 13.
- **Balakrishnan, B.**, Tsay, M., Pierre, K., & Vincent-Killian, J. (2004). *Need for acceptance and use of computer-mediated communication*. Paper presented at the

annual meeting of the Association for Education in Journalism and Mass Communication (AEJMC 2004), Toronto, Canada, August 4 – 7.

Research Grants – Under Review

- *Co-Principal Investigator, Anesthesia Patient Safety Foundation Grant for Can Virtual Reality Environments be Utilized for Effective Training in Anesthesiology?* (\$150,000 for 2020-2021, PI – Julie Marshall)
- *Co-Investigator, National Institute of Health grant for Virtual Reality Behavior Intervention Training for Pre-Service Clinicians Working with Children with Autism* (\$391,952 for 2019-2021; PI – Casey Clay)
- *Key Personnel, National Science Foundation – CCRI: Medium: Collaborative Research grant for Community Infrastructure for Visual Cloud Computing with Edge Networking to enable Environmental Situational Awareness* (1,319,200 for 2019-2022, PI – Prasad Calyam)

Research Grants – Funded

- *Co-Investigator, Federal Highway Administration grant for MIMIC - Multidisciplinary Initiative on Methods to Integrate and Create Artificial Realistic Data* (\$1,073,255 for 12.01.2018-12.01.2019; PI – Praveen Edara)
- *Co-Principal Investigator, UM System Research and Creative Works Strategic Investment Program Tier-2 Grant* for Building a Convergent Research Community for Smart City Center Procurement (\$333,300 for 2019-2021, PI – William Buttlar)
- *Principal Investigator, Steelcase Active Learning Center Grant* for 21st Century Collaborative Design Studio (\$67,000 gift in kind)
- *Co-Principal Investigator, University of Missouri Center for Patient-Centered Outcomes Research for Virtual Reality Skills Training for Behavioral Intervention with Individuals with Autism Spectrum Disorders* (\$19,981 for 2017-2018, PI – Casey Clay)
- *Joint Principal Investigator, University of Missouri – Interdisciplinary Innovations Fund for Development of 3D Virtual Reality Environments for Medical Education* (\$25,000 for 2016-2017, Joint PI – Julie Marshall)
- *Co-Principal Investigator, U.S. Department of Transportation – Federal Highway Administration for A Multidisciplinary Approach to Investigate Work Zone Using SHRP2 Safety Data*, (\$99,999 for 2015-2017; PI – Praveen Edara).
- *Collaborator, National Science Foundation Research Traineeship (NRT) Program for NRT-IGE: A test bed for STEM graduate student communication training* (\$487,468 for 2015-2017; PI – Jack Schultz)

- *Principal Investigator, Seeding Interdisciplinary Research Collaboration (SIRC) Award for Evaluating potential of VR simulations for healthcare facility prototyping and training of healthcare professionals* (\$1,500 for 2015)
- *Co-Investigator, Missouri Dept. of Transportation & Regional University Transportation Centers Program - Investigation of J-Turn Design Factors using the ZouSim* (\$199,172 for 2014-2016)
- *Co-Investigator, University of Missouri PRIME Match Funds for Investigation of J-Turn Design Factors using the ZouSim* (\$31,200 for 2014-2016)
- *Co-Principal Investigator, University of Missouri System Interdisciplinary Intercampus (IDIC) Research Grant - Informatic and Architectural Analysis of Human Performance in a Clinical Simulation Setting* (\$94,640 for 2014-2015, PI – Mark Hoffman, Univ. of Missouri Kansas City Center for Health Insights)
- *Joint-Principal Investigator, University of Missouri Mizzou Advantage Research Grant – Immersive, interactive, integrative: Envisioning media of the future in 3-Dimensions.* (\$130,795 for 2014-2016, Joint PI – Clyde Bentley)
- *Principal Investigator, Reynolds Journalism Institute Fellowship for Examining Potential of 3-D Technologies for Journalism, Science Communication and Advertising.* (\$35,000 for buying out primary teaching responsibilities for 2014-2015 academic year)
- *Co-Principal Investigator, University of Missouri – Interdisciplinary Innovations Fund for iSTUDIO: An Interactive Form-making Environment for Art and Architectural Teaching.* (\$25,000 for 2014-2015; PI - Newton D'souza)
- *Joint-Principal Investigator, University of Missouri – Mizzou Online for New Online Masters Concentration in Design Research.* (\$178,000 for 2012-2014; Ruth Tofle and Newton D'souza are Joint PIs)
- *Co-Principal Investigator, University of Missouri – Mizzou Advantage Network Grant for Enhancing Disaster Resilience in a Digital Age.* (\$100,000 for 2012-2013; Project Co-PIs – Glen Cameron, Brian Houston and Chris Fulcher)
- *Co-Principal Investigator, University of Missouri – Mizzou Advantage Network Grant for Creative Convergence Network (CCN): International Symposium on Assessment and Facilitation of Creativity in New Media.* (\$25,000 for 2012-2013; PI – Newton D'souza)
- *Principal Investigator, University of Missouri – Interdisciplinary Innovations Fund for ReCap: Reality Capture and Simulation for Design Evaluation.* (\$25,000 for 2012-2013; Co-I – Newton D'souza)
- *Co-Principal Investigator, University of Missouri – Interdisciplinary Innovations Fund for Leading the Future of the Retail Industry through Creating Digital/Virtual Student Project Showcases.* (\$22,500 for 2012-2013; PI – Jung-Ha Brookshire)
- *Principal Investigator, University of Missouri, College of Human Environmental Sciences – Seeding Interdisciplinary Research Collaboration (SIRC) Award for*

