Proceedings of the IEEE
FEBRUARY 2014 / VOL. 102 / NO. 2

CONTENTS

SPECIAL ISSUE

APPLICATIONS OF AUGMENTED REALITY

Edited by J. White, D. C. Schmidt, and M. Golparvar-Fard

124 Behind the Glass: Driver Challenges and Opportunities for AR Automotive Applications
By J. L. Gabbard, G. M. Fitch, and H. Kim
|INVITED PAPER| This paper presents challenges of incorporating augmented reality into automotive applications and promising research solutions.

137 Augmented Reality for Construction Site Monitoring and Documentation
By S. Zollmann, C. Hoppe, S. Kluckner, C. Poglitsch, H. Bischof, and G. Reitmayr
|CONTRIBUTED PAPER| This paper describes an approach for utilizing imagery from unmanned aerial vehicles to build mobile augmented reality applications for construction.

155 Next-Generation Augmented Reality Browsers: Rich, Seamless, and Adaptive
By T. Langlotz, T. Nguyen, D. Schmalstieg, and R. Grasset
|CONTRIBUTED PAPER| This paper discusses the challenges and varying research approaches to building augmented reality browsers to discover and view content related to physical objects around a mobile device.

170 Manipulating the Experience of Reality for Rehabilitation Applications
By H. Regenbrecht, S. Hoermann, C. Ott, L. Müller, and E. Franz
|CONTRIBUTED PAPER| This paper explores the use of augmented reality for therapeutic applications and a cognitive model to aid in therapeutic application design.

185 Virtual Handcrafting: Building Virtual Wood Models Using ToolDevice
By R. Arisandi, M. Otsuki, A. Kimura, F. Shibata, and H. Tamura
|CONTRIBUTED PAPER| This paper introduces a number of new physical world tools to manipulate virtual objects and the research behind their construction.

196 Two-Phase Calibration for a Mirror Metaphor Augmented Reality System
By J. S. Jang, G. S. Jung, T. H. Lee, and S. K. Jung
|CONTRIBUTED PAPER| This paper investigates the problem of building an immersive augmented reality system that uses mirrors to enhance the perceived realism of the user's augmented reality experience.

204 Combining Photogrammetry and Augmented Reality Towards an Integrated Facility Management System for the Oil Industry
By L. Hou, Y. Wang, X. Wang, N. Maynard, I. T. Cameron, S. Zhang, and Y. Jiao
|CONTRIBUTED PAPER| This paper describes approaches for using augmented reality to improve facility management for the oil industry.

221 Erratum to "GaN-Based p–n Junction Blue-Light-Emitting Devices" by I. Akasaki [Proc. IEEE, vol. 101, no. 10, pp. 2200–2210, Oct. 2013]

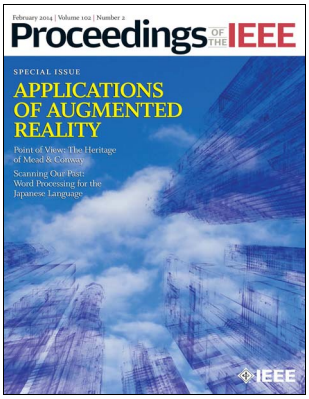
DEPARTMENTS

114 POINT OF VIEW
The Heritage of Mead & Conway: What Has Remained the Same, What Has Changed, What Was Missed, and What Lies Ahead
By M. Casale-Rossi

120 SCANNING THE ISSUE
Applications of Augmented Reality
By J. White, D. C. Schmidt, and M. Golparvar-Fard

222 SCANNING OUR PAST
STARS: WORD PROCESSING FOR THE JAPANESE LANGUAGE
By M. Doi and H. Lei

229 FUTURE SPECIAL ISSUES/SPECIAL SECTIONS



On the Cover: Our cover this month illustrates how augmented reality can help us combine computer-generated sensory input with the real-world environment, such as the graphic of the tall buildings against the clear blue sky.