

# Iván Marín-Franch, PhD

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## EMPLOYMENT

- 2018 –** **Freelance Research Consultant and scientific-software developer** in Computational Optometry. Currently collaborating in the NIH R01 project entitled Early detection of glaucoma progression using a novel individualized approach and the VA Merit review project entitled Testing of the far peripheral visual field —Obtaining the Full View.
- 2017 – 2018** **Scientist I** in the Department of Ophthalmology, UAB Medicine, working with Dr Lyne Racette on the NIH R01 project entitled Early detection of glaucoma progression using a novel individualized approach (70% effort). I am also working with Dr Michael Wall from the University of Iowa on the VA Merit review funded project entitled Testing of the far peripheral visual field —Obtaining the Full View (30% effort).
- 2017** **Assistant Research Professor** in the Department of Ophthalmology, Indiana University School of Medicine working with Dr Lyne Racette on the NIH R01 funded project entitled Early detection of glaucoma progression using a novel individualized approach.
- 2013 – 2016** **Research Fellow** in the Departamento de Óptica at Universitat de València; working with Profs Robert Montés-Micó, Norberto López-Gil from the Universidad de Murcia, and Philip Kruger from SUNY College of Optometry, on a project entitled Signals For Accommodative Responses In Humans. The overarching aim of the project is to identify the optical signals that control accommodation and emmetropization of the eye and can lead to detection of individuals at risk of developing myopia. My main duty is the development of software to drive the experiments performed with adaptive optics technology and the extraction, processing, and analysis of results.
- 2013** **Research Fellow** in the Indiana University School of Optometry; working with Prof Larry N Thibos on a project entitled Measuring aberrations of accommodated myopic eyes over a wide field of view and developing peripheral image quality metrics. My main duty was the development of MatLab software for the automation of routine statistical analysis and exploratory data analysis of image quality metrics of the accommodating eye for emmetropes and myopes.
- 2010 – 2012** **Research Fellow** in the Indiana University School of Optometry and the Department of Optometry and Visual Science at City University London; working with Profs William H Swanson and David P Crabb on a project entitled Application of Psychophysical Models to Visual Disorders (<http://newsinfo.iu.edu/news/page/normal/13053.html>). My main duty was the development of statistical methods suitable to address specific questions of the grant and, more generally, for clinical research in glaucoma. The specific

questions of the grant include analyses of agreement (or association) between different structural and functional measures for diagnosis and assessment of progression in glaucoma, methods for combining structural and functional information, and to determine whether such methods do improve diagnosis. In addition, I have developed the R statistical package visualFields for the analysis and visualization of visual fields (<http://cran.r-project.org/web/packages/visualFields/index.html>), which is part of the OPI (<http://people.eng.unimelb.edu.au/aturpin/opi.html>).

**2009 – 2010 Research Associate** in the Department of Biomedical Sciences and Human Oncology at the Università di Torino; working with Prof Franco Merletti on statistical analysis and data management of large studies in cancer epidemiology. Studies include SYNERGY, carried out by the International Agency for Research on Cancer (<http://www.iarc.fr/index.php>), and NINFEA ([https://www.progettoninfea.it/index\\_en](https://www.progettoninfea.it/index_en)).

**2008 – 2009 Research Assistant** in the School of Electrical and Electronic Engineering at the University of Manchester; working with Prof David H Foster in further development of the software modelfree ([www.modelfree.manchester.ac.uk](http://www.modelfree.manchester.ac.uk)) within a project entitled Non-Parametric Stimulus-Response Functions for Psychophysics sponsored by EPSRC.

**2006 Demonstrator in Geometrical Optics Laboratory** (first-year undergraduate module for Optometry degree) in the Faculty of Life Sciences, University of Manchester.

**2003 – 2004 Analyst Programmer and Technology Consultant** at Coritel, group Accenture Spain (Barcelona and Malaga). My main duties were to create functional and technical designs for new developments in SAP (System, Applications, and Products) according to client requirements and specifications, as well as give advice to programmers, supervise their work, and ensure the final products reached the high quality standards determined by Accenture (maximum level, 5, of Capability Maturity Model, CMM). My particular responsibility was for the deliverables to clients, including Sara Lee, Gas Natural, and Infineon.

**2002 – 2003 Analyst Programmer** at Coritel (Barcelona). Clients included Roche-diagnostics, Merck, and Ebro-Puleva

**2001 – 2002 Programmer** at Coritel (Barcelona). Clients included Sanofi-Synthélabo

## GRANTS

**NIH R01 EY025756**

**\$1,950,000**

Role: Co-investigator (70% effort)

Principal investigator: Lyne Racette

Title: Early detection of glaucoma progressions using functional and structural data jointly.

**Glaucoma Research Foundation Shaffer grant**

**\$40,000**

**02/15 – 02/16**

Role: Collaborator

Principal investigator: Lyne Racette

Title: Early detection of glaucoma progression using functional and structural data jointly.

**BrightFocus Foundation**

**\$100,000**

**07/14 – 06/16**

Role: Collaborator

Principal investigator: Lyne Racette

Title: An individualized model to monitor glaucoma progression.

**IUPUI DRIVE**

**\$15,000**

**07/14 – 06/15**

Role: Collaborator

Principal investigator: Lyne Racette

Title: A novel individualized structure-function model to monitor glaucoma progression.