Analog to Digital: Image Based 3-d Modeling and Motion Capture for Architecture and Apparel Design. (\$1,236 for 2012; Co-I – So-Yeon Yoon)

- *Principal Investigator*, University of Missouri, College of Human Environmental Sciences – **Margaret W. Mangel Faculty Research Catalyst Fund for Understanding Team Cognition in Digitally-Mediated Design Collaboration.** (\$3,000 for 2011-2012)
- *Co-Investigator*, University of Missouri – **Mizzou Advantage Network Grant for Creative Convergence Network (CCN): International Symposium on Assessment and Facilitation of Creativity in New Media.** (\$19,787 for 2011-2012; PI – Newton D'souza).
- *Co-Principal Investigator*, University of Missouri, College of Human Environmental Sciences – **Seeding Interdisciplinary Research Collaboration (SIRC) Award for Developing a Large-scale Interactive Walkthrough: The Case for Gaming Engine-based VR Simulations of the Metabolic Kitchen.** (\$1,019 for 2011; PI – So-Yeon Yoon).
- *Co- Investigator*, University of Missouri – Research Board Grant for **Evaluating the Impact of Virtual Reality Learning environment on Design Creativity.** (\$21,366 for 2010-2011; PI – Newton D'souza).
- *Principal Investigator*, University of Missouri – **Interdisciplinary Innovations Fund for the Development of a Collaborative Design and Education (CoDE) Environment at the Immersive Visualization Lab (iLab).** (\$25,000 for 2010-2011; Co-I – Newton D'souza, So-Yeon Yoon)
- *Principal Investigator*, University of Missouri – **Interdisciplinary Innovations Fund for the Development of an Immersive Visualization Lab.** (\$25,000 for 2009-2010; Co-I – Newton D'souza, So-Yeon Yoon, Michael Goldschmidt, Ronald Phillips)
- *Principal Investigator*, University of Missouri, College of Human Environmental Sciences – **Margaret W. Mangel Faculty Research Catalyst Fund for Examining the Relationship between Design Intelligence and 3D Visualization Strategies for Architectural Design.** (\$2,850 for 2009-2010)
- *Co-Principal Investigator*, University of Missouri, College of Human Environmental Sciences – **Margaret W. Mangel Faculty Research Catalyst Fund for Enhancing Creativity through a Virtual Reality Learning Environment.** (\$2,500 for 2009-2010; PI – Newton D'souza)
- *Co-Investigator*, University of Missouri – **Interdisciplinary Innovations Fund for Implementation of Building Information Modeling for ShowMe Solar Decathlon 2011 and ArchSt 4815 Studio V.** (\$15,875 for 2009-2010; PI – Michael Goldschmidt)
- *Co-Principal Investigator*, University of Missouri – **Faculty Development Project Award for Hybrid Design Studios in Architectural Studies: Combining Online Virtual and Physical Environment Instruction.** (\$3,100 for 2009-2010; PI – So-Yeon Yoon)

- *Co-Principal Investigator*, University of Missouri, College of Human Environmental Sciences – **Margaret W. Mangel Faculty Research Catalyst Fund for Understanding the Effect of Color Environments: Physiological and Self-Report.** (\$2,621.00 for 2009-2010; PI – So-Yeon Yoon)
- *Co-Investigator*, College of Arts and Architecture, Penn State University – **Research initiation grant for Participatory Design Studio (PDS) - Inquiry-based collaborative design studio between Penn State and Carleton University, Ottawa.** (\$17,500 for 2007-2008; PI – Katsuhiko Muramoto).
- **Grants for Undergraduate Research Mentorship at University of Missouri Faculty Mentor for College of Human Environmental Sciences P.U.R.E. (Program for Undergraduate Research Experience) Grants.** Each project listed below received \$2000 totaling \$22,000 to provide research apprenticeship opportunities for undergraduate students from 2011-17.
 - Robin King, **Visualization Research: Real Ergonomic Testing of Medical Rooms** (2017)
 - Jordan Frericks, **Virtual Reality Enhances the Game of College Basketball** (2017-2018)
 - Mohammed Al Subaie, **Dynamic Architecture: Exploring Adaptive and Responsive Architecture** (2016-2017)
 - Rebecca Van Lue, **Evaluating Emotional Responses to the Designed Environment: Integrating Virtual Reality Environments with Emotional Response Measurement** (2016)
 - Rachael Liberty & Hannah Wallace, **Research-based Prototyping and Evaluation of an Intensive Care Unit** (2014)
 - Ashlyn Jach, **Pervasive Developmental Disabilities in the Learning Environment** (2014)
 - Lindsay Webb, & Alyssa Jensen, **Examining Digitally Mediated Collaborative Design Environments** (2013)
 - Benjamin Schrimpf, **Ergonomic and Architectural Design Evaluation using Motion Capture Tools** (2012)
 - Malia Bucher, **Balancing Performance and Aesthetics: Building Simulation Using Rhino, Grasshopper and Arduino** (2012)
 - Nicole Wagdy and Michael Sun, **Guidance Tools to Enhance Navigation in a Virtual Environment** (2012)
 - Brad Martin and Melina Smith, **Evaluating Impact of Virtual Reality System Components on Spatial Experience** (2011)

