

# O P T I C A L R E S E A R C H A S S O C I A T E S

## Professional Experience:

2009-Present	Optical Engineer, Optical Research Associates
2003-2008	Research Associate, CREOL, the College of Optics and Photonics, University of Central Florida
2006 (Summer)	Optical Designer, Canon Research Labs
2005 (Summer)	Intern, Optical Research Associates
2001-2002	Researcher, Human Computer Interaction Group, University of Joseph Fourier
1999-2001	Researcher, Starlab Research N.V./S.A.
1998 (Summer)	Electronics Engineer, BMW A.G. Research and Development

## Education

2008	Ph.D. Degree in Optical Sciences, CREOL College of Optics
2004	M.S. Degree in Optical Sciences, University of Central Florida
1999	B.S. Degree in Electrical Engineering, Michigan State University

His experience has been focused on the design and fabrication of single and dual-element off-axis head-worn displays using free-form and diffractive surfaces. In the process of advancing these optical systems, he has developed new methods for representing and optimizing free-form optical surfaces that have led to breakthrough designs in the field of head-worn displays. He has a range of experiences in the design and implementation of optical instrumentation and is currently specializing in optical systems engineering for emerging applications throughout the optics industry.

## Awards/Honors

2008	Newport/Spectra Research Excellence Grant
2008	SPIE William H. Price Scholarship in Optical Engineering
2007	Link Foundation Fellow
2007	CTIA Wireless Association Fashion in Motion Scholarship
2006	SPIE Educational Scholarship in Optical Science and Engineering
2005	Michael Kidger Memorial Scholarship in Optical System Design
2002	CREOL Fellowship

## Patents

U.S. 6,970,092 Co-inventor of Short Range Communication System (assigned to Philips Electronics).

## Publications

“Application of Radial Basis Function Networks to Shape Description in a Dual-Element Off-axis Magnifier”, with S. Vo, H. Foroosh, and J.P. Rolland, *Optics Letters* **33**(11), pp. 1237-1239, (2008).

“Application of Radial Basis Functions to Shape Description in a Dual-Element Off-axis Magnifier: Field of View Limit”, with S. Vo, H. Foroosh, and J.P. Rolland, *Journal of Society of Information Display, Special Issue on Mobile Displays*, **16**(11), pp.1089-1098, (2008).

“Optimal Local Shape Description for Rotationally Non-Symmetric Optical Surface Design and Analysis”, with B. Moore, H. Foroosh, and J.P. Rolland, *Optics Express* **16**(3), pp.1583-1589, (2008).

“Real Ray-Based Determination of Aberration Field Centers in Nonsymmetric Optical Systems”, with K. P. Thompson, T. Schmid, and J.P. Rolland, Submitted to *JOSA A*, (2008).

“Design Efficiency of 3188 Optical Systems” with J. Rogers, K. P. Thompson, and J. P. Rolland, *Current Developments in Lens Design and Optical Engineering IX, SPIE Optics & Photonics, San Diego, CA*, (2008).

“Meshfree Approximation Methods for Surface Representation in Optical Design. Novel Optical Systems Design and Optimization XI”, with G. E. Fasshauer, H. Foroosh, K. Thompson and J.P. Rolland, *SPIE Optics & Photonics, San Diego, CA*, (2008).

“Meshfree Approximation Methods for Surface Representation in Optical Design”, with J.P. Rolland, *OSA Annual Meeting, Frontiers in Optics*, (2008).

“Where Do We Stand On Eyeglass Displays?”, with S. Vo, S. Vogl, R. Spindelbaker, A. Ferscha, and J. P. Rolland, *International Symposium on Mixed and Augmented Reality, Cambridge, UK*, (2008).

“Benefits of a Radial Basis Function Representation to Shape Description of Free-Form Optical Surfaces with Application to Head-Worn Displays”, with S. Vo, H. Foroosh, and J.P. Rolland, *Society of Information Display, Digest of Technical Papers, Los Angeles, CA*, (2008).

“Dual-Element Off-Axis Near-Eye Optical Magnifier”, with J.P. Rolland, *Optics Letters* **32**(11), pp.1363-1365, (2007).

“A Comparative Analysis of Doublets versus Single Layer Diffractive Optical Elements in Eyepiece Design”, with J.P. Rolland, *Applied Optics* **46**(33), pp.8140-8148, (2007).

“Beyond the Desktop: Emerging Technologies for Supporting 3D Collaborative Teams”, with J.P. Rolland, J. Covelli, C. Fidopiastis, F. Fournier, R. Martins, F. Hamza-Lup, and D. Nicholson, *International Journal on Interactive Design and Manufacturing* **1**(4), pp.239-241, (2007).

“Head-worn displays: A Review”, with J.P. Rolland, *IEEE/OSA Journal of Display Technology*, **2**(3), pp.199-216, (2006).

“Dual-Element Compact Off-Axis Display”, with A. Oranchak and J.P. Rolland, *IEEE International Symposium on Wearable Computers*, pp. 131-132, Montreux, Switzerland, (2006).

“Dual-Element Off-Axis Eyeglass Based Display”, with A. Oranchak, and J. P. Rolland, *International Optical Design, Technical Digest, Optical Society of America, TuC2* (2006).

“Design of a Compact Optical See-Through Head-Worn Display with Mutual Occlusion Capability”, with Y. Ha, and J.P. Rolland, *Novel Optical Systems Design and Optimization VIII, SPIE Symposium on Optics and Photonics, San Diego, CA* (2005).

“A Compact Optical See-Through Head-Worn Display with Occlusion Support”, with Y. Ha, and J.P. Rolland, *International Symposium on Mixed and Augmented Reality*, pp.16-25, Arlington, VA, (2004).

“The Past, Present and Future Of Head-Mounted (HMD) Display Designs”, with J.P. Rolland, Photonics Asia, Beijing, China, (2004).

“An Augmented Reality Based Learning Assistant for Electric Bass Guitar”, with F. Bérard, International Conference on Human Computer Interaction, Crete, Greece, (2003).

“Context Awareness in Systems with Limited Resources”, with J. Coutaz, K. Van Laerhoven, and H. Gellersen, Artificial Intelligence in Mobile Systems, Lyon, France, (2002).

“A Magnetic Finger Tracker as an Input Device”, Conference on Human Computer Interaction, New Orleans, (2001).

“What Shall We Teach Our Pants? [A hybrid architecture that enables on-line adaptive context recognition.]”, with K. Van Laerhoven, International Symposium on Wearable Computers, Atlanta, Georgia, (2000).

“Virtual & Augmented Reality”, with F. Biocca, J. Czischke, J. DeVries, H. Huang, K. Kind, K. Nowak, and M. Witt, Communication Technology Update, 6th Ed. Butterworth-Heinemann. (1998).

## **Professional Societies**

Member, SPIE	The International Society for Optical Engineering
Member, IEEE	The Institute of Electrical and Electronics Engineers
Member, OSA	The Optical Society of America
Member, SID	The Society for Information Display
Member, SIAM	The Society of Industrial and Applied Mathematics
Member, AMS	American Mathematical Society
Member, MAA	The Mathematical Association of America