**GRANT APPLICATIONS**

**European Research Council Starting Grant**

**€1,941,244**

Role: Principal Investigator

Title: Adaptive optics for improved diagnosis of retinal pathologies.

(Score B. Ranking range 30–39%.)

**Marie Curie Intra-European Fellowship (IEF)**

Role: Research fellow

Title: Computational simulations of signals for accommodative responses in humans

(Score of 86.90 / 100.)

**MEMBERSHIPS**

**2012 –** Member of **The Royal Statistical Society**

**2010 – 2017** Member of **The Association for Research in Vision and Ophthalmology**

**2008 – 2017** Member of **The Colour group of Great Britain**

**AWARDS AND HONORS**

**2015** **IMC international travel grant** awarded by the program meeting committee for the International Myopia Conference (IMC) hold in Wenzhou, China, 2015.

**2014** **Paper selected for review** in the International Glaucoma Review (IGR), 15-2, 2014: "Choice of statistical method influences apparent association between structure and function in glaucoma". The IGR is the quarterly publication of the World Glaucoma Association.

**2013** **Press release** at ARVO website featuring the R package visualFields ([http://www.arvo.org/About\\_ARVO/Press\\_Room/New\\_software\\_provides\\_free\\_framework\\_for\\_collaborative\\_research\\_in\\_visual\\_field\\_analysis](http://www.arvo.org/About_ARVO/Press_Room/New_software_provides_free_framework_for_collaborative_research_in_visual_field_analysis)).

**2008** **Best Presentation** given by The Colour Group of Great Britain in the meeting at Bradford: "WD Wright & MacDonald/Green Awards: An Educational Exercise".

**2008** **MacDonald-Green Award** given by The Colour Group of Great Britain for attendance at the Fourth European Conference on Colour in Graphics, Imaging, and Vision, 2008.

**2008** **Postgraduate Research Student Conference Travel Funds (PGR)** given by The University of Manchester for attendance at the Fourth European Conference on Colour in Graphics, Imaging, and Vision, 2008.

**TEACHING EXPERIENCE**

**2015 – 2017** **Lecturer of the course statistics applied to optometry** for the *Master in Advanced Optometry and Vision (Máster en Optometría Avanzada y Visión)* in the University of Murcia, Spain.

- 2016**      **Perimetry: interpretation and limitations** XIII summer course *Current Issues in Vision (Aspectos Actuales en Visión)* by the University of Murcia, Spain.
- 2014 – 2015**    **Support lecturer for Fourier Optics for ITN imparted by Larry N Thibos in the University of Murcia, Spain.** ITN is the international training network Marie Curie European Grant. My tasks were to correct theoretical and computational exercises of Thibos' Fourier Optics course with MatLab. I also taught MatLab and provided assistance for the computational exercises to the students, mostly optometrists.
- 2014**      **Lecturer for the ITN series of lectures**, which consisted of 60-hours of lectures on statistics (2 courses), communicating science (1 course), and ethics in clinical research (1 course). Attendees were international PhD optometry students from a Marie Curie's initial training network (ITN).
- 2006**      **Demonstrator in Geometrical Optics Laboratory** (first-year undergraduate module for Optometry degree) in the Faculty of Life Sciences, University of Manchester.

### **SUPERVISION TASKS**

- 2017 –**      Co-supervisor of Sampson Listowell Abu and Koosha Ramezani, research fellows at Racette's Lab.
- 2013 – 2017**    Co-director of the PhD thesis by Antonio J. Del Águila-Carrasco.
- 2013 – 2014**    Co-supervisor of Rongrong Hu, a research fellow at Racette's Lab.
- 2012**      Co-supervisor of a team of part-time programmers at Swanson's Lab.
- 2012**      Co-supervisor of Nicole A Stiles for the Dean's Scholar summer student program at Swanson's Lab.
- 2011**      Co-supervisor of Kehuan Zhang, a programmer hired during summer for reengineering Swanson's VSG Perimetry program from C++ to MatLab.
- 2011**      Co-supervisor Brittany R Adams for the Dean's Scholar summer student program at Swanson's Lab.

### **EDUCATION**

- 2005 – 2009**    **PhD in Vision Sciences.** "Information-theoretic analysis of trichromatic images of natural scenes under different phases of daylight" supervised by Prof David H. Foster. Funded by the Engineering and Physical Sciences Research Council
- 1998 – 2000**    **MSc in Statistical Science and Techniques** in the Department of Statistics at the Universidad de Granada
- 1995 – 1998**    **BSc in Statistics** in the Department of Statistics at the Universidad de Granada

### **ADDITIONAL EDUCATION**

- 2001** Postgraduate courses in Statistics at PhD level taught by the University of Granada
- 2000** Trainee ABAP IV programmer (SAP environment) in Malaga
- 2000** Trained secondary school level teacher by the University of Granada

### **JOURNAL PUBLICATIONS**

Bartuzel MM, Iskander R, **Marín-Franch I**, López-Gil N. Defocus vibrations in optical systems – considerations in reference to the human eye. *Journal of the Optical Society of America A*, [accepted], 2019.

**Marín-Franch I**, Xu R, Bradley A, Thibos LN, López-Gil N. The effect of spherical aberration on visual performance and refractive state for stimuli and tasks typical of night viewing. *Journal of Optometry*, 11(3):144-152, 2018.

**Marín-Franch I**. Publication bias and the chase for statistical significance. *Journal of Optometry*, 11(2):67-68, 2018.