Research Grants – Submitted, Not Funded

- *Co-Principal Investigator*, National Science Foundation – **Major Research Instrumentation** grant for **MRI: Acquisition of CAVE - An Immersive Virtual Reality Environment for Dynamic Interactive Decision Making and Learning** (\$496,000 for 2019-2022, PI – Ye Duan)
- *Co-Investigator*, U.S. Department of Energy for **SAMARITAN – Supporting Alternative Fuel Vehicle use in the Midwest to Aid Resilience Initiatives Towards Natural Disasters** (\$750,000 for 2019-2021, PI – Praveen Edara)

- *Principal Investigator, UM System Research and Creative Works Strategic Investment Program Tier-1 Grant* for High Resolution 3D Tiled Display (\$300,000 for 2019-2021)
- *Co-Principal Investigator, UM System Research and Creative Works Strategic Investment Program Tier-2 Grant* for Strategic Investment in Medical Research & Training in Virtual Reality (SIM ReTriVR)(\$400,000 for 2019-2021, PI – Chris Sampson)
- *Co-Principal Investigator, UM System Research and Creative Works Strategic Investment Program Tier-2 Grant* for Center for Cognitive Internet of Things and Virtual Reality for Smart and Connected Community (\$500,000 for 2019-2021, PI – Ye Duan)
- *Co- Investigator, UM System Research and Creative Works Strategic Investment Program Tier-2 Grant* for Center for Image and Video Analytics (\$750,000 for 2019-2021, PI – Kannappan Palaniappan)
- *Co-Investigator, UM System Research and Creative Works Strategic Investment Program Tier-2 Grant* for Center for Quantitative Cardiovascular and Lymphatic Research (QCaLyR) (\$750,000 for 2019-2021, PI- Giovanna Guidoboni)
- *Co-Investigator, National Science Foundation S-STEM Program Grant* for MO Pathways to Success: Three-University Partnership to Enhance STEM Recruitment, Transfers, Retention and Graduation (\$4,996,205 for 01.01.2019-12.31.2023; PI – Vellore S Gopalaratnam)
- *Co-Principal Investigator, National Science Foundation Engineering Research Center Planning Grant* for Modernizing Infrastructure with Citizen Input and Transportation Innovation (MI-CITI) (\$100,000 for 2018-2019, PI – William Buttlar)
- *Co-Investigator, University of Missouri – Mizzou Advantage Research Grant* for Digital Tools for Teaching Green Building Literacy (\$50,000 for 2017-2018; Joint PIs – Laura Cole & Laura Zangori)
- *Co-Investigator, University of Missouri – Mizzou Advantage Research Grant* Using Immersive Virtual Reality for Effective Surgery Training & Cortisol Measurement (\$50,000 for 08.01.2018-12.31.2019; PI – Prasad Calyam)
- *Co-Principal Investigator, University of Missouri – Black & Veatch Research Partnership Grant for Third Eye: Wearable Technology for Preventing Construction Worker Fatalities* (PI - Praveen Edara)
 - One of eight teams shortlisted for final round
- *Joint Principal Investigator, Coulter Foundation Seed Grant for AIR-SIM: Anesthesia Immersive Reality Simulator*
 - Was selected as a finalist as part of the MU Coulter Bootcamp
- *Co-Investigator, U.S. Department of Transportation – Federal Highway Administration for Phase II: A Multidisciplinary Approach to Investigate Work Zone Using SHRP2 Safety Data*, (\$243,041 for 2017-2019; PI – Praveen Edara)

