

Roopak R. Tamboli

C6 3, Room 10.09, Saarland Informatics Campus, Saarland University, Saarbrücken, 66123, Germany
Email: tamboli@nt.uni-saarland.de, rrtamboli@gmail.com, Skype: rrtamboli,
Web: rrtamboli.github.io, www.nt.uni-saarland.de/people/roopak-tamboli/

PRESONAL INFORMATION	Gender: Male Languages: English, Hindi, Marathi	Date of Birth: 04/09/1988 Marital status: Married
RESEARCH INTERESTS	Image processing, Immersive visualization, Light field, Perceptual quality assessment, 3D reconstruction from multiple views, Camera calibration	
EDUCATION	Indian Institute of Technology Hyderabad Ph.D., Department of Electrical Engineering, CGPA: 9.50 01/2013 - 12/2020 ¹ Advisor: Dr. Soumya Jana, Co-advisor: Dr. Sumohana Channappayya Thesis: <i>Multiview 3D Content: Acquisition, Reconstruction, Immersive Visualization and Quality Assessment</i> M. Tech., Department of Electrical Engineering, CGPA: 9.22 06/2011 - 06/2015 Advisor: Dr. Soumya Jana Thesis: <i>Minimal Representation of Electrocardiogram Signals: Towards Low-Cost Telecardiology</i> Walchand College of Engineering Sangli B.E., Department of Electronics Engineering 06/2006 - 06/2010	
EXPERIENCE	Postdoctoral Researcher, 03/2021 - 12/2021 Saarland University, Saarbrücken, Germany Early Stage Researcher, 01/2018 - 12/2018 Holografika Ltd., Budapest, Hungary Perceptual quality assessment (subjective and objective) on projection-based light-field displays, orientation preferences of 3D objects via user-interaction, viewing conditions of light-field video content, key performance indicators of light field visualization, light field compression. This position was funded from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No. 643072, Network QoE-Net. Intern, 02/2014 - 03/2014 Yokohama Research Laboratory Hitachi Ltd., Kanagawa, Japan This internship involved a pilot study on Compressive Sensing (CS) for Magnetic Resonance (MR) Imaging. Several existing sampling schemes and CS reconstruction algorithms were tested on real MR images. This internship was realized under the "Project for Future Researchers at Indian Institute of Technology, Hyderabad (IIT-H) to Enhance Network Development with Scholarship of Japan"	

Updated on July 1, 2021.

¹Thesis defended on 22.12.2020.

RESEARCH OVERVIEW	Postdoctoral <ul style="list-style-type: none"> – 5D light-field analysis. Doctoral <ul style="list-style-type: none"> – Multiview content generation using various real and synthetic camera arrangements. – Camera auto-calibration, Euclidean 3D reconstruction from multiple 2D views. – 3D reconstruction of oculofacial region and surface reconstruction. – Subjective and objective methods to assess quality of perceptual experience on projection-based light-field displays. Masters <ul style="list-style-type: none"> – Non-uniform sampling and sparse recovery of ECG signals. – Low-complexity compact representation of ECG signals. 	
TEACHING ASSISTANCE	Immersive Multimedia and Telepresence Information Theory and Coding Electric and Magnetic Circuits	01/2013 - 05/2013, 08/2014 - 12/2014 01/2013 - 05/2013 08/2011 - 12/2011
SERVICE	Reviewer <ul style="list-style-type: none"> – Signal Processing: Image Communication (2019-20), IEEE Transactions on Circuits and System for Video Technology (2019), National Conference on Communications (2018), Biomedical Signal Processing and Control (2016-17). Volunteering in workshops held at IIT Hyderabad <ul style="list-style-type: none"> – ‘Compressed Sensing and Applications’, October 2016 and ‘Cyber Physical Systems: Applications and Open Challenges’, March 2013. Memberships <ul style="list-style-type: none"> – IEEE P3333.1.4 - <i>Standard</i> for the Quality Assessment of Light Field Imaging from 06/2020 	
ACADEMIC ACHIEVEMENTS	Excellence in Research certificate, 2017, 2018 and 2019, IIT Hyderabad. All India Rank 727/1,37,853 in Graduate Aptitude Test in Engineering (GATE), 2011.	
COMPUTR SKILLS	Programming: MATLAB, Shell Script Software: 3DS-MAX, Meshlab Operating systems: MS-Windows, Linux (Ubuntu)	
EXTRA- CURRICULAR ACTIVITIES	Rotaract Club of WCE Sangli (Rotary International District 3170) President (07/2009 - 06/2010), Vice-President (07/2008 - 06/2009)	07/2006 - 06/2011