**Marín-Franch I**, Artes PH, Chong LX, Turpin A, Wall M. Data obtained with an open-source static automated perimetry test of the full visual field in healthy adults. *Data in Brief*, 21:75-82, 2018.

Chu FI, **Marín-Franch I**, Ramezani K, Racette L. Associations between structure and function are different in healthy and glaucomatous eyes. *PLoS ONE*, 13(5): e0196814, 2018.

Ramezani K, **Marín-Franch I**, Hu R, Swanson WH, Racette L. Prediction Accuracy of the Dynamic Structure-Function Model for Glaucoma Progression Using Contrast Sensitivity Perimetry and Confocal Scanning Laser Ophthalmoscopy. *Journal of Glaucoma*, 27(9):785-793, 2018.

Zapata-Díaz, JF, **Marín-Franch I**, Radhakrishnan H, López-Gil N. Impact of Higher-Order Aberrations on Depth-of-Field. *Journal of Vision*, 18(12):5, 1-11, 2018.

Del Águila-Carrasco AJ, Lara, F. Bernal-Molina P, Riquelme-Nicolás R, **Marín-Franch I**, Esteve-Taboada JJ, Montés-Micó R, Kruger PB, López-Gil N. Effect of phenylephrine on static and dynamic accommodation. *Journal of Optometry*, 12(1):30-37, 2018.

Del Águila-Carrasco AJ, **Marín-Franch I**. Letter to the Editor: Symmetric visual response to positive and negative induced spherical defocus under monochromatic light conditions. *Vision Research* [In press], 2018.

**Marín-Franch I**, Del Águila-Carrasco AJ, Bernal-Molina P, Esteve-Taboada JJ, Montés-Micó R, López-Gil N, Kruger PB. There is more to accommodation of the eye than simply minimizing retinal blur. *Biomedical Optics Express*, 8(10), 2017.

**Marín-Franch I**, Del Águila-Carrasco AJ, Levecq, X, López-Gil N. Drifts in real-time partial wavefront correction and how to avoid them. *Applied Optics*, 56(14):3989-3994, 2017.

Del Águila-Carrasco AJ, **Marín-Franch I**, Bernal-Molina P, Esteve-Taboada JJ, Kruger PB, Montés-Micó R, López-Gil N. Accommodation Responds to Optical Vergence and Not Defocus Blur Alone. *Investigative Ophthalmology and Visual Science*, 58:1758-1763, 2017.

Bernal-Molina P, **Marín-Franch I**, Del Águila-Carrasco AJ, Esteve-Taboada JJ, López-Gil N, Kruger PB, Montés-Micó R. Human eyes do not need monochromatic aberrations for dynamic accommodation. *Ophthalmic and Physiological Optics*, 37(5):602-609, 2017.

Esteve-Taboada JJ, Del Águila-Carrasco AJ, Bernal-Molina P, López-Gil N, Montés-Micó R, Kruger PB, **Marín-Franch I**. Dynamic accommodation without feedback does not respond to isolated blur cues. *Vision Research*, 136:50-56, 2017.

López-Alcón D, **Marín-Franch I**, Fernández-Sánchez V, López-Gil N. Optical factors influencing the amplitude of accommodation. *Vision Research*, 141:16-22, 2017.

Papadatou E, Del Águila-Carrasco AJ, **Marín-Franch I**, López-Gil N. Temporal multiplexing with adaptive optics for simultaneous vision. *Biomedical Optics Express*, 7(16):4102-4113, 2016.

Jaskulski M, **Marín-Franch I**, Bernal-Molina P, López-Gil N. The effect of longitudinal chromatic aberration on the lag of accommodation and depth of field. *Ophthalmic and Physiological Optics*, 36(6):657-663, 2016.

Esteve-Taboada JJ, Del Águila-Carrasco AJ, **Marín-Franch I**, Bernal-Molina P, Montés-Micó R, López-Gil N. Opto-mechanical artificial eye with accommodative ability. *Optics Express*, 23(15):19396-19404, 2015.

Racette L, Helm JE, Dul M, **Marín-Franch I**. The joint structure-function dynamics of glaucoma progression. *Expert Review of Ophthalmology*, 10(5):407-409, 2015.

Dominguez-Vicent A, **Marín-Franch I**, Esteve-Taboada JJ, Madrid-Costa D, Montés-Micó R. Repeatability of in-vitro power profile measurements for multifocal contact lenses. *Contact Lens and Anterior Eye*, 38(3):168-72, 2015.

Hu R, **Marín-Franch I**, Racette L. Prediction Accuracy of a Novel Dynamic Structure-Function Model for Glaucoma Progression. *Investigative Ophthalmology and Visual Science*, 55(12):8086-8094, 2014.

**Marín-Franch I**, Swanson WH, Malinovsky VE. A novel strategy for the estimation of the general height of the visual field in patients with glaucoma. *Graefe's Archives for Clinical and Experimental Ophthalmology*, 252(5): 801-809, 2014.

**Marín-Franch I**. Passing-Bablok regression is inappropriate for assessing association between structure and function in glaucoma. *Investigative Ophthalmology and Visual Science*, 28;54(8):5848-5849, 2013.

**Marín-Franch I**, Malik R, Crabb DP, Swanson WH. Choice of statistical method influences apparent association between structure and function in glaucoma. *Investigative Ophthalmology and Visual Science*, 54(6):4189-4196, 2013.