- *Co-Principal Investigator, U.S. Department of Transportation – Federal Highway Administration Exploratory Advanced Research Program for Demonstration of an Affordable Federated Multi-Modal Simulator* (\$299,948 for 2017, PI – Carlos Sun)
- *Co-Principal Investigator, Anesthesia Patient Safety Foundation for Training in Immersive Virtual Reality for Mastery Learning* (150,000 for 2017-2018, PI – Julie Marshall)
- *Co-Principal Investigator, National Transportation Research Board for Third Eye: Wearable Technology for Preventing Worker Fatalities in Work Zones* (\$150,000 for 2016-2017, PI – Praveen Edara)
- *Collaborator/Consultant, National Science Foundation US Ignite for Improving Digital Media Instruction Through the Application of Ultrahigh Gigabit and Virtual Interactive Immersion Technologies to Distance Learning* (\$600,000 for 2015-2018; PIs – Dale Musser, Ronald Green)
- *Co-Investigator, Army Medical Research Grant for Integration of Qualitative and Quantitative Motion Analysis to Evaluate and Improve Clinical Team Performance* (\$600,000 for 2015-2018; PI – Mark Hoffman)
- *Co-Investigator, Society for Technology in Anesthesia - Fresenius Grant for Creation of a 3D Virtual Reality Airway Library* (\$7,500 for 2015; PI – Julie Marshall)
- *Co-Investigator, Craig H. Neilsen Foundation – Psychosocial Research Program for Identifying Driving Patterns of Persons with Spinal Cord Injury to Design a Smart Vehicle Cab Configurations Using an Eye & Head-Tracking Human-In-The-Loop (HITL) Simulation* (\$100,000 for 2015-2016; PI-Jung Hyup Kim)
- *Co-Principal Investigator, National Science Foundation – Division of Astronomical Sciences for Planetary Nebulae, Molecules and the Universe* (\$464,208 for 2014-2017; PI- Angela Speck, Co-PI – Sean Baldrige)
- *Co-Investigator, National Science Foundation Division of Chemical, Biological, Environmental, and Transport Systems (CBET) for Fate of Emerging Carbon Nanomaterials (CNM) in the Environment: Transformations of Graphene and C-Dots in Natural Waters* (\$326,106 for 2014-2017, PI – Maria Fidalgo)
- *Joint PI, Architecture and Neuroscience Foundation grant for The ‘WOW’ Experience in Architecture: An Exploratory Study using Psychophysiological, Neural and Behavioral Measures.* (\$50,000 for 2012-2013; Joint PI – Newton D’souza)
- *Principal Investigator, University of Missouri, Mizzou Advantage Seed Grant for Project VAST (Visualization Across Space & Time): An Inter-disciplinary Initiative for Spatial and Temporal Visualization.* (\$50,000 for 2011-2012).
- *Co-Principal Investigator, ASID Research Grant for Measuring Emotional Effects of Interior Color Environments: The Case for Real-Scale Computer Simulations with Physiological and Self-Report Measures.* (\$35,000 for 2011-2012; PI – So-Yeon Yoon).

- *Co-Investigator*, Nuckoll's Foundation, **Nuckolls Fund for Lighting Education for Visualize/ Actualize: Lighting Simulation & Realization**. (\$5,000 for 2011-2012; PI – Ruth Brent Tofle).

Development of Simulations Tools and Prototypes

- **AIR-SIM: Anesthesia Immersive Reality Simulator**
With Julie Marshall, James Hopfenblatt & Zhaleh Khosravi
Ongoing simulation tool development to train anesthesiologists
- **Zou-Sim J-Turn Simulator & Work zone safety training**
With Carlos Sun, Praveen Edara, James Hopfenblatt & Zhu King
Ongoing simulation tool development for transportation design research and worker training
- **Multi-Modal Virtual Environment for Design Presentation**
with Loukas Kalisperis, Danielle Oprean
Ongoing software development project led by Balakrishnan to develop a large-screen, multi-modal design presentation and critique environment for architectural designs.
- **NeoCITIES Geotools**
with Mark Pfaff, Scott Pezanowski, Varun Adibhatla, Michael D. McNeese
Scaled-world simulation developed to study team collaboration and situation awareness funded by National Science Foundation and Department of Homeland Security. Balakrishnan was involved in design of experiment based on research objectives, development of prototypes and conduct of usability research, data collection and analysis and coordination of software developers.
- **NeoCITIES Transactive Memory System**
with Varun Adibhatla, Alice Shapiro and Michael D. McNeese
Prototype developed for first responders to coordinate crisis response. Balakrishnan was involved in development of early prototypes integrating 2D and 3D spatial information and conducting usability evaluations with experts

TEACHING EXPERIENCE

Courses Taught at University of Missouri

Graduate Courses

- | | |
|----------------|---|
| • Arch St 8840 | Graduate Design Studio |
| • Arch St 8830 | Digital Design Studio 2 |
| • Arch St 8050 | Research Methods |
| • Arch St 8960 | Readings Course – Theoretical Topics in Digital Media |
| • Arch St 8085 | Problems in Environmental Design |
| • Arch St 9555 | Recent Trends: Workshop for online & onsite students |
| • Arch St 7840 | Graduate Design Studio |
| • Arch St 7232 | Graduate Design Communication I |
| • Arch St 7961 | Design Research & Service Design |
| • Arch St 7962 | Information Visualization & Visual Analytics |

