



## Gastón A. Ayubi

Postdoctoral Scholar, Ophthalmology

### Bio

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#### BIO

Gastón A. Ayubi completed his undergraduate studies in physics and electrical engineering, followed by PhD studies in physics at the University of the Republic of Uruguay. As an undergraduate student, in 2008 he started collaborating at the Department of Physics, where he developed a strong interest in phase imaging techniques. In 2022 he joined Stanford University as a postdoc. His role is to develop and test phase contrast imaging methods for both microscopy and retinal imaging.

#### PROFESSIONAL EDUCATION

- Licenciado, University of the Republic (2014)
- Ingeniero, University of the Republic (2016)
- Doctor of Science, University of the Republic (2020)
- PhD, Universidad de la República, Uruguay , Physics (2020)
- BSc, Universidad de la República, Uruguay , Electrical engineering (2016)
- BSc, Universidad de la República, Uruguay , Physics (2014)

#### STANFORD ADVISORS

- Alfredo Dubra, Postdoctoral Faculty Sponsor

#### LINKS

- <https://dubralab.stanford.edu/>: <https://dubralab.stanford.edu/>
- <https://www.linkedin.com/in/gastonayubizavalla/>: <https://www.linkedin.com/in/gastonayubizavalla/>

### Publications

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#### PUBLICATIONS

- **Telecentric model eye for correction of image distortion in adaptive optics ophthalmoscopes.** *Biomedical optics express*  
Akondi, V., Ayubi, G. A., Huang, X., Kunala, K., Dubra, A.  
2025; 16 (7): 2767-2791
- **Telecentric model eye for correction of image distortion in adaptive optics ophthalmoscopes** *BIOMEDICAL OPTICS EXPRESS*  
Akondi, V., Ayubi, G. A., Huang, X., Kunala, K., Dubra, A.  
2025; 16 (7): 2767-2791
- **Normalized weighted cross correlation for multi-channel image registration** *OPTICS CONTINUUM*  
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2024; 3 (5): 649-665

- **Hilbert's and Takeda's single-shot interferometry with a linear-carrier: a comparison** *MEASUREMENT SCIENCE AND TECHNOLOGY*  
Ferrari, J. A., Flores, J. L., Fernandez Lakatos, M., Ayubi, G. A., Perciante, C. D., Frins, E.  
2024; 35 (5)
- **Robust real-time estimation of non-uniform angular velocity and sub-pixel jitter in images captured with resonant scanners** *OPTICS EXPRESS*  
Ayubi, G. A., Dubra, A.  
2023; 31 (26): 44199-44211
- **Common-path quantitative phase imaging by propagation through a sinusoidal intensity mask** *OPTICS AND LASERS IN ENGINEERING*  
Ayubi, G. A., Lakatos, M., Casaballe, N., Frins, E.  
2023; 171
- **Phase retrieval by amplifying the prism term of the Transport of Intensity Equation with a sliding step function** *OPTIK*  
Lakatos, M., Ayubi, G. A., Casaballe, N., Ferrari, J. A., Frins, E.  
2022; 271
- **Orientation-selective edge enhancement of phase objects** *OPTICS COMMUNICATIONS*  
Ferrari, J. A., Flores, J. L., Ayubi, G. A., Matias Di Martino, J., Perciante, C. D., Frins, E.  
2019; 434: 44-48
- **Optimal phase-shifting algorithm for interferograms with arbitrary steps and phase noise** *OPTICS AND LASERS IN ENGINEERING*  
Ayubi, G. A., Duarte, I., Ferrari, J. A.  
2019; 114: 129-135
- **3D-shape of objects with straight line-motion by simultaneous projection of color coded patterns** *OPTICS COMMUNICATIONS*  
Flores, J. L., Ayubi, G. A., Di Martino, J., Castillo, O. E., Ferrari, J. A.  
2018; 414: 185-190
- **Hybrid ac-current sensor based on the time modulation of an autonomous light source** *OPTIK*  
Flores, J. L., Ayubi, G. A., Matias Di Martino, J., Perciante, C. D., Carro, J., Ferrari, J. A.  
2018; 152: 29-35
- **Phase-step retrieval for tunable phase-shifting algorithms** *OPTICS COMMUNICATIONS*  
Ayubi, G. A., Duarte, I., Perciante, C. D., Flores, J. L., Ferrari, J. A.  
2017; 405: 334-342
- **Robust interferometer with external phase-shift control** *OPTICS EXPRESS*  
Ferrari, J. A., Flores, J. L., Ayubi, G. A., Frins, E.  
2017; 25 (24): 29965-29970
- **Three-dimensional shape profiling by out-of-focus projection of colored pulse width modulation fringe patterns** *APPLIED OPTICS*  
Silva, A., Flores, J. L., Munoz, A., Ayubi, G. A., Ferrari, J. A.  
2017; 56 (18): 5198-5203
- **Generalized phase-shifting algorithms: error analysis and minimization of noise propagation: erratum (vol 55, pg 1461, 2016)** *APPLIED OPTICS*  
Ayubi, G. A., Perciante, C. D., Matias Di Martino, J., Flores, J. L., Ferrari, J. A.  
2016; 55 (28): 7763
- **Generalized phase-shifting algorithms: error analysis and minimization of noise propagation** *APPLIED OPTICS*  
Ayubi, G. A., Perciante, C. D., Matias Di Martino, J., Flores, J. L., Ferrari, J. A.  
2016; 55 (6): 1461-1469
- **Optical implementation of the generalized Hough transform with totally incoherent light** *OPTICS LETTERS*  
Fernandez, A., Alonso, J. R., Ayubi, G. A., Osorio, M., Ferrari, J. A.  
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- **All-in-focus image reconstruction under severe defocus** *OPTICS LETTERS*