**Marín-Franch I**, Swanson WH. The visualFields package: a tool for analysis and visualization of visual field. *Journal of Vision*, 13(3):10, 1-12, 2013.

**Marín-Franch I**, Foster DH. Estimating information from color signals: an application to digital cameras and natural scenes. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 35(1):78-91, 2013.

**Marín-Franch I**, Swanson WH, Adams BA, Zhu H, Crabb DP. Novel Analytical Methods for StratusOCT: Alignment of the Scan Circle. *Optometry and Vision Science*, 89(12):e109-e111, 2012.

**Marín-Franch I**, Foster DH. Number of perceptually distinct surface colors in natural scenes. *Journal of Vision*, 10(9):9, 1-7, 2010.

Foster DH, **Marín-Franch I**, Amano K, Nascimento SMC. Approaching ideal observer efficiency in using color to retrieve information from natural scenes. *Journal of the Optical Society of America A*, 26(11):B14-B24, 2009.

## CONFERENCE CONTRIBUTIONS

### 2019

**Marín-Franch I**, Artes PH, Racette L. Joint analysis of pointwise linear regression with structure and function may not increase sensitivity to glaucoma progression. The Association for Research in Vision and Ophthalmology (ARVO). Vancouver, Canada, 2019.

Abu SL, **Marín-Franch I**, Racette L. Predicting glaucoma progression in one eye based on the progression status of the fellow eye. The Association for Research in Vision and Ophthalmology (ARVO). Vancouver, Canada, 2019.

Bain C, **Marín-Franch I**, Malik R, McNaught A, Bunn L, Artes PH. The limits of the far peripheral visual field. The Association for Research in Vision and Ophthalmology (ARVO). Vancouver, Canada, 2019.

Wall M, Subramani A, Chong LX, Galindo R, Turpin A, Kardon RH, Matthew T, Jane B, **Marín-Franch I**. Detection of Visual Loss in IHH with Static Automated Perimetry: Temporal Wedge Defects. The Association for Research in Vision and Ophthalmology (ARVO). Vancouver, Canada, 2019.

### 2018

Kruger PB, **Marín-Franch I**, Del Águila-Carrasco AJ, Bernal-Molina P, Esteve-Taboada JJ, Montés-Micó R, López-Gil N. Monocular Dynamic Accommodation without Optical Cues. *XXIII Biennial Meeting of the International Society for Eye Research (ISER)*, Belfast, Northern Ireland, UK, 2018.

Abu SL, **Marín-Franch I**, Racette L. The impact of the baseline classification of eyes on the ability of structural and functional tests to identify glaucoma progression. *American Academy of Optometry (AAO)*, San Antonio, Texas, US, 2018.

Abu SL, **Marín-Franch I**, Racette L. The detection of glaucoma progression with retinal nerve fiber layer thickness is not improved by mean sensitivity information. *The Association for Research in Vision and Ophthalmology (ARVO)*, Honolulu, Hawaii, US, 2018.

Bain C, **Marín-Franch I**, McNaught A, Artes PH. The limits of the far peripheral visual field. *The Association for Research in Vision and Ophthalmology (ARVO)*, Honolulu, Hawaii, US, 2018.

Abu SL, **Marín-Franch I**, Racette L. Early detection of glaucoma progression by individual and combination of structural and functions indices. *Southeastern Vision Conference (SVC)*, Birmingham, AL, US, 2018.

Riquelme-Nicolás R, Lara F, **Marín-Franch I**, Sobrado MP, López-Gil N. Valoración de la amplitud de acomodación en pacientes hipotiroideos [Assessment of the amplitude of

accommodation in patients with hypothyroidism]. *XXV Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2018.

Andrews CD, Jasleen JK, **Marín-Franch I**, Artes, PA, MacLaren RE. Investigating the full visual field using a modified Esterman test with Octopus Open Perimetry Interface. *British Congress of Optometry and Vision Science (BCOVS)*. Cambridge, UK, 2018.

## 2017

**Marín-Franch I**, Racette L. Comparing joint structure-function models to estimate progression in glaucoma. North American Perimetric Society (NAPS) Meeting, Skaneateles, NY, 2017.

Abu SL, **Marín-Franch I**, Racette L. Comparing different combinations of structural and functional measurements that estimate progression in glaucoma. North American Perimetric Society (NAPS) Meeting, Skaneateles, NY, 2017.

Wall M, Lee E, Subramani A, Chong LX, **Marín-Franch I**, Turpin A. Patterns of Vision Loss in Idiopathic Intracranial Hypertension: The Central vs. Peripheral Visual Field. North American Perimetric Society (NAPS) Meeting, Skaneateles, NY, 2017.

**Marín-Franch I**, Racette L. Assessing different approaches to describe the dynamics of structure-function progression in glaucoma. *Southeastern Vision Conference (SVC)*. Nashville, TN, USA, 2017.

Abu SL, **Marín-Franch I**, Racette L. Validation of a dynamic structure-function model for glaucoma progress in ocular hypertension patients. *Southeastern Vision Conference (SVC)*. Nashville, TN, USA, 2017.

Ramezani K, Swanson WH, **Marín-Franch I**, Hu R, Racette L. Prediction Accuracy of the Dynamic Structure-Function model for Glaucoma Progression using Contrast Sensitivity Perimetry and Confocal Scanning Laser Ophthalmoscopy. *Southeastern Vision Conference (SVC)*. Nashville, TN, USA, 2017.