Undergraduate Courses

- Arch St 4990 Thesis Design Studio
- Arch St 4860 Programming for Thesis
- Arch St 4823 Design Studio III
- Arch St 4824 Design Studio IV
- Arch St 4420/7420 History of the Designed Environment after 1750
- Arch St 3182 Design Studio II
- Arch St 2230 Design Communication

Individual Study Courses

- Arch St 7960 Readings in Environmental Design
- Arch St 4085 Problems in Architectural Studies
- Arch St 4960 Readings in Architectural Studies
- Arch St 9990 Dissertation Proposal
- Arch St 9090 Doctoral Research in Environmental Design

Courses Newly Developed or Substantially Redesigned*Arch St 8050: Research Methods in Environment and Behavior*

- Substantially redesigned the course to include experiential learning
- Developed interactive video lectures for all course topics for online students to provide them with a near-classroom experience
- Integrated web-based collaboration technologies to introduce statistical software tools for online students

Arch St 8633: Theoretical Perspectives in Design Computing

- This seminar course was newly developed to be the core theory course for M.S. & Ph.D. students in the design with digital media emphasis area

Arch St 4420/4440: History of Architecture, Interior and Furniture Design since the Industrial Revolution

- New course developed to better integrate the history course with the design studios in the Architectural Studies curriculum

Arch St 4555: Recent trends: Advanced Visualization

- Offered as an elective course teaching stereoscopic visualization, parametric modeling and behavioral simulation using intelligent agents

Arch St 4961/7961: Design Research and Service Design

- New course developed to provide an overview of applied research methods for use across design disciplines as well as offer industry perspective through guest lectures from experts at leading companies such as Microsoft, Ericsson, Hallmark etc.

Arch St 4962/7962: Information Visualization and Visual Analytics

- New course developed to provide introduction to information visualization and visual analytics drawing from an inter-disciplinary perspective.

Courses Taught at Penn State University

Arch 281 Introduction to Computer Applications in Architecture

Arch 481 Digital Design Media, Co-instructor with Prof. Katsuhiko Muramoto and Dr. Loukas Kalisperis

Teaching Assistantship at Penn State University

Arch 281 Introduction to Computer Applications in Architecture with Dr. Loukas Kalisperis

Arch 441/442 Architectural Design and Analysis with Prof. Pier Luigi Bandini

Arch 481 Digital Design Media with Dr. Loukas Kalisperis & Prof. Katsuhiko Muramoto

Arch 497E Virtual Design for the Built Environment with Dr. Loukas Kalisperis & Dr. John Messner

Comm 404 Mass Communication Research with Dr. S. Shyam Sundar

Comm 506 Mass Communication Research (Graduate Course) with Dr. S. Shyam Sundar

Comm 418 Media Effects with Dr. S. Shyam Sundar

Courses Taught at National Institute of Technology, Calicut, India

Architecture Design 1 Introductory Design Studio

Architecture Design 2 Intermediate Design Studio

Computer Aided Design

Professional Practice: Building Codes and Ethics of Architectural Practice

Invited Lectures, Presentations and Exhibitions

- Invited Lecture, Midwest Bioinformatics Conference, *What does virtual reality and motion capture offer healthcare?*, Columbia, MO – April 12-13, 2018
- Keynote Presentation, Pennsylvania and Friends Spatial Cognition Symposium, *Spatial Ideation for Design: Potential of Emerging 3-D Technologies* University Park, PA – May 20-22
- Presentation with Newton D'souza, Mizzou International Symposium on Creativity – Overview and Analysis Hallmark-Mizzou Creativity Workshop, April 19-20, 2013.
- Keynote Lecture, Indian Institute of Architects, Thrissur Chapter Meeting – *Visualization, Simulations and Development of Virtual Environments for Design Decision-Making*, January 16, 2013.
- Invited Lecture, University of Calicut, Dept. of Architecture – *Design Visualization and Simulation Using Virtual Reality Environments*, January 16, 2013.
- Invited Lecture, Indiana University Purdue University Indianapolis, School of Informatics – *Enhancing Imagination, Evaluating Experience: Cognitive and Affective Aspects of 3-D Visualization*, February 2012
- Invited Lecture, University of Kerala, Dept. of Architecture – *Developing Affordable Virtual Reality for Architectural Design*, July 30, 2010.

