

Shoaib Rehman Soomro

PERSONAL DATA

Nationality: Pakistan	Date of Birth: 2 nd October 1990
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RESEARCH INTERESTS

3D Display and Imaging Systems, Head Worn & Near-to-Eye Displays, Augmented Reality & Virtual Reality Systems and Applications.

TEACHING INTERESTS

Image and Video Processing, Communication, Signal Processing, Control Engineering, Digital Logic Design, MEMS, Microfabrication.

EDUCATION

Sep/2013 - Feb/ 2018	PhD in Electrical and Electronics Engineering Graduate School of Science and Engineering, Koç University, Istanbul, Turkey ▪ Dissertation Title: Augmented Reality 3D Display and Light Field Imaging Systems Based on Passive Optical Surfaces
Oct/2008 - July/2012	Bachelor of Engineering (BE) in Telecommunication Faculty of Electrical Engineering, Sukkur IBA University, Sukkur, Pakistan

WORK EXPERIENCE

Jan/2019 - to Date	Assistant Professor , Department of Electronic Engineering Mehran University of Engineering and Technology, Jamshoro, Pakistan
Aug/2018 - Jan/2019	Assistant Professor , Department of Electrical Engineering Bahria University, Karachi, Pakistan
Mar/2018 - July/2018	Assistant Professor , Department of Electronic Engineering Technology BBS University of Technology and Skill Development, Khairpur, Pakistan.
Sep/2013 – Feb/2018	Teaching & Research Assistant , Optical Microsystems Laboratory Koç University, Istanbul, Turkey
Aug/2012 to Aug/2013	Lab Engineer/Junior Lecturer , Department of Electrical Engineering Bahria University, Karachi, Pakistan

RESEARCH PROJECTS

- Principle Investigator (PI) of the project *"Point-of-Care Testing and IoT based System for Real-Time Cotton Crop Disease Detection"* of worth PKR 3.278 million awarded by Sindh higher Education Commission.
- Worked as PhD Research Assistant on European Research Council's (ERC) project under (FP7/2007-2013) / ERC advanced grant agreement (340200) awarded to Prof. Hakan Urey at Koç University. PhD research work focused on the design and development of novel 3D display and imaging systems for augmented reality.

PATENT CONTRIBUTION

1. Urey H., **Soomro S.R.**, "Physical Object Reconstruction Through a Projection Display System" US Patent US10739670. (Granted: August/2020).
2. Urey H., **Soomro S.R.**, Eralp M., "A Dual-Function Display and Multi-View Imaging System", US Patent US10531070. (Granted: January/2020).

RESEARCH PUBLICATIONS

Journal Articles

1. **Soomro S.R.**, Urey H., "Visual acuity response when using 3D head-up-display in the presence of accommodation-convergence conflict" *Journal of Information Display*, 21(2), 93-101 (2020).
2. **Soomro S.R.**, Urey H., "Integrated 3D Display and Imaging Using Dual Purpose Passive Screen and Head-mounted Projectors and Camera" *Optics Express* 26(2): 1161-1173 (2018).
3. **Soomro S.R.**, Urey H., "Light-efficient Augmented Reality 3D Display using Highly Transparent Retro-reflective Screen", *Applied Optics* 56 (22): 6108-6113 (2017).
4. **Soomro S.R.**, Ulusoy E., Urey H., "Decoupling of real and digital content in projection based augmented reality systems using time multiplexed image capture". *Journal of Imaging Science and Technology*, 61(1): 10406-1-6 (2017).
5. **Soomro S.R.**, Urey H., "Design, Fabrication and Characterization of Transparent Retro-reflective Screen". *Optics Express* 24 (21): 24232-24241(2016).

