

RESEARCH
INTERESTS

Virtual & Augmented Reality: rendering geo-spatial mixed-reality, freepoint videos & lightfields.
Computer Graphics and Vision: real-time 4D reconstruction, CUDA, texture stitching.

EDUCATION

University of Maryland, College Park, Maryland, USA Sep. 2013 - present
 Ph.D. Candidate, M.S. in Computer Science, GPA: 3.90 / 4.00; Advisor: Dr. Amitabh Varshney

ACM Honored Class, Shanghai Jiao Tong University, China Sep. 2009 - Jul. 2013
 B.S., Computer Science. GPA: 88.0/100 GRE: 1520/1600

RESEARCH
EXPERIENCE

Microsoft Research, Redmond (MSR) May. - Aug. 2016, 2017
Full-time Research Intern advised by Ben Cutler, Sameh Khamis, and Hugues Hoppe.

- Collaborated with the team to publish the [Mobile Holoportation Project](#) (C++, CUDA, HLSL).
- [Interactive Seamless Fusing Multiview Videos with Intrinsic Colors](#). (In submission)

Institute for Advanced Computer Studies, University of Maryland (UMIACS)

Full-time Graduate Research Assistant advised by Dr. Varshney Dec. 2014 - present

- CUDA computing for efficient processing 360 degree videos; kernel foveated rendering in 3D.
- [SocialStreetView.com](#): The first system blending street views and geo-tagged social media in 3D.
- [VideoFields.com](#): Rendering surveillance videos with automatic segmentation in 3D.
- [VRSurus.com](#): Tangible puppets with gestures recognition and haptic feedback demoed at UIST.
- 3D Foveated rendering, GPGPU for light field compression, visual cryptography, 4D saliency

Makeability Lab Assistant at HCIL advised by Dr. Froehlich Aug. 2013 - Jan. 2015

- [AtmoSPHERE](#): A tangible interactive visualization system to represent human traces via Kinect.
- [HandSight](#): Realtime OCR with finger-mounted camera and haptics feedback for 20+ blind users.
- [Tohme](#): Data analytics and image segmentation for curb ramps on Google Street View.

Microsoft Research Asia (MSRA)

Jul. 2012 - Feb. 2013
Full-time Research Intern advised by Zhiwei Li, Rui Cai and Lei Zhang

- [3DVAR](#): Developed a real-time virtual and augmented reality demo for Microsoft TechFest.
- [StereoScanner](#): Co-implemented a real-time SfM based 3D surface reconstruction system.
- **Best Demo Award** in MSRA Intern Techfest 2013; demo selected for Microsoft Techfest 2013.

PEER-REVIEWED
PAPERS

Du, R., Varshney, A. *Social Street View: Blending Immersive Street Views with Geo-tagged Social Media*. In proceedings of the 21st Annual ACM SIGGRAPH Web3D Conference, 2016. pp. 77-85. ACM. (**Best Paper Award**)

Du, R., Bista, S., Varshney, A. *Video Fields: Fusing Multiple Surveillance Videos into a Dynamic Virtual Environment*. In proceedings of the 21st Annual ACM SIGGRAPH Web3D Conference, 2016. pp. 165-172. ACM.

Stearns, L., **Du, R.**, Oh, U., Catherine, Z., Findlater, L., David, R., Froehlich, J.E. *Evaluating Haptic and Auditory Directional Guidance to Assist Blind Persons in Reading Printed Text Using Finger-Mounted Cameras*. In ACM Transactions on Accessible Computing, 8(5), 2016.

Du, R., He, L. *VRSurus: Enhancing Interactivity and Tangibility of Puppets in Virtual Reality*. In Proceeding of the of CHI '16 Extended Abstracts on Human Factors in Computing Systems. pp. 2454-2461. ACM.

Du, R., Wills, K., Potasznik, M, Froehlich, J.E. *AtmoSPHERE: Representing Space and Movement Using Sand Traces in an Interactive Zen Garden*. In Proceeding of the of CHI '15 Extended Abstracts on Human Factors in Computing Systems (CHI '15). pp. 1627-1632. ACM.

Stearns, L., **Du, R.**, Oh, U., Wang, Y., Findlater, L., Chellappa, R., Froehlich, J.E. *The Design and Preliminary Evaluation of a Finger-Mounted Camera and Feedback System to Enable Reading of Printed Text for the Blind*. In Proceeding of the European Conference on Computer Vision (ECCV) 2014 Workshops. pp. 615–631. 2014.

Du, R., Liu, R., Wu, T., Lu, B.L. *Online Vigilance Analysis Combining Video and Electrooculography Features*. In Proceeding of the 19th International Conference on Neural Information Processing (ICONIP '12), vol. V, pp. 447-453, 2012.

PEER-REVIEWED POSTERS Findlater, L., Stearns, L., **Du, R.**, Oh, U., Wang, Y., Chellappa, R., Froehlich, J.E. *Supporting Everyday Activities for Persons With Visual Impairments Through Computer Vision-Augmented Touch* In Proceedings of the 17th International ACM SIGACCESS Conference on Computers & Accessibility, pp. 383-384, 2015.

PATENTS

- **Du, R.**, Varshney, A. *System and Methods for Social Street View*. US Patent 1475-40PCT filed on March 20, 2016; US Provisional Patent 62/135941 filed on March 20, 2015.
- Varshney, A., Ferrick, C., Agarwal, M., **Du, R.**. *Low-Cost Commodity Camera Array for Acquiring Virtual Environments*. US Provisional Patent 62/327,354 filed on April 25, 2016.

AWARDS

- Outstanding Research Assistant Award** from the University of Maryland. May. 2017
- Invention of the Year Finalist** for our invention to acquire virtual environments. Feb. 2017
- Best Paper Award** from ACM SIGGRAPH Web3D Conference. August. 2016
- Dean Scholarship** from UMD Department of Computer Science. Oct. 2013
- Bosch Scholarship** (2 out of 300) in Shanghai Jiao Tong University Nov. 2012
- 1st-class Academic Excellence Scholarship** (ranked #2/180) in SJTU CS. Oct. 2012
- Schneider Electric Scholarship** (1 out of 30 in the ACM Class) Dec. 2010
- Bronze Medalist** in Chinese Team Selection Contest in Informatics (CTSC 2008) Apr. 2008
- Bronze Medalist** in Asia-Pacific Informatics Olympiad (APIO 2008) Apr. 2008
- Bronze Medalist** in Nation Olympiad in Informatics (NOI 2008) Aug. 2008
- First Prizes & Top 3** in Nation Olympiad in Informatics in Province (NOIP) 2006-2008

HONORS

- Vice President** of SJTU Alumni in DC Metro Area. Dec. 2014
- Chief Technology Officer** of Microsoft ARD Intern Community. Nov. 2012
- Volunteer Star Award** for Excellent Service in the World EXPO 2010 Oct. 2010

PROFESSIONAL SERVICE Student Member. ACM and IEEE. Student Volunteer for ACM CHI 2014. External Reviewer for CAD&CG 2017, CHI 2013-2017, Mobile HCI 2015-2017, IDC 2015-2017, CSCW 2016, ISMAR 2015, UIST 2015, CC 2015, ITS 2015.

SKILLS

- Programming: C++/ C / C# / Objective-C, Python, Java, PHP, SQL, JavaScript
- Graphics and Vision: CUDA, GLSL, OpenGL, OpenCV, Kinect, Machine Learning