- University of Missouri, MANGMT 8100: Exploring the Digital Globe– *Developing Virtual Environments for Behavior Research*
 - Oct 19, 2010
 - Nov 1, 2011
 - Nov 6, 2012
 - Sept 9, 2014
 - Feb 24, 2016
- University of Missouri, CV ENG 4190: Infrastructure Project Development – *Virtual Reality Simulations for Design and Project Management*
 - Nov 8, 2012
 - Nov 7, 2013
 - Nov 13, 2014
 - Nov 12, 2015
 - Nov 29, 2016
- University of Missouri, JOURN 4462: Emerging Technologies
 - Nov 13, 2013
 - Mar 16, 2016
 - Mar 22, 2017
- *Transactive Memory System for Geo-Collaboration* – Poster presented at the 2008 College of Information Science and Technology Graduate Symposium, Penn State University, Jan 31-Feb 1.
- *Virtual Reality and Digital Media: A Multi-modal Approach towards Architectural Representation* - Poster presented at the Annual Graduate Research Exhibition, Penn State University, March 2003.
- *Building Dynamic Worlds on the Web with VRML 97. Talk given at ITS/SALA Immersive Environments Lab open house in March 2002 with Elena Slobounov.*
- Guest lectures at Penn State on *Adding Behavior and Interactions in Virtual Environments*
 - Arch 497E/AE 497E – Virtual Design for the Built Environment [Spring 2004]
 - Arch 543 – Topics in Digital Media [Fall 2004]

GRADUATE STUDENT ADVISING

Architectural Studies

Mohammad Dastmalchi (Chair, Ph.D. Committee)
 Keith Hedges (Chair, Ph.D. Committee)
 James Hopfenblatt (Chair, Ph.D. Committee)
 Emili Carlson (Member, Ph.D. Committee)
 Michael Lam (Chair, M.A. Committee)

Zhaleh Khosravi (Chair, M.S. Committee, Completed Spring 2018)
 Ehsan Naderi (Chair, Ph.D. Committee, Completed Fall 2017)
 Benjamin Schrimpf (Chair, M.S. Committee, Completed Fall 2016)
 Ehsan Naderi (Chair, M.A. Committee, Completed Fall 2016)
 Tilanka Chandrasekera (Member, Ph.D. Committee; Completed Fall 2015)
 Danielle Oprean (Co-Chair, Ph.D. Committee; Completed Fall 2014)

	Ahmed Alawadhi (Member, Ph.D. Committee; Completed Fall 2014)
	Preeyarat Wuttisirisart (Chair, M.A. Committee; Completed Fall 2014)
	Kenneth Jacquin (Chair, M.A. Committee; Completed Spring 2013)
	Thong Thai (Member, M.A. Committee; Completed Summer 2012)
	Rachel Myers (Member, Ph.D. Committee; Completed Fall 2015)
	Carrie Steuber (MA Committee member, Completed Fall 2011)
School of Journalism	Rachel Myers (Member, Ph.D. Committee; Completed Fall 2015)
	Courtney Ledo (Member, M.A. Committee; Completed Fall 2014)
	Ryan Kresse (Member, M.A. Committee; Completed Spring 2012)
	Nathan Birt (Member, M.A. Committee; Completed Summer 2009)
College of Engineering	Zhu King (Member, Ph.D. Committee)
	Zhu King (Member, M.S. Committee, Completed Fall 2016)
	Xiaonan Yang (Industrial Engg.) (Member, M.S. Committee, Completed Summer 2016)
	Wei Du (Industrial Engg.) (Member, M.S. Committee; Completed Summer 2015)

LEADERSHIP ROLES AT UNIVERSITY OF MISSOURI

Chair, MU Information Technology Committee, 2018 – Present

- Committee member 2016 - Present
- Advise on issues involving computer and information technology including budget
- Oversight of Computer and IT services on the MU campus.

Member, Steering Committee – Digital Storytelling Program

- Advice on curriculum and strategies to grow the new program, 2017-2018

Coordinator, Design with Digital Media Graduate Program, 2012 - 2018

- Lead curriculum and promote the emphasis area
- Lead infrastructure development for digital media needs

Founding Director, Immersive Visualization Lab (iLab)

- Led the development and manage operations of the iLab which has state-of-the-art advanced visualization hardware and software for our graduate and undergraduate students
- Established and maintain multi-disciplinary collaborations with research groups in College of Engineering, School of Medicine, Thompson Center for Autism, School of Nursing, College of Arts and Science, School of Journalism and University of Missouri – Kansas City

Member, MU Cyberinfrastructure Committee

- Co-Led Imaging & Visualization Component of MU Cyberinfrastructure Plan
 - Contribute to strategic planning for cyberinfrastructure on campus
 - Organized campus wide showcase of visualization research bringing together 6 research groups on campus and 2 external organizations
-

AWARDS & HONORS WON BY ADVISEES AND STUDENTS

Danielle Oprean, Ph.D. Student (Completed, Fall 2014)

- ARCC King Student Medal (2013)
- John D. Bies International Travel Scholarship (2012)
- Top Graduate Student at the University of Missouri (2012) from Graduate Student Association (GSA)
- Marcia W. Healy & Robert N. Healy Graduate Scholarship, Dept. of Architectural Studies, 2010
- Graduate Professional Council (GPC) Travel Award Recipient (2010), University of Missouri

Ehsan Naderi, Current Ph.D. Student

- Graduate Teaching Award, College of Human Environmental Sciences, 2017
- Marcia W. Healy & Robert N. Healy Graduate Scholarship, Dept. of Architectural Studies, 2014