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- **Wrapping-free phase retrieval with applications to interferometry, 3D-shape profiling, and deflectometry** *APPLIED OPTICS*  
Perciante, C. D., Strojnik, M., Paez, G., Matias Di Martino, J., Ayubi, G. A., Flores, J. L., Ferrari, J. A.  
2015; 54 (10): 3018-3023
- **Generation of phase-shifting algorithms with N arbitrarily spaced phase-steps** *APPLIED OPTICS*  
Ayubi, G. A., Perciante, C. D., Flores, J. L., Matias Di Martino, J., Ferrari, J. A.  
2014; 53 (30): 7168-7176
- **Differential 3D shape retrieval** *OPTICS AND LASERS IN ENGINEERING*  
Matias Di Martino, J., Fernandez, A., Ayubi, G. A., Ferrari, J. A.  
2014; 58: 114-118
- **Transport of intensity equation: Validity limits of the usually accepted solution** *OPTICS COMMUNICATIONS*  
Ferrari, J. A., Ayubi, G. A., Flores, J. L., Perciante, C. D.  
2014; 318: 133-136
- **Phase retrieval from one partial derivative** *OPTICS LETTERS*  
Matias Di Martino, J., Flores, J. L., Pfeiffer, F., Scherer, K., Ayubi, G. A., Ferrari, J. A.  
2013; 38 (22): 4813-4816
- **Gradient field microscopy of unstained specimens: comment** *OPTICS EXPRESS*  
Ferrari, J. A., Ayubi, G. A.  
2013; 21 (16): 19187
- **Binary coded triangular fringes for 3-D surface-shape measurement** *APPLIED OPTICS*  
Flores, J. L., Torales, G., Ferrari, J. A., Ayubi, G., Castillo, O., Di Martino, M.  
2013; 52 (15): 3576-3582
- **Single-shot phase recovery using two laterally separated defocused images** *OPTICS COMMUNICATIONS*  
Matias Di Martino, J., Ayubi, G. A., Dalchiele, E. A., Alonso, J. R., Fernandez, A., Flores, J. L., Perciante, C. D., Ferrari, J. A.  
2013; 293: 1-3
- **Edge linking and image segmentation by combining optical and digital methods** *OPTIK*  
Flores, J. L., Ayubi, G. A., Alonso, J. R., Fernandez, A., Matias Di Martino, J., Ferrari, J. A.  
2013; 124 (18): 3260-3264
- **Binary coded linear fringes for three-dimensional shape profiling** *OPTICAL ENGINEERING*  
Ayubi, G. A., Matias Di Martino, J., Flores, J. L., Ferrari, J. A.  
2012; 51 (10)
- **Edge enhancement of color images using a digital micromirror device** *APPLIED OPTICS*  
Matias Di Martino, J., Flores, J. L., Ayubi, G. A., Alonso, J. R., Fernandez, A., Ferrari, J. A.  
2012; 51 (16): 3439-3444
- **Color encoding of binary fringes for gamma correction in 3-D profiling** *OPTICS LETTERS*  
Ayubi, G. A., Matias Di Martino, J., Alonso, J. R., Fernandez, A., Flores, J. L., Ferrari, J. A.  
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- **Incoherent optical processor for nondirectional edge enhancement of color images** *OPTICS LETTERS*  
Flores, J. L., Ayubi, G. A., Alonso, J. R., Fernandez, A., Matias Di Martino, J., Ferrari, J. A.  
2011; 36 (23): 4596-4598
- **Optical processing of color images with incoherent illumination: orientation-selective edge enhancement using a modified liquid-crystal display** *OPTICS EXPRESS*  
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● **Optimal pulse-width modulation for sinusoidal fringe generation with projector defocusing: comment** *OPTICS LETTERS*

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● **Three-dimensional profiling with binary fringes using phase-shifting interferometry algorithms** *APPLIED OPTICS*

Ayubi, G. A., Matias Di Martino, J., Alonso, J. R., Fernandez, A., Perciante, C. D., Ferrari, J. A.

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● **Pulse-width modulation in defocused three-dimensional fringe projection** *OPTICS LETTERS*

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● **Application of DVD/CD pickup optics to microscopy and fringe projection** *AMERICAN JOURNAL OF PHYSICS*

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