Conference Proceedings and Presentations

1. Hedili M.K., Ulusoy E., Kazempour S., **Soomro S.R.**, Hakan Urey "Next Generation Augmented Reality Displays, IEEE Sensors (2018)
2. **Soomro, S.R.**, Eldes, O., Urey H., "Towards Mobile 3D Telepresence Using Dual-purpose Screens and Head-worn Devices", In IEEE Virtual Reality and 3D Interfaces, Munich, Germany (2018)
3. **Soomro, S.R.**, Eldes O., Aksit K., Urey H., "Mobile 3D Imaging using Handheld Lens Array Surface and Single Camera", IS&T Electronic Imaging, San Francisco, CA, USA (2018).
4. **Soomro S.R.**, Urey H., "Desktop Size See-through Screens for 3D Augmented Reality". In International OSA Network of Students, Paris, FR (2017).
5. **Soomro S.R.**, Urey H., "Augmented Reality 3D Display Using Head-Worn Projectors and Passive Screens" In Fotoniks 2017: 19th National Workshop on Optics, Electro-Optics and Photonics, Istanbul, TR (2017).
6. Urey H., **Soomro S.R.**, Ulusoy E., "Wearable Augmented Reality Displays". In OSA Imaging and Applied Optics Congress, DM4F.2, Los Angeles, CA, USA (2017).
7. **Soomro S.R.**, Urey H., "Augmented reality 3D display using head-mounted projectors and transparent retro-reflective screen". Proc. SPIE 10126E-1, In Advances in Display Technologies VII, San Francisco, CA, USA (2017).
8. **Soomro S.R.**, Ulusoy E., Eralp M., Urey H., "Dual purpose passive screen for simultaneous display and imaging", Proc. SPIE 10126N-1, In Advances in Display Technologies VII, San Francisco, CA, USA (2017).
9. **Soomro S.R.**, Urey H., "Retro-reflective Characteristics of Transparent Screen for Head Mounted Projection

Displays". In Annual OSA meeting: Frontiers in Optics, pp FTu5A-2, Rochester, NY, USA (2016).

10. Genç, Ç., **Soomro, S.R.**, Duyan, Y., Ölçer, S., Balci, F., Ürey, H. and Özcan, O., "Head Mounted Projection Display & Visual Attention: Visual Attentional Processing of Head Referenced Static and Dynamic Displays while in Motion and Standing". In Proceedings of the CHI Conference on Human Factors in Computing Systems, pp. 1538-1547, Denver, CO, USA (2016).
11. **Soomro S.R.**, Javed M.A., Memon F.A., "Vehicle Number Recognition System for Automatic Toll Tax Collection". In IEEE international conference on robotics and artificial intelligence, pp. 125-129, Islamabad, PK (2012).

EXCHANGE VISITS & TRAININGS

July/2016 **Visiting Student Researcher**, Microelectronics Systems Laboratory (MSL)
Swiss Federal Institute of Technology, Lausanne, Switzerland.

June/2011 – July/2011 **Summer Intern**, Multimedia and Broadband Department
Pakistan Telecommunication Company Limited (PTCL), Pakistan

June/2010 – July/2010 **Summer Intern**, Aircraft Radio Engineering and Maintenance Hanger
Pakistan International Airlines (PIA), Karachi, Pakistan

ACADEMIC ACHIEVEMENTS

- Student inventor award recipient by Koç University for contributing as co-inventor in two international patents (2016)
- Recipient of fully funded PhD scholarship funded by Koc University, Turkey and Higher Education Commission, Pakistan (2013 to 2018).
- Gold medal recipient in Bachelor of Engineering with first distinction (2013).
- Recipient of fully funded undergraduate scholarship under National ICT Scholarship Program funded by NICTRDF, Ministry of IT, Pakistan (2008-2012).

TECHNICAL SKILLS

- Programming Skills: Python, MATLAB, Visual C++
- Other Technical Skills: Non-Sequential Optical Modelling Using Zeemax, COMSOL-Multiphysics, Rapid Prototyping and 3D Printing, Inkscape, Blender, Image Processing and 3D Vision with OpenCV.
- Hands-on experience of working with optical setups, optomechanical components and rapid fabrication.

PERSONAL SKILLS

- Interpersonal, Time management, Analytical, Organizational and Leadership Skills.
- Go-getter attitude with an ability to grasp new ideas, concepts, tools and methods.

ADDITIONAL INFORMATION

- Former student member of The Optical Society (OSA), International Society for Optics and Photonics (SPIE), and Society of Imaging Science and Technology (I&ST).
- Former Vice President, OSA Student Chapter, Koç University, Turkey (2017).
- Registered engineer with Pakistan Engineering Council (PEC).
- Languages: English, Urdu, Sindhi, Basic Turkish.

REFERENCES

- **Prof. Dr. Hakan Urey** (PhD Advisor)
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- **Prof. Dr. Madad Ali Shah**
Vice Chancellor, BBS University of Technical Skills and Development, Khairpur Mirs, Pakistan.
Professor, Faculty of Electrical Engineering, Sukkur IBA, Sukkur, Pakistan.

- **Prof. Dr. Arbab Nighat**
Chairperson, Electronic Engineering Department
Mehran University of Engineering and Technology, Jamshoro, Pakistan.
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