James Hopfenblatt, Current Ph.D. Student

- Finalist (with Zhu King & Ehsan Naderi), Traffic Control Device Challenge (TCDC) organized by The Transportation Research Board (TRB) Standing Committee on Traffic Control Devices (AHB50) and the American Traffic Safety Services Association (ATSSA)
- Marcia W. Healy & Robert N. Healy Graduate Scholarship, Dept. of Architectural Studies, 2015
- Selected for the Reynolds Journalism Institute Tech Showcase 2014

Mohammad Dastmalchi, Current Ph.D. Student

- HES Graduate Scholarship for Continuing Students 2017-2018

Aaron McMurry, Undergraduate student

- Award of Merit – Applied Design Category, MU Visual Art and Design Showcase, 2017 for MAKE: STEAM – A Makerspace for Columbia, Studio 4 Class Project

Mohammed Al Subaie, Undergraduate student

- Award of Merit – Applied Design Category, MU Visual Art and Design Showcase, 2016 for MAKE: STEAM – A Makerspace for Columbia, Studio 4 Class Project

Coulton Becker, Undergraduate Student

- Second Prize – Applied Design Category, MU Visual Art and Design Showcase, 2018 for Child Development Lab, Studio 3 Class Project
-

James Rusk, Undergraduate student

- Missouri Theatre Display Award, MU Visual Art and Design Showcase, 2016 for Columbia Transit Station, Studio 3 Class Project

Alyssa Jensen and Lindsay Webb, Undergraduate students

- Honorable Mention, Undergraduate Research Exhibition MU (2014)

College of Human Environmental Sciences P.U.R.E. Grants

- Since the P.U.R.E. scholarships were instituted, 15 students who worked with me in the iLab as their mentor have won the scholarship – highest among all faculty in the college
- Two P.U.R.E. scholarship winners have gone on to start independent visualization companies specializing in virtual reality for the built environment

COMPUTING SKILLS

Computer Aided Design and BIM

SketchUp, 3ds Max & Mental Ray, Form.Z, Rhino 3D, Grasshopper 3D, AutoCAD, DraftSight
Revit, Navisworks Freedom & Navisworks Manage

2D Graphics and Illustration

Adobe Photoshop, Illustrator, InDesign, SketchBook Pro

Video Editing

iMovie, Adobe Premiere, Basic knowledge of Adobe After Effects

Virtual Reality & Gaming

VRML, Unity 3D, and EON Reality, Basic knowledge of Quest 3D,

Interactivity

Adobe Flash, Basic knowledge of Actionscript and Lingo

Geographic Information Systems

Basic knowledge of ArcView, ArcMap & ArcInfo

Statistical Analysis

JMP, SPSS, Minitab, Basic knowledge of SAS & LISREL

Usability Evaluation and Behavioral Observation Tools

LogSquare, INTERACT

Psychophysiology Tools

Biopac MP 35 and MP 150 systems and Acknowledge software, Basic knowledge of EMOTIV EEG Cap

CREATIVE ENDEAVOR & ARCHITECTURAL PRACTICE (SELECTED)

Competition Entries	Ashwinikumar Crematorium with Gurjith Singh Matharoo (Lead Designer), Komal Mehta and Rolf Seiler, 1997 (Editor’s Choice Award for Emerging Architecture, 2003 by Architectural Review)
Architectural/ Design Visualization	Kerala Institute of Travel and Tourism Studies, Thiruvananthapuram for Iyer & Mahesh Architects (National Competition Winner), 2001. Independent Practice KINFRA Software Technology Park, Cochin, for Iyer & Mahesh Architects (National Competition Winner), 2001. Independent Practice “Mangta Hai” Set Design Visualization, for Ajit Rao, 2001. Independent Practice
Commercial Projects	Resort at Poovar, Trivandrum, India, 1999-2000 Environmental Creations Ayurgramam Resort, Bangalore, India, 1998-2000 Environmental Creations
Public Projects	International Film City – Permanent venue for International Film Festival of Kerala Environmental Creations

Festival Venue, International Film Festival of Kerala -2000, Calicut. | Environmental Creations

Residential Projects

Nawal Residence, Ajmer, India, 1997 | at Matharoo Associates Architects

Singh Residence, Ajmer, India, 1997 | at Matharoo Associates Architects

Bhandari Residence, Ahmedabad, India, 1997 | at Matharoo Associates Architects

Raju Nair Residence, Kottayam, India, 1999-2000 | at Environmental Creations: Architects and Landscape Architects

Girish Nair Residence, Trivandrum, India, 1999-2000 | Independent Practice

MEDIA COVERAGE

Coverage of Reynolds Journalism Institute Fellowship Project & Database of 3D Technologies

South Carolina Press Association eBulletin (Nov. 18, 2015)

Lion Publishers (Nov. 17, 2015)

Arizona Newspaper Association Weekly Newsletter (Nov. 12, 2015)

Native American Journalists Association Newsletter (Nov. 12, 2015)