REFERENCES

Prof. Soumya Jana Dept. of Electrical Engineering Indian Institute of Technology Hyderabad	Prof. C. S. Sastry Dept. of Mathematics Indian Institute of Technology Hyderabad
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Dr. Sumoahana Channappayya Dept. of Electrical Engineering Indian Institute of Technology Hyderabad	Tibor Balogh Founder and CEO Holografika, Budapest, Hungary
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OVERVIEW OF PUBLICATIONS

Journal articles: 3, Conference papers: 21, h-index: 6, i-10 index: 2, Citations: 119.
Google Scholar: <https://goo.gl/L5bPmc>

JOURNAL ARTICLES

- 2019 P. A. Kara, R. R. Tamboli, O. Doronin, A. Cserkaszkzy, A. Barsi, Zs. Nagy, M. G. Martini, A. Simon, “The key performance indicators of projection-based light field visualization”, *Journal of Information Display*, vol. 20, no. 2, pp. 81–93, 2019.
- A. Cserkaszkzy, P. A. Kara, R. R. Tamboli, A. Barsi, M. G. Martini, L. Bokor, T. Balogh, “Angularly-continuous light-field format: concept, implementation and evaluation”, *Journal of the Society for the Information Display*, vol. 27, no. 7, pp. 442–461, 2019.
- 2016 R. R. Tamboli^{*}, B. Appina^{*}, S. S. Channappayya, S. Jana, “Super-multiview content with high angular resolution: 3D quality assessment on horizontal-parallax lightfield display”, *Signal Processing: Image Communication*, vol. 47, pp. 42–55, 2016.
(*equal contribution)

CONFERENCE PUBLICATIONS

- 2021 P. A. Kara, A. Barsi, R. R. Tamboli, M. Guindy, M. G. Martini, T. Balogh, A. Simon. “Recommendations on the viewing distance of light field displays,” *Digital Optical Technologies*, vol. 11788, International Society for Optics and Photonics, 2021.
- 2019 R. R. Tamboli, V. Sandu, S. Nerasala, A. Richhariya, K. K. Vupparaboina, S. Jana, “Novel Hybrid Teleophthalmology: Technological Case for Oculofacial Surgery”, *IEEE Global Humanitarian Technology Conference*, Seattle, pp. 1–8, 2019.
- P. A. Kara, R. R. Tamboli, A. Cserkaszkzy, A. Barsi, A. Simon, A. Kusz, L. Bokor, M. G. Martini, “Objective and Subjective Assessment of Binocular Disparity for Projection-Based Light Field Displays”, *International Conference on 3D Immersion*, Brussels, pp. 1–8, 2019.
- 2018 P. A. Kara, R. R. Tamboli, A. Cserkaszkzy, A. Barsi, M. G. Martini, Laszlo Bokor, “The viewing conditions of light-field video for subjective quality assessment”, *International Conference on 3D Immersion*, Brussels, pp. 1–8, 2018.
- R. R. Tamboli[†], A. Cserkaszkzy, P. A. Kara, A. Barsi, M. G. Martini, “Objective quality evaluation of an angularly continuous light-field format”, *International Conference*

[†] Oral presentation.

on 3D Immersion, Brussels, pp. 1–8, 2018.

R. R. Tamboli[†], P. A. Kara, N. Bisht, A. Barsi, M. G. Martini, S. Jana, “Objective quality assessment of 2D synthesized views for light-field visualization”, International Conference on 3D Immersion, Brussels, pp. 1–8, 2018.

K. K. Vupparaboina, R. R. Tamboli[†], M. S. Reddy, P. A. Kara, M. G. Martini, A. Barsi, A. Richhariya, and S. Jana, “Towards true-to-scale 3D reconstruction of the human face using structured light projection and off-the-shelf cameras,” International Conference on 3D Immersion, Brussels, pp. 1–8, 2018.

