# Andrés Marrugo

*Curriculum Vitæ*

*Parque tecnológico Carlos Vélez Pombo*
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## Personal Information

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|---|---|
| Full Name: | Andrés Guillermo Marrugo Hernández |
| Passport No.: | CC73006735 |
| Gender: | Male |
| Nationality: | Colombian |
| Birth Date: | October 28th, 1984. |
| Place of birth: | Cartagena, Colombia. |
| Marital status: | Married. |

## Education

**2008-2013** **Ph.D. in Optical Engineering**, *Universidad Politécnica de Cataluña*, Barcelona, España, *Cum laude*.
Thesis title: "Retinal image analysis: image processing and feature extraction."

**2008-2009** **M.Sc. in Photonics**, *Universidad Politécnica de Cataluña*, Barcelona, España, *9.8/10*.
Thesis title: "Image analysis algorithms for feature extraction in eye fundus images"

**2003-2008** **B.E. in Mechatronics Engineering**, *Universidad Tecnológica de Bolívar*, Cartagena, Colombia, *5.0/5.0*.
Thesis title: "Guava fruit ripening optic inspection system by means of digital image analysis"

## Awards and Scholarships

**2012** Honors Diploma: Young Researchers, Spanish Optical Society.

**2009** FPU doctoral scholarship, Spanish Ministerio de Educación.

**2008** Laureate Undergraduate Thesis, Universidad Tecnológica de Bolívar.

**2008** Egresado de Honor: Premio Alcatraz de Oro, Universidad Tecnológica de Bolívar.

**2008** Summa Cum Laude, Universidad Tecnológica de Bolívar.

## Experience

**Jan 2014 – present** **Assistant Professor**, *Faculty of Engineering*, Universidad Tecnológica de Bolívar, Colombia.

**May 2013 – Dec 2013** **Assistant Professor**, *Faculty of Basic Sciences*, Universidad Tecnológica de Bolívar, Colombia.

**Sep 2008 – Feb 2013** **Research Assistant**, *Grupo de Óptica Aplicada y Procesado de Imagen*, Universitat Politècnica de Catalunya, Spain.

**Jul 2007 – Dec 2007** **Research Assistant - Intern**, *Grupo de Química Cuántica y Teórica*, Universidad de Cartagena, Colombia.

**Jan 2005 – May 2007** **Teacher Assistant**, *Physics Department*, Universidad Tecnológica de Bolívar, Colombia.

## Participation in R+D projects

**Jan 2010 – Dec 2012**  **Procesado de la información óptica con aplicaciones a la industria, la salud visual y la seguridad**, financiado por MCINN (Min. Ciencia e Innovación), Plan Nacional de Diseño y Producción Industrial. Fondos FEDER, Universidad Politécnica de Cataluña.

**Oct 2008 – Sep 2009**  **Dispositivos y procesadores para la interacción avanzada entre sistemas de visión humana y visión artificial**, financiado por Ministerio de Educación y Ciencia (MEC, convocatoria 2006), Plan Nacional de Diseño y Producción Industrial. Fondos FEDER, Universidad Politécnica de Cataluña.

## Research Stays

**May 2010 – Aug 2010**  **Retinal image restoration**, *Image Processing Department*, Institute of Information Theory and Automation, Czech Academy of Science, Prague, Czech Republic.

**Nov 2009 – Dic 2009**  **Image quality estimation**, *Grupo de Modelado de Visión y Procesado de Imagen*, Instituto de Óptica, Consejo Superior de Investigaciónes Científicas, Madrid, Spain.

## Publications

### Invited Technical Articles

Andrés G Marrugo, María S Millan, Gabriel Cristóbal, Salvador Gabarda, Michal Sorel, and Filip Sroubek. Toward computer-assisted diagnosis and telemedicine in ophthalmology. *SPIE Newsroom*, (doi: 10.1117/2.1201205.004256), 2012.

### Journal Articles

Andrés G Marrugo, María S Millán, Michal Sorel, and Filip Sroubek. Restoration of retinal images with space-variant blur. *Journal of Biomedical Optics*, 19(1):016023, 2014.

Andrés G Marrugo, María S Millan, Gabriel Cristóbal, Salvador Gabarda, and Héctor C Abril. Anisotropy-based robust focus measure for non-mydriatic retinal imaging. *Journal of Biomedical Optics*, 17(7):076021, 2012.

Andrés G Marrugo, Michal Sorel, Filip Sroubek, and María S Millan. Retinal image restoration by means of blind deconvolution. *Journal of Biomedical Optics*, 16(11):116016, Nov 2011.

Andrés G Marrugo and María S Millan. Retinal image analysis: preprocessing and feature extraction. *Journal of Physics: Conf. Series*, 274(1):012039, 2011.

Andrés G Marrugo and María S Millan. Optic disc segmentation in retinal images. *Opt. Pura Apl.*, 43(2):79–86, May 2010.

Ricardo Vivas-Reyes, Luz Mercado, Jorge Anaya-Gil, Andrés G Marrugo, and Emiliano Martinez. Theoretical study to evaluate polyfuran electrical conductivity and methylamine, methoxy substituent effects. *Journal of Molecular Structure: THEOCHEM*, 861(1-3):137–141, 2008.

### Peer Reviewed Conference Proceedings

Andrés G Marrugo, María S Millán, Sorel Michal, and Sroubek Filip. Blind restoration of retinal images degraded by space-variant blur with adaptive blur estimation. In *8th Ibero-American Conference on Optics 11th Latin-American Meeting on Optics, Lasers and Applications (RIAO)*, Porto, July 22–26 2013.

Andrés G Marrugo, María S Millan, Gabriel Cristóbal, Salvador Gabarda, Michal Sorel, and Filip Sroubek. Image analysis in modern ophthalmology: from acquisition to

computer assisted diagnosis and telemedicine **Invited Paper**. In *SPIE Photonics Europe, Proceedings SPIE*, volume 8436, page 84360C, July 2012.

Andrés G Marrugo, María S Millan, and Héctor C Abril. Implementation of an Image Based Focusing Algorithm for Retinal Imaging. In *X Reunión Nacional de Óptica*, pages 40–43, Zaragoza, 2012.

Andrés G Marrugo, María S Millan, Gabriel Cristóbal, Salvador Gabarda, and H C Abril. No-reference Quality Metrics for Eye Fundus Imaging. *CAIP'11, Lecture Notes in Computer Science*, 6854:486–493, 2011.

Andrés G Marrugo, Filip Sroubek, Michal Sorel, and María S Millan. Multichannel blind deconvolution in eye fundus imaging. In *ISABEL '11-Proceedings of the 4th International Symposium on Applied Sciences in Biomedical and Communication Technologies*, pages 7:1–7:5. New York, NY, USA, 2011.

Andrés G Marrugo and María S Millan. Efectos de Compresión en Imágenes de la Retina Para la Evaluación del Riesgo Glaucomatoso. In *IX Reunión Nacional de Óptica*, page 140, Orense (Spain), September 2009.

## Language Knowledge

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| Spanish: | Native |
| English: | Excellent (Toefl: 111/120) |
| French: | Basic (Delf A6) |

## Computer Skilss

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| Programming languages: | C/C++, VHDL, also Matlab/Simulink, Octave, Maple, LaTeX. |
| Software: | Solid Edge (CAD/CAM), Gaussian, Pspice, Git. |
| Operating systems: | Linux, MS Windows, and Mac OS X. |

## Scientific Societies

- Spanish Optical Society (SEDOPTICA)
- European Optical Society (EOS)
- International Society for Optics and Photonics (SPIE)
- Institute of Electrical and Electronics Engineers (IEEE)