Online News Association Weekly (Nov. 11, 2015)

Society of Professional Journalists Leads Weekly (Nov. 11, 2015)

MediaShift (Nov. 10, 2015)

NetNewsCheck (Nov 10, 2015)

Association of Alternative Newsmedia (April 8, 2015)

Editor and Publisher (April 2015, Vol 148, issue 4)

MU iLab showcases 3-D, virtual technology

Columbia Missourian (April 27, 2014)

MU's iLab opens doors to promote interaction

Columbia Daily Tribune (April 26, 2014)

A new point of view

HES Vanguard 2013

Awards recognize extra effort of MU employees

Columbia Daily Tribune (April 19, 2012)

New 3-D lab unveiled at the MU Department of Architectural Studies

Columbia Missourian (January 11, 2012)

Undergrad architecture students get immersive lab at University of Missouri

Campus Technology (January 03, 2012)

3-D visualization laboratory aids architects

Vision Systems Magazine (December 29, 2011)

Total Immersion for Designs
Constructech Magazine (December 28, 2011)

School opens 3-D design laboratory
St. Louis Post Dispatch – Education Digest (December 21, 2011)

A Collaborative Design and Education Environment
The Innovator: Exploring Educational Technologies at Mizzou (Fall 2011)

Balakrishnan, Stone honored for promoting tech-savvy students
MizzouWeekly (October 13, 2011)

iLab helps Missouri students
Newswire of ARCHITECT, The magazine of the American Institute of Architects
(December 22, 2011)

3-D lab helps MU architecture, interior design students
Columbia Daily Tribune (December 20, 2011)

MU Unveils 3-D Visual Immersion Laboratory
MU News Bureau (December 19, 2011)

SERVICE

University of Missouri

Member, MU Information Technology Committee, August 2016 - present

Member, MU Cyberinfrastructure Council, January 2013 – December 2017

Co-Lead on Imaging & Visualization component of MU's Campus Cyberinfrastructure plan, Summer 2015 to Spring 2016

MU Annual Visual Art and Design Showcase Committee, Summer 2015 – Summer 2016

MU Honors College Diversity Committee, Spring 2016

Member, MU Information Technology Transition Project – Research sub-committee, Spring – Summer, 2015

Member, Technology Evaluation Sub-Committee, Fall 2010 – present

Faculty Fellow, Center for Digital Globe (CDiG), Spring 2011 – present

Faculty Advisor, Design with Digital Media Students Association, Fall 2011 – present

Architectural Studies Workshop Coordinator, High School Art Day, Fall 2011, Fall 2012

College of Human Environmental Sciences

Member, Faculty Committee on College Policy, Fall 2016 – present

Member, Search Committee for the Dean of College of Human Environmental Sciences, Fall 2016 – Spring 2017

Member, Academic Appeals Committee, July 2010 – July 2014

Member, Search and Screening Committee for Instructional Technology Liaison
Summer 2010; Fall 2013.

**Department of
Architectural Studies**

Chair, Search and Screening Committee, Design with Digital Media faculty position
Fall 2016-Spring 2017

Co-Chair, Search and Screening Committee, Design with Digital Media faculty position
Fall 2012-Spring 2013

Coordinator, Design with Digital Media Graduate Program, Summer 2012 – present
Coordinator, Architectural Studies Print Center, Summer 2012 – Summer 2014

Coordinator, History Course Sequence, CIDA Program Accreditation Preparation, Spring
2012

Coordinator, Computing and Curriculum Committee, Summer 2012 – present

iLab Development and Promotion, November 2008 – present

Assisted Dept. Chair with the Development proposal – “Visualize/Actualize”:
Highlighting experiential learning in Architectural Studies and interdisciplinary programs.

Academic advisor

20 undergraduate students – 2009 – 2010 Academic Year
36 undergraduate students – 2010 – 2011 Academic Year
36 undergraduate students – 2011 – 2012 Academic Year
32 undergraduate students – 2012 – 2013 Academic Year
21 undergraduate students – 2013 – 2014 Academic Year
21 undergraduate students – 2014 – 2015 Academic Year
21 undergraduate students – 2015 – 2016 Academic Year

Faculty Mentor for Program for Undergraduate Research Experience (P.U.R.E)

Profession

Current Professional Organization Memberships

- ACADIA – Association for Computer Aided Design in America
- ACM – Association for Computing Machinery & ACM SIGCHI – Special Interest Group in Computer Human Interaction ACSA – Association of Collegiate Schools of Architecture
- DCA – Design Communication Association
 - Scientific Committee Member for 2018 Biennial Conference
- ICA – International Communication Association
- HFES – Human Factors and Ergonomics Society

Previous Professional Organization Memberships

- AEJMC – Association of Educators in Journalism and Mass Communication
- CAADRIA – Computer-Aided Architectural Design Research in Asia
- eCAADe – Education and research in Computer Aided Architectural Design in Europe

- EDRA – Environmental Design Research Association