A. Cserkaszkzy, P. A. Kara, R. R. Tamboli, A. Barsi, M. G. Martini, T. Balogh, “Light-field capture and display systems: limitations, challenges, and potentials”, SPIE Novel Optical Systems Design and Optimization XXI, vol. 10746, San Diego, 2018.

P. A. Kara, R. R. Tamboli, A. Cserkaszkzy, M. G. Martini, A. Barsi, L. Bokor, “The perceived quality of light-field video services”, SPIE Applications of Digital Image Processing XLI, vol. 10752, San Diego, 2018.

R. R. Tamboli, P. A. Kara, A. Cserkaszkzy, A. Barsi, M. G. Martini, S. Jana, “Canonical 3D object orientation for interactive light-field visualization”, SPIE Applications of Digital Image Processing XLI, San Diego, vol. 10752, 2018.

R. R. Tamboli, K. K. Vupparaboina, M. S. Reddy, P. A. Kara, A. Cserkaszkzy, M. G. Martini, A. Richhariya, S. Jana, “Towards Euclidean auto-calibration of stereo camera arrays”, SPIE Optical System Alignment, Tolerancing, and Verification XII, vol. 107470, San Diego, 2018.

R. R. Tamboli, P. A. Kara, A. Cserkaszkzy, A. Barsi, M. G. Martini, B. Appina, S. S. Channappayya, S. Jana, “3D objective quality assessment of light field video frames”, 3DTV-Conference: The True Vision - Capture, Transmission and Display of 3D Video, Helsinki, pp. 1–4, 2018.

R. R. Tamboli[‡], M. S. Reddy, P. A. Kara, M. G. Martini, S. S. Channappayya, S. Jana, “A high-angular-resolution turntable data-set for experiments on light field visualization quality”, Tenth International Conference on Quality of Multimedia Experience, Cagliari, pp. 1–3, 2018.

R. R. Tamboli[‡], P. A. Kara, B. Appina, M. G. Martini, S. S. Channappayya, S. Jana, “Effect of primitive features of content on perceived quality of light field visualization”, Tenth International Conference on Quality of Multimedia Experience, Cagliari, pp. 1–3, 2018.

2017 R. R. Tamboli[†], B. Appina, S. S. Channappayya, S. Jana, “Achieving high angular resolution via view synthesis: quality assessment of 3d content on super multiview lightfield display,” International Conference on 3D Immersion, Brussels, pp. 1–8, 2017.

2016 K. K. Vupparaboina, R. R. Tamboli, M. S. Reddy, A. Richhariya, M. Naik and S. Jana, “Oculofacial surgical planning: True-to-scale 3D feature quantification using multicamera network,” IEEE Annual India Conference, Bangalore, pp. 1–6, 2016.

R. R. Tamboli and S. Jana, “Telecardiology under resource constraint: Low-complexity compact representation of ECG,” Computing in Cardiology Conference 2016, Vancouver, BC, pp. 141–144, 2016.

2015 K. K. Vupparaboina, R. R. Tamboli[†], P. M. Shenu and S. Jana, “Laser-based detection

[†] Oral presentation.

[‡] Poster presentation.

- and depth estimation of dry and water-filled potholes: A geometric approach,” Twenty First National Conference on Communications, Mumbai, pp. 1–6, 2015.
- 2014 R. R. Tamboli, K. K. Vupparaboina, J. Reddy, S. Jana and S. Channappayya, “A subjective evaluation of true 3D images,” International Conference on 3D Imaging, Liege, pp. 1–8, 2014.
- 2013 R. R. Tamboli, M. A. Savkoor, S. Jana and R. Manthalkar, “On the sparsest representation of electrocardiograms,” Computing in Cardiology, Zaragoza, pp. 479–482, 2013.
- R. R. Tamboli[†], D. S. S. Reddy and S. Jana, “A hybrid Fourier/wavelet technique for improved ECG signal approximation,” IEEE International Conference on Signal Processing, Computing and Control, Solan, pp. 1–6, 2013.
- 2012 D. S. S. Reddy, R. R. Tamboli and S. Jana, “Universal nonuniform sampling of ECG signals: Opportunities and obstacles,” The 5th Biomedical Engineering International Conference, Ubon Ratchathani, pp. 1–5, 2012.