Bain C, **Marín-Franch I**, Artes PH. Ultra-wide field (UWF) perimetry of the temporal-inferior visual field. *British Congress of Optometry and Vision Science (BCOVS)*. Plymouth, UK, 2017.

López-Gil N, **Marín-Franch I**, Del Águila-Carrasco AJ, Bernal-Molina P, Esteve-Taboada JJ, Jaskulski M, Montés-Micó R, Kruger PB. Defocus sign detection by the visual system. *International Myopia Conference (IMC)*. Birmingham, UK, 2017.

Kruger PB, **Marín-Franch I**, Del Águila-Carrasco AJ, Bernal-Molina P, Esteve-Taboada JJ, Montés-Micó R, López-Gil N. There is more to accommodation than simply maximizing retinal image contrast. *The Association for Research in Vision and Ophthalmology (ARVO)*, Baltimore, Maryland, US, 2017.

López-Gil N, **Marín-Franch I**, Bernal-Molina P, Esteve-Taboada JJ, Montés-Micó R, Kruger PB, Del Águila-Carrasco AJ. Does accommodation respond equally to artificially blurred as to real out-of-focus retinal images? *The Association for Research in Vision and Ophthalmology (ARVO)*, Baltimore, Maryland, US, 2017.

Bartuzel MM, **Marín-Franch I**, Del Águila-Carrasco AJ, Iskander R, López-Gil N. Defocus vibrations improve visual resolution of defocused targets. *The Association for Research in Vision and Ophthalmology (ARVO)*, Baltimore, Maryland, US, 2017.



Lee E, Subramani A, Wanzek R, Eden T, Chong LX, Turpin A, **Marín-Franch I**, Wall M. Patterns of Vision Loss in Idiopathic Intracranial Hypertension: The Central vs. Peripheral Visual Field. *The Association for Research in Vision and Ophthalmology* (ARVO), Baltimore, Maryland, US, 2017.

Foster DH, **Marín-Franch I**. Universal information limit on real-world color constancy. *Vision Sciences Society* (VSS) annual meeting, St. Pete Beach, Florida, US, 2017.

Foster DH, **Marín-Franch I**. Can Cone Signals in the Wild Be Predicted From the Past? MODVIS: Computational and Mathematical Models in Vision, St. Pete Beach, Florida, US, 2017.

## 2016

López-Gil N, Papadatou E, Del Águila-Carrasco AJ, **Marín-Franch I**. Simultaneous vision with adaptive optics. *Eight European Meeting on Visual and Physiological Optics* (VPO 2016), Antwerp, Belgium, 2016.

**Marín-Franch I**, Bernal-Molina P, Del Águila-Carrasco AJ, Kruger PB, Esteve-Taboada JJ, Montés-Micó R, López-Gil N. Does dynamic accommodation respond to the shape of the blurred retinal image without changes in physical vergence? *The Association for Research in Vision and Ophthalmology* (ARVO), Seattle, Washington, US, 2016.

Bernal-Molina P, Del Águila-Carrasco AJ, López-Gil N, Lara F, Kruger PB, Riquelme-Nicolás R, Montés-Micó R, Esteve-Taboada JJ, **Marín-Franch I**. Effect of phenylephrine on static and dynamic accommodation. *The Association for Research in Vision and Ophthalmology* (ARVO), Seattle, Washington, US, 2016.

Zapata-Diaz JF, **Marín-Franch I**, Radhakrishnan H, López-Gil N. Impact of higher-order aberrations on depth-of-field. *The Association for Research in Vision and Ophthalmology* (ARVO), Seattle, Washington, US, 2016.

**Marín-Franch I**, Chu F-I, Racette L. Statistics of joint structural and functional changes in eyes with glaucoma after short series of visits. The 22nd international visual field and imaging symposium (IPS), Udine, Italy, 2016.

Chu F-I, **Marín-Franch I**, Racette L. An investigation of the robustness of prediction accuracy of a dynamic structure-function model for glaucoma progression. The 22nd international visual field and imaging symposium (IPS), Udine, Italy, 2016.

Wall M, Artes PH, Chong LX, Lee E, Wanzek R, **Marín-Franch I**, Swanson WH, Johnson CA, McKendrick AM, Turpin A. Testing of the full visual field in early glaucoma: the Iowa Open Perimetry Initiative. The 22nd international visual field and imaging symposium (IPS), Udine, Italy, 2016.

Foster DH, **Marín-Franch I**. Failure of surface color cues under natural changes in lighting. MODVIS: Computational and Mathematical Models in Vision, St. Pete Beach, Florida, US, 2016.

**Marín-Franch I**, Del Águila-Carrasco AJ, Bernal-Molina P, Kruger PB, Esteve-Taboada JJ, Montés-Micó R, López-Gil N. ¿Utiliza el ojo el astigmatismo, la aberración esférica, u otras aberraciones de alto orden para detectar el signo del desenfoque? [Is astigmatism, spherical, or other high-order aberrations used for detecting the sign of defocus?] *XXVIII Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2016.

Del Águila-Carrasco AJ, Bernal-Molina P, López-Gil N, Kruger PB, Esteve-Taboada JJ, Montés-Micó R, **Marín-Franch I**. ¿Afecta la fenilefrina al funcionamiento del músculo ciliar en acomodación dinámica? [Does phenylephrine affect the function of the ciliary muscle in dynamic accommodation?] *XXVIII Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2016.

