

## EDUCATION

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### University of Oxford

D.Phil. in Astrophysics

Oxford, United Kingdom

2017–Current

- Thesis: “*Measuring and calibrating Non-Common Path Aberrations in Adaptive Optics assisted image-slicer based spectrographs*”

### Delft University of Technology (TU Delft)

M.Sc. in Aerospace Engineering - Space Flight

Delft, Netherlands

2015–2017

- Thesis: “*Optimum design of freeform-enabled space optical instruments*”

### Technical University of Madrid (UPM)

B.Sc. in Aerospace Engineering - Science & Aerospace Technologies

Madrid, Spain

2011–2015

- Thesis: “*Microstructure and phase-equilibrium of the pseudo-ternary systems NiAl-Cr-W and NiAl-Cr-Re. Characterisation of the eutectic trough*”

## EXPERIENCE

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### OHB System AG

Optical Engineer Internship + M.Sc. Thesis

Munich, Germany

Jul 2016–Sep 2017

- Development of a Python toolbox for the design and optimisation of space optical instruments containing freeform optics for more compact and lightweight solutions.

### Faculty of Mathematics | TU Delft

Honours Programme

Delft, Netherlands

Feb 2016–Jun 2016

- Development of asynchronous parallel algorithms on the GPU for Adaptive Optics in the next generation of Extremely Large Telescopes.

### IMDEA Materials Institute

Internship + B.Sc. Thesis

Getafe, Spain

Feb 2015–Jul 2015

- Experimental design and development of advanced high temperature alloys for aerospace jet engines.

## PUBLICATIONS

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- [1] **Álvaro Menduiña-Fernández**, M. Tecza, and N. Thatte, “HARMONI - first light spectroscopy for the ELT: novel techniques for the calibration of non-common path aberrations”, in *Ground-based and Airborne Instrumentation for Astronomy VIII*, vol. 11447, SPIE, 2020, pp. 475–492.
- [2] M. Tecza, R. M. Barnsley, **Álvaro Menduiña-Fernández**, and T. Sukegawa, “Design and proto-typing of integral field units for the ELT-PCS test bench spectrograph”, in *Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation III*, vol. 10706, SPIE, 2018, pp. 731–740.
- [3] J.-B. Volatier, **Álvaro Menduiña-Fernández**, and M. Erhard, “Generalization of differential ray tracing by automatic differentiation of computational graphs”, *J. Opt. Soc. Am. A*, vol. 34, no. 7, pp. 1146–1151, Jul. 2017.

## CONFERENCES

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- **SPIE Astronomical Telescopes + Instrumentation**, Digital Forum [Poster + Proceedings] Dec 2020
- **Artificial Intelligence in Astronomy**, ESO Garching [Poster] Jul 2019
- **Machine Learning Seminar**, University of Oxford [Presentation] Jun 2019
- **Oxford Computer Science Conference**, University of Oxford [Presentation + Poster] Jun 2019
- **AO4ASTRO**, Laboratoire d'Astrophysique de Marseille [Presentation] Mar 2019
- **NYRIA**, Leiden University [Presentation] Oct 2018

## TEACHING & OUTREACH

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- **Lab Demonstrator**, Astrophysics, University of Oxford 2018 –Current  
*Demonstrating and marking AstroLabs*
- **Teacher Aerospace Engineering**, University of Cambridge Jul 2018  
*Oxbridge Academic Programs, "The Cambridge Tradition", Jesus College*

## COURSES

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- **Advanced Optical Systems Design**, Zemax Optics Studio 2018
- **Space Optics Instrument Technology**, European Space Agency 2018
- **Concurrent Engineering Workshop**, European Space Agency 2018
- **Space Optics Instrument Design**, European Space Agency 2018
- **Programming on the GPU with CUDA**, Faculty of Mathematics, TU Delft 2017

## SCHOLARSHIPS & AWARDS

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- **Santander Academic Travel Award**, Santander Universities | Oxford 2018
- **Honours Programme**, Delft University of Technology 2016
- **Research Initiation Fellowship**, IMDEA Materials Institute 2014
- **Excellent Academic Achievement**, Technical University of Madrid 2012–2014
- **Excellence Grant**, Community of Madrid 2011–2013

## SKILLS

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- **Programming:** Python, Jupyter, Pandas, PyCUDA
- **Machine Learning:** Keras, Scikit-learn, Tensorflow
- **Version Control:** Git, GitHub
- **Optical Design:** Zemax Optics Studio, ZOS API

## LANGUAGES

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- **Spanish:** Native speaker
- **English:** Bilingual proficiency
  - **TOEFL iBT**, Score: 110/120 2015
  - **CPE Cambridge**, C2 Proficiency 2011