

KRISHNA RAO VIJAYANAGAR

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Summary	To obtain a position as a researcher in the field of image and video compression with a focus on video compression and codec optimization.	
Education	Ph.D. Electrical and Computer Engineering <i>Illinois Institute of Technology, Chicago, IL</i> Thesis title: Depth Map Processing for Multi-view Video plus Depth Codec Design	'10 - May '14
	M.S. Electrical and Computer Engineering <i>Illinois Institute of Technology, Chicago, IL</i> Thesis title: Unidirectional Distributed Video Coding	'08 - '10
	B.E. Instrumentation Engineering <i>Bangalore Institute of Technology, India</i> Thesis title: Design and Fabrication of a Fully-Automated Coulometer	'02 - '06
Experience	Graduate Research Asst., Multimedia Comm. Labs, IIT-Chicago. <ul style="list-style-type: none">Research on 2D and 3D video compression.	'09 - present
	Student Asst., Facilities Dept., Institute of Design, IIT-Chicago <ul style="list-style-type: none">Responsible for the storeroom and inventory of the Facilities Dept.	'08 - '09
	Executive Engineer, Yokogawa India Ltd., Bangalore, India <ul style="list-style-type: none">Designed control systems for major industries (petrochemical, chemical, polymers, sugar, cement, power).Specialized in and trained employees in SEBOL (a proprietary language similar to "C" used to control batch processes).Handled several projects consisting of small teams of 3–5 engineers.	'06 - '08
Skills	Languages: C (<i>4+ years</i>), MATLAB (<i>4+ years</i>), LaTeX (<i>4+ years</i>), HTML. Operating Systems: Windows, Linux. Programming environments: gedit with gcc & g++, Visual Studio on Windows. Libraries: OpenCV, ocl bindings in OpenCV.	
Publications <i>Under review</i>	<ol style="list-style-type: none">K. R. Vijayanagar, Y. Liu, and J. Kim, "Depth map compression using rate-distortion optimized compressed sensing," to IEEE Transactions on Multimedia.W. Liu, K. R. Vijayanagar, and J. Kim, "Side information generation for distributed video coding using spatio-temporal joint bilinear upsampling," International Journal of Distributed Sensor Networks.K. R. Vijayanagar, Y. Liu, and J. Kim, "Depth map compression using hybrid compressed sensing," to 39th Intl. Conf. on Acoustics, Speech and Signal Proc. (ICASSP '14).Y. Liu, K. R. Vijayanagar, and J. Kim, "Quad-tree partitioned compressed sensing for depth map coding," to 39th Intl. Conf. on Acoustics, Speech and Signal Proc. (ICASSP '14).W. Liu, K. R. Vijayanagar, and J. Kim, "Side information generation for distributed video coding using spatio-temporal joint bilateral upsampling," to 39th Intl. Conf. on Acoustics, Speech and Signal Proc. (ICASSP '14).	

Published

1. K. R. Vijayanagar, J. Kim, Y. Lee, and J-B. Kim, "Low complexity distributed video coding," Proc. in Journal of Visual Communication and Image Representation, Elsevier.
2. K. R. Vijayanagar, M. Loghman, and J. Kim, "Realtime refinement of Kinect depth maps using multi-resolution anisotropic diffusion," Mobile Networks and Applications, Springer.
3. K. R. Vijayanagar, J. Kim, Y. Lee, and J-B. Kim, "Efficient view synthesis for multi-view video plus depth," Proc. of the 20 th IEEE Intl. Conf. on Image Proc. (ICIP 2013), 2013.
4. K. R. Vijayanagar and J. Kim, "Compression of residual layers of layered depth video using block truncation coding," in Proc. of 3DTV-Conference: The True Vision - Capture, Transmission and Display of 3D Video (3DTV-CON 2012), pp. 1-4, Oct. 2012.
5. K. R. Vijayanagar, M. Loghman and J. Kim, "Refinement of depth maps generated by low-cost depth sensors," in Proc. of the 2012 International SoC Design Conference (ISOCC-2012), pp. 355–358, Nov. 2012.
6. L. Li, K. R. Vijayanagar, K. Choi, and J. Kim, "Energy Efficient Encoder Design of Distributed Video Coding for Wireless Video Sensor Network," in Proc. of the WTA 2011, 2011.
7. W. Liu, K. R. Vijayanagar, and J. Kim, "Low-delay distributed multiple description coding for error-resilient video transmission," in Proc. of the IEEE Intl. Workshop on Multimedia Sig. Proc. (MMSP 2011), pp. 1–6, Oct. 2011.
8. K. R. Vijayanagar and J. Kim, "Dynamic GOP size control for low-delay distributed video coding," Proc. of the 18 th IEEE Intl. Conf. on Image Proc. (ICIP 2011), pp. 157–160, Sep. 2011.
9. K. R. Vijayanagar and J. Kim, "Real-time low-bitrate multimedia communication for smart spaces and wireless sensor networks," IET Communications, vol. 5, no. 17, pp. 2482–2490, Nov. 2011.
10. K. R. Vijayanagar and J. Kim, "Low delay Distributed Video Coding using data hiding," in Proc. of the Picture Coding Symposium (PCS 2010), pp. 582–585, Dec. 2010.

Main Projects

1. End-to-end frame-based and block-based video codecs based on the principles of Distributed Video Coding using C.
2. Proposed and wrote a multi-resolution anisotropic diffusion tool to refine depth maps extracted from Microsoft Kinect sensor in C and MATLAB.
3. Proposed and wrote a codec in C to compress depth maps using (a) hierarchical block truncation coding and layered depth video concept (b) compressed sensing.
4. Wrote a C program for rate-distortion optimization used in (a) measurement rate selection for compressed sensing and (b) quadtree decomposition for depth map compression.
5. Disparity estimation for stereo images using C and MATLAB.
6. JPEG compression in C.

Awards & Honors

1. **Full Research Assistantship**, Dept. of Electrical and Computer Eng.. 2009 - present
2. **2nd place** at the 2012 IIT Research Day Student Poster Session (Graduate category).
3. **"People's Choice Award" at the Microsoft Imagine Cup 2010**
 - Part of a three member team that created a service named "AwareNet" to help welfare organizations connect and co-ordinate with volunteers.
 - Among the top 5 teams in the U.S.
 - <http://www.microsoft.com/presspass/press/2010/apr10/04-26imaginecupwinners10pr.msp>
 - <http://blogs.iit.edu/entrepreneurship/2010/07/19/awarenet-helping-you-help-others/>
4. **Ranked 9th** in the University amongst 900+ students (2006).

Leadership Activities

1. **Coordinator**, Vedic Vision Society (VVS) at the Illinois Institute of Technology.
2. **Webmaster**, MMCOM.: creating and maintaining the Multimedia Communication Lab's website at IIT-Chicago. Aug. 2009 - Present
3. **Volunteer, ISKCON-Chicago. 2012 - Present**
 - creating and managing web services and email applications for day-to-day operations and festivals.
 - inventory management and handling cash during the weekly Sunday feasts.
4. **Coordinator, United Nations Millennium Project Meeting** held at IIM-Bangalore during 2003-04 (commissioned by the UN Secretary General and supported by the UN Development Group).