Hernández Rodríguez C, Vidal Alegría, **Marín-Franch I**, Lara Lacárcel F, Usón González E. Influencia del descentramiento en la medida del valor fórico en miopes. [Influence of decentering in forea in myopes.] *XXVIII Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2016.

Esteve-Taboada JJ, **Marín-Franch I**, Del Águila-Carrasco AJ, Bernal-Molina P, López-Gil N, Montés-Micó R. Diseño de un ojo artificial acomodativo empleando una lente de focal variable electrónicamente. Análisis estático y dinámico. [Design of an accommodative artificial eye with a lens with a variable focal.] *XXVIII Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2016.

## 2015

**Marín-Franch I**, Del Águila-Carrasco AJ, Bernal-Molina P, Kruger PB, Esteve-Taboada JJ, Montés-Micó R, López-Gil N. Is astigmatism, spherical, or other high-order aberrations used for detecting the sign of defocus? *International Myopia Conference (IMC)*. Wenzhou, Zhejiang, P. R. China, 2015.

Esteve-Taboada JJ, Del Águila-Carrasco A, Bernal-Molina P, **Marín-Franch I**, Montés-Micó R. Dynamic analysis of an accommodating artificial eye based on an electrically tunable lens. *XXXIII Congress of the European Society of Cataract & Refractive Surgeons*, Barcelona, Spain, 2015.

Jaskulski MT, **Marín-Franch I**, Bernal-Molina P, López-Gil N. The effect of longitudinal chromatic aberration on the lag of accommodation and depth of field. *The Association for Research in Vision and Ophthalmology (ARVO)*, Denver, Colorado, US, 2015.

**Marín-Franch I**, Racette, L. Specificity and sensitivity of bootstrap median regression of joint structure and function glaucoma progression. *The Association for Research in Vision and Ophthalmology (ARVO)*, Denver, Colorado, US, 2015.

Racette L, **Marín-Franch I**. Adjusting for age removed evidence of correlations between rim area and visual sensitivity in healthy eyes. *The Association for Research in Vision and Ophthalmology (ARVO)*, Denver, Colorado, US, 2015.

Ramezani K, Swanson WH, **Marín-Franch I**, Hu R, Racette L. Prediction Accuracy of a Dynamic Structure-Function (DSF) model for Glaucoma Progression using Contrast Sensitivity Perimetry (CSP) and Confocal Scanning Laser Ophthalmoscope. *The Association for Research in Vision and Ophthalmology (ARVO)*, Denver, Colorado, US, 2015.

Bauchle C, **Marín-Franch I**, Racette L. A Comparison of the Prediction Error of Two Structure-Function Models of Glaucoma Progression in Patients with Ocular Hypertension. *The Association for Research in Vision and Ophthalmology (ARVO)*, Denver, Colorado, US, 2015.

Racette L, Bauchle C, Hu R, **Marín-Franch I**. Differences between the dynamic structure-function model and a Bayesian model for glaucoma progression based on the length of follow up. *World Glaucoma Congress (WGA)*, Hong Kong, China, 2015.

Racette L, Hu R, **Marín-Franch I**. The Dynamic Structure-Function Model: A New Approach to Monitor Glaucoma Progression. International Conference on Eye Disorders and Treatment, OMICS Group, Baltimore, MD, 2015.

Łabuz G, Reus NJ, Van Den Berg TJ, **Marín-Franch I**. Ocular straylight in the normal pseudophakic eye. *The Association for Research in Vision and Ophthalmology (ARVO)*, Denver, Colorado, US, 2015.

#### 2014

Hu R, **Marín-Franch I**, Racette L. Improved prediction accuracy using the most recent visits within a longitudinal follow-up test series with the dynamic structure-function model. The 21st international visual field and imaging symposium (IPS), New York City, US, 2014.

Racette L, Hu R, **Marín-Franch I**. Assessment of glaucoma progression using the Dynamic Structure-Function model with permutation analysis. *The Association for Research in Vision and Ophthalmology (ARVO)*, Orlando, Florida, US, 2014.

Hu R, **Marín-Franch I**, Racette L. Prediction Accuracy of a Novel Dynamic Structure-Function Model for Glaucoma Progression. *The Association for Research in Vision and Ophthalmology (ARVO)*, Orlando, Florida, US, 2014.

**Marín-Franch I**, Hu R, Esteve-Taboada JJ, Del Águila-Carrasco AJ, Racette L. Un modelo novel de estructura/function puede mejorar el seguimiento de pacientes con glaucoma. [A novel structure/function model can improve follow-up of patients with glaucoma.] *XXIII Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2014.

**Marín-Franch I**, Del Águila-Carrasco AJ, Esteve-Taboada JJ, Belda-Salmerón L, Domínguez-Vicent, A. El glaucoma temprano no se detecta antes con tecnología OCT que con campimetría clásica. [Early glaucoma cannot be detected earlier with OCT technology than with classic perimetry.] *XXIII Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2014.

Esteve-Taboada JJ, **Marín-Franch I**, Del Águila-Carrasco AJ, Bernal-Molina P, López-Gil N, Montés-Micó R. Óptica adaptativa para caracterizar los estímulos que intervienen en la emetropización del sistema visual. [Adaptive optics for characterizing the stimuli that affect the emmetropization of the visual system.] *XXIII Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2014.

