Sujal Bista

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EDUCATION

Ph.D. in Computer Science, (3.9 GPA) *May 2010 – May 2014*
University of Maryland, College Park, MD

M.S. in Computer Science, (3.9 GPA) *Sept 2008 - May 2010*
University of Maryland, College Park, MD

B.S. in Computer Science (3.5 GPA) *Sept 2002 - May 2005*
University of Maryland, College Park, MD

WORK EXPERIENCE

Research Associate *May 2014 – Current*
University of Maryland Institute for Advanced Computer Studies
University of Maryland, College Park, MD

- Research on Virtual and augmented reality
- 3D graphics visualization
- Medical and scientific visualization

Graduate Research Assistant *Sept 2008 – May 2014*
Graphics and Visual Informatics Lab
University of Maryland, College Park, MD

- Research on 3D graphics visualization multi-view rendering
- GPU based optimizations
- Depth perception and saliency
- Synchronized distributed rendering
- MRI visualization.

Lead Graphics Programmer *July 2004 – July 2008*
Center for Advance Transportation Technology Laboratory
University of Maryland, College Park, MD

- Designed and developed a real-time transportation visualization system. The system was used by FEMA during the inauguration of President Obama.
- Researched optimized data structures to manage and render massive satellite data
- Researched graphics rendering algorithms and visual effects

Computer Programmer *June 2002 – Sept 2006*
Atomic Engineering Corporation, Gaithersburg, MD

- Designed and developed application that used spectral readings to

identify molecular compositions.
- Examined the lab data by performing peak and spectral analysis
- Converted raw scientific readings to standard format for faster and versatile access.

Computer Lab Assistant *Sept 2000 – June 2002*
Montgomery College, Rockville, MD
Area 4 Academic Computing Team
- Assisted with scheduled software/hardware upgrades and network security testing
- Resolved issues and provided support for applications in Windows environment
- Assisted students with C/C++/Java programming
- Fixed hardware and software problems

AWARDS

- Larry S. Davis Doctoral Dissertation Award, best dissertation in the CS department, 2014.
- IEEE SciVis best paper award, 2014.
- ASME CIE best paper award, 2012.
- Charley V. Wootan award for the best paper in the area of transportation policy and organization, 2007.
- Computer Science, Engineering and Mathematics Scholarship (2001-2002) (2003-2004)

PUBLICATIONS

Visual Knowledge Discovery for Diffusion Kurtosis Datasets of the Human Brain. Sujal Bista, Jiachen Zhuo, Rao P. Gullapalli, and Amitabh Varshney. [Under review], 2015.

Kinetic depth images: Flexible generation of depth perception. Sujal Bista, Ícaro Lins Leitão da Cunha, and Amitabh Varshney. [Under review], 2015.

Visualization of Brain Microstructure through Spherical Harmonics Illumination of Spatio-Angular Fields. Sujal Bista, Jiachen Zhuo, Rao P. Gullapalli, and Amitabh Varshney. IEEE Transactions on Visualization and Computer Graphics, 20(12), pp. 2516-2525, Dec. 2014. [**Best Paper Award**]. (Paper) (Video)

Using GPUs for realtime prediction of optical forces on microsphere ensembles. Sujal Bista, Sagar Chowdhury, Satyandra. K. Gupta, and Amitabh Varshney. ASME Journal of Computing and Information Science in Engineering, 13(3), pp. 031002-031002, Apr. 2013. (Paper) (Video)

Using GPUs for Realtime Prediction of Optical Forces on Microsphere Ensembles, Sujal Bista, Sagar Chowdhury, Satyandra K. Gupta, and Amitabh Varshney. Proceedings of the ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE, 2012 [**Best Paper Award**]. (Paper) (Video)

Speeding up Particle Trajectory Simulations under Moving Force Fields using GPUs, Rob Patro, John P. Dickerson, Sujal Bista, Satyandra K. Gupta, and Amitabh Varshney, ASME Journal of Computing and Information Science in Engineering, 2012. (Paper)

MDMap: A System for Data-Driven Layout and Exploration of Molecular Dynamics Simulations, Robert Patro, Cheuk Yiu Ip, Sujal Bista, Samuel Cho, Dave Thirumalai, Amitabh Varshney, IEEE Symposium on Biological Data Visualization, 2011. (Paper) (Video)

Social Snapshot: A System for Temporally Coupled Social Photograph, Robert Patro, Cheuk Yiu Ip, Sujal Bista, and Amitabh Varshney, IEEE Computer Graphics and Applications, 31(1), pp. 74-84, 2011. (Paper) (Video)

Global contours. Sujal Bista and Amitabh Varshney. UMIACS Technical Report, CS-TR-4957, 2010/05/05/ 2010. (Paper)

Wide-area, Four-Dimensional, Real-time, Interactive Transportation System Visualization, Michael L. Pack, Phillip Weisberg, and Sujal Bista, Transportation Research Record: Journal of the Transportation Research Board, pp. 97-108, 2007. [**Best Paper Award**]. (Paper) (Video)

Four-Dimensional Interactive Visualization System for Transportation Management and Traveler Information," Michael L. Pack, Phillip Weisberg, and Sujal Bista, Human Performance, Simulation and Visualization: Journal of the Transportation Research Board, pp. 152-158, 2005. (Paper)

RELEVANT CLASSES

Advanced Computer Graphics	Rendering rainy day environment
Computer Processing of Pictorial Information	Using machine learning algorithms to classify images
Scientific Computing I	Ray tracing and photon mapping using stochastic sampling
Computer Networks	Trust and Credit among multiple swarms in Bit Torrent
Geographical Information Systems and Spatial Databases	Analysis of GPU and CPU based data structures (BSD and k-D Tree)
Recent Advances in Graphics and Visualization	Detection of globally salient contours based on eigenvalue analysis
Semantic Robots	Study of how styles are embedded in the basis vectors that are used to represent basic human motion.

COMPUTER SKILLS

C, C++, OpenGL, DirectX, WebGL, CUDA, CG, GLSL, HLSL, Matlab, Assembly, Java, C#, Windows, Linux/Unix

ACTIVITIES

Weight Lifting

- **5th** in 56kg men US National Weightlifting Championships 2012
- **1st** in 56kg men Maryland State Weightlifting Championships 2011

Wushu

- **2nd** in Int. Changquan in USAWKF National Championships 2005
- **2nd** in Int. Staff in USAWKF National Championships 2005
- **2nd** in Int. Changquan in 8th International Wushu-Kungfu Festival & Championships 2004
- **2nd** in Int. Mantis in 8th International Wushu-Kungfu Festival & Championships 2004
- **2nd** in Int. Staff in 8th International Wushu-Kungfu Festival & Championships 2004
- **3rd** in Int. Changquan in 8th Annual Collegiate Wushu Championship 2004
- Terp Wushu Club
    - President, Spring 2004- Fall 2004: Lead Chinese martial arts club.
    - Vice -President, Fall 2003
- Programmed and managed **Wushu Judging Software** (2005-current) that is used in various tournaments including Wushu Collegiate, Annual Wushu Games, and Wushu National Team Trials.