Bernal-Molina P, Del Águila-Carrasco AJ, Esteve-Taboada JJ, **Marín-Franch I**, Montés-Micó R, López-Gil N. ¿Cambia la profundidad de campo del ojo cuando acomoda? [Does the depth of focus change when the eye accommodates?] *XXIII Congreso Internacional: Optometría, Contactología y Óptica Oftálmica*, OPTOM. Madrid, Spain, 2014.

#### 2013

Racette L, Hu R, **Marín-Franch I**. A novel model to assess glaucoma progression using structural and functional data jointly. *North American Perimetric Society biennial meeting (NAPS)*, Chapel Hill, North Carolina, US, 2013.

Hu R, **Marín-Franch I**, Racette L. Assessment of a Joint Structure-Function Model for Glaucoma Progression. *North American Perimetric Society biennial meeting (NAPS)*, Chapel Hill, North Carolina, US, 2013.

Swanson WH, Huang G, Malinovsky VE, Burns S, **Marín-Franch I**. Permutation Analysis of Progression in Patients with Early Glaucoma. *North American Perimetric Society biennial meeting (NAPS)*, Chapel Hill, North Carolina, US, 2013.

Hu R, **Marín-Franch I**, Racette L. A Novel Dynamic Structure-Function Model for Glaucoma Progression. *Glaucoma Perimetric Society meeting (GPS)*, Chapel Hill, North Carolina, US, 2013.

Foster DH, **Marín-Franch I**. Effectiveness of Digital Camera Sensors in Distinguishing Colored Surfaces in Outdoor Scenes. *Optical Society of America Vision Meeting (OSA)*. Houston, Texas, USA, 2013.

Foster DH, **Marín-Franch I**. How dichromatic vision is doubly disadvantaged in natural scenes. *The International Colour Vision Society (ICVS)*, Winchester, UK, 2013.

**Marín-Franch I**, Swanson WH. Between-Subject Differences Account for More Dissociation Between Rim Area and Visual Sensitivity Than Within-Subject Fluctuations. *The Association for Research in Vision and Ophthalmology (ARVO)*, Seattle, Washington, US, 2013.

## 2012

**Marín-Franch I**, Swanson WH, Racette L. Towards an Improved Estimation of Pattern-Deviation Maps Based on Total-Deviation Rank Curves. *The Association for Research in Vision and Ophthalmology (ARVO)*, Fort Lauderdale, Florida, US, 2012.

## 2011

Malinovsky VE, Sutton BM, Torbit JK, Dul MW, Swanson WH, **Marín-Franch I**. Improving the contrast sensitivity perimetry (CSP) test. *American Academy of Ophthalmology (AAO)* annual meeting. Orlando, Florida, US, 2011.

**Marín-Franch I**, Swanson WH, Malinovsky VE. Alternative methods for estimation of diffuse visual field loss can lead to improved indices of glaucoma progression. *North American Perimetric Society biennial meeting (NAPS)*, Skaneateles, New York, US, 2011.

Foster DH, Nascimento SMC, Amano A, **Marín-Franch I**. How many human cone pigments are needed to reliably identify surfaces in natural scenes? *International Colour Vision Society (ICVS)*. Kongsberg, Norway, 2011.

Mirabelli D, Merletti F, Richiardi R, Corbin M, **Marín-Franch I**, et al. Lung cancer risk among men by occupation and industry in SYNERGY: pooled analysis of case-control studies on the joint effects of occupational carcinogens in the development of lung cancer. *Scientific Committee on Epidemiology in Occupational Health (EPICOH)*, Oxford, UK, 2011.

**Marín-Franch I**, Malinovsky VE, Swanson WH, Crabb DP. Pattern deviation may sometimes be an unreliable indicator of visual field loss due to statistical artifacts. *World Glaucoma Congress (WGA)*, Paris, France, 2011.

Foster DH, Nascimento SMC, Amano K, **Marín-Franch I**. Near-optimal tuning of trichromatic vision for constant surface identification in natural scenes. *Vision Sciences Society (VSS)* annual meeting, Naples, Florida, US, 2011.

**Marín-Franch I**, Crabb DP, Swanson WH, Malik R, Garway-Heath DF. Does Least-Squares Regression Give Misleading Results When Applied To Data From Structure-Function Studies In Glaucoma? *The Association for Research in Vision and Ophthalmology (ARVO)*, Fort Lauderdale, Florida, US, 2011.

## 2009

Foster DH, **Marín-Franch I**, Nascimento SMC, Amano K. How many surfaces in natural scenes can be identified by their colour? *Measuring the Impossible NETWORK (MINET) Conference: Measurement, Sensation and Cognition*. London, UK, 2009.

## 2008

Foster DH, **Marín-Franch I**, Nascimento SMC, Amano K. Coding efficiency of CIE color spaces. *Color Imaging Conference (CIC)*. Portland, Oregon, USA, 2008.

Foster DH, **Marín-Franch I**, Nascimento SMC, Amano K. How efficiently does post-receptor coding capture information about the natural world? *European Conference on Visual Perception (ECVP)*. Utrecht, the Netherlands. Abstract published in *Perception*, 37 (ECVP Abstract supplement), 2008.

**Marín-Franch I**, Foster DH. Distribution of information within and across colour spaces. *European Conference on Colour in Graphics, Imaging and Vision (CGIV)*. Terrassa, Spain, 2008.

## 2007

**Marín-Franch I**, Foster DH. Cone-signal interactions maximizing information about coloured surfaces in natural scenes. *European Conference on Visual Perception (ECVP)*. Arezzo, Italy. Abstract published in *Perception*, 36 (ECVP Abstract supplement), 2007.

**Marín-Franch I**, Foster DH. Information available from coloured surfaces in natural scenes under spatially random illumination. *International workshop on Foundations of Computer Vision: Light, Space, and Matter*. Bertinoro, Italy, 2007.

## 2006

**Marín-Franch I**, Foster DH. Estimating the information available from coloured surfaces in natural scenes. *European Conference on Colour in Graphics, Imaging and Vision (CGIV)*, pp. 44-47. Leeds, United Kingdom, 2006.

## INVITED LECTURES AND PRESENTATIONS

- April 2017** Estadística en ciencias de la visión [Statistics in Vision Sciences]. Departamento de Estadística, Universidad de Granada, Granada, Spain.
- Sept 2016** Interpretación y limitaciones de campimetrías [Interpretation and limitations in perimetry]. XIII Curso de aspectos actuales en vision [XIII Course on current trends in vision], Águilas, Murcia, Spain.
- May 2016** Dynamic accommodation and night myopia experiments with adaptive optics. Indiana University School of Optometry, Bloomington, Indiana, US.
- May 2016** Dynamic accommodation and night myopia experiments with adaptive optics. Indiana University School of Medicine, Indianapolis, Indiana, US.
- May 2016** Can adaptive optics improve diagnosis of ophthalmic pathologies with visual psychophysics? Carver College of Medicine, Iowa, US.
- July 2014** Estimating information from image colors of natural scenes. First Friday Talks (FFT). Departamento de Óptica, Universitat de València, València, Spain.

- Nov 2013** Trabajando de estadístico fuera de España [Working as a statistician outside Spain]. Departamento de Estadística, Universidad de Granada, Granada, Spain.
- Jan 2012** Avoiding 'blind' use of statistics: over-interpretation of statistical methods in glaucoma research. Seminar in the Department of Mathematical Sciences. University of Liverpool, Liverpool, UK.
- Sept 2011** A better estimation of diffuse visual-field loss leads to improved progression indices in glaucoma. Schnurmacher Institute for Vision Research Colloquium (SIVR). The State University of New York, New York, US.
- Sept 2008** Information-theoretic analysis of trichromatic images of natural scenes under different phases of daylight. In WD Wright & MacDonald/Green Awards: An Educational Exercise. The Colour Group of Great Britain. Bradford, UK.

### **SEMINARS AND OTHERS**

- Sept 2011** **Talk.** A better estimation of diffuse visual-field loss leads to improved progression indices in glaucoma. Oxyopia Vision Science Seminars. Indiana University School of Optometry, Bloomington, Indiana, US.
- May 2010** **Talk.** Statistics, colour vision, epidemiology. Department of Optometry and Visual Science, City University London, London, UK.
- Feb 2010** **Talk.** Estimating information from colour signals: an application to digital cameras and natural scenes. Department of Genetics, Biology and Biochemistry, University of Torino, Torino, Italy.
- April 2009** **Talk.** Information theory and statistical efficiency: an application to colour vision of the normal eye. Department of Biomedical Sciences and Human Oncology, University of Torino, Torino, Italy.
- March 2009** **Talk.** Information-theoretic analysis of trichromatic images of natural scenes under different phases of daylight. Department of Psychology, Giessen University, Giessen, Germany.
- Oct 2008** **Poster.** Information available and retrieved in colour images of natural scenes under changes in illumination spectra. Sensing, Imaging & Signal Processing (SISP) post-graduate research conference. School of Electrical and Electronic Engineering, University of Manchester, Manchester, UK.
- July 2006** **Talk.** Constraints on models of surface-colour perception. School of Electrical and Electronic Engineering, University of Manchester, Manchester, UK.
- March 2006** **Talk.** Estimating the information available from coloured surfaces in natural scenes. Seminar Series. Faculty of Life Sciences, University of Manchester, Manchester, UK.
- Nov 2005** **Talk.** Estimating the information available from coloured surfaces in natural scenes. Computational Neurosciences Journal Club. Faculty of Life Sciences, University of Manchester, Manchester, UK.

**May 2005** **Talk.** Information limits on neural identification of coloured surfaces in natural scenes. Computational Neurosciences Journal Club. Faculty of Life Sciences, University of Manchester, Manchester, UK.

### **REVIEWER TASKS**

**Since 2019** Journal of Ophthalmology. Papers reviewed (JOphthalmol): 1

**Since 2014** Ophthalmic and Physiological Optics (OPO). Papers reviewed: 2

**Since 2014** Clinical Ophthalmology (CO). Papers reviewed: 2

**Since 2013** Public Library of Science, PLOS One (PONE). Papers reviewed: 2

**Since 2013** Investigative Ophthalmology & Visual Science (IOVS). Papers reviewed: 4

**Since 2011** Clinical & Experimental Ophthalmology (CEO). Papers reviewed: 1

**Since 2011** Current Eye Research (CER). Papers reviewed: 2

**Since 2011** Optometry and Vision Science (OVS). Papers reviewed: 4.

**2010** Reviewer for the European Conference on Colour in Graphics, Imaging and Vision (CGIV) in Joensuu, Finland. Papers reviewed: 2