






Siemen Burssens

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
Key Skills

Data analysis & visualisation
Statistical inference & modelling
Technical & professional writing
Presentation & communication
Project management Python
numpy/scipy/pandas/plotly/seaborn
Jupyter Notebook SQL Git/Github

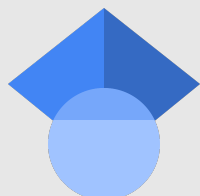
Personal

I'm interested in the delivery of insights for stakeholders of varied backgrounds by means of knowledge extraction from data sets and case studies. With my experience as a researcher and a data scientist I know how to work efficiently and autonomously in order to meet deadlines and complete project goals in a timely manner. As a result, I have the ability to learn new concepts and methods quickly, and possess strong interpersonal and presentation skills.

Interests

-  Problem solving
-  Data visualisation
-  Machine learning
-  Sustainability and SMART cities
-  Astronomy and geophysics

Profiles



Education

- 2018 – 2022 **PhD in Astronomy and Astrophysics** KU Leuven, Belgium
Thesis title: Massive star asteroseismology with TESS and K2.
Supervisors: Dr. Dominic M. Bowman, Prof. Dr. Conny Aerts
Degree obtained: 4 July 2022.
Link to thesis: <https://tinyurl.com/3dbysvrv>
- 2017 – 2018 **M.Sc. in Medical Radiation Physics** KU Leuven, Belgium
Thesis title: Knowledge-based treatment planning: a RapidPlan approach.
Supervisors: Ir. Msc. Tom Depuydt
Grade: 2:1
- 2015 – 2017 **M.Sc. in Astronomy and Astrophysics** KU Leuven, Belgium
Thesis title: Molecular analysis of oxygen-rich AGB-star V1300 Aql.
Supervisors: Prof. Dr. Leen Decin, Dr. Taissa Danilovich.
Grade: 1st
- 2012 – 2015 **Bachelors degree in Physics** KU Leuven, Belgium
with a minor in Biochemical Sciences

Professional experience

Key projects

- **H2OforAll: Increasing citizens' awareness and engagement regarding disinfection by-products and drinking water quality (2023-2024, University of Leeds).**

My role in this EU Horizon project includes using data-driven evidence to increase public awareness about disinfection by-products and engage citizens to take actions that protect water quality now and in the future. To achieve this I'm taking a two-way approach: developing a model that allows citizens to calculate their exposure and pollution profiles, and conducting a social study to determine which actions are most readily adopted and lead to overall behavioural change.

Project management Systematic literature reviews Social study design
Categorical data analysis Scientific modelling Software: Python, R, QGIS

- **MAMSIE/PARADISE: Statistical data modelling of neutron star progenitors (2020-2022, KU Leuven).**

Here, I developed up a Python-based statistical modelling framework to derive physical properties of neutron star progenitors. This included extracting data from large astronomy databases and the analyses of multiple data sets of different sources. I also performed simulations of stellar structure and evolution using high performance computing, and conducted an in-depth statistical analysis using a variety of computational methods and algorithms.

The results of this research were published as a research article in the peer-reviewed scientific journal *Nature Astronomy* (doi:10.1038/s41550-023-01978-y) .

Time-series data Multiphysics simulations High performance computing
Statistical inference Bayesian analyses Software: Python, SQL, Fortran

- **MAMSIE/PARADISE: First scientific results of the novel TESS space mission telescope (2019-2020, KU Leuven).**

In this project I set up a Python-based data processing framework to combine data sets of 98 stars from different telescopes, including data sets from the recently launched TESS space telescope. I then used the framework to deliver new evidence-backed insights into the evolution of stars more massive than our Sun.

Resulted in the publication of a research article in the peer-reviewed scientific journal *Astronomy and Astrophysics* (doi:10.1051/0004-6361/202037700).

Data extraction Time-series data Scientific computing Data visualisation
High performance computing Software: Python, SQL

Languages

Dutch

English

French

Italian

German

Spanish

Other relevant experience

- **Survey analysis to investigate AI usage by academic staff at the University of Leeds (2023-2024).**

Here I participated in the design and analysis of a survey investigating the usage, perception of risks and biases, and the training needs of academic staff regarding generative AIs (such as ChatGPT and Llama). The analysis consisted of descriptive statistics, clustering analyses, and the statistical modelling of categorical data (multiple choice questions, Likert scale data, etc.).

- **Four years of teaching in undergraduate university programs (2018-2022).**

Assistant lecturer on courses in mechanics, electrodynamics, thermodynamics, and astronomy. My duties included the development of lesson plans, hands-on exercise sessions, mentoring students, and the design, supervision and correction of exams.

- **Speaker and participant at several international conferences and seminars (2019-2022).**

This included conferences organised by the European Astronomical Society (EAS, [link](#)), and the International Astronomical Union (IAU361, [link](#)). Here, I obtained hands-on experience with proper data visualisation, presentation skills, and public speaking in front of large audiences.

- **Scientific outreach through a variety of channels (2019-2022).**

This included organising and participating in open science days at the university for young students aged 6 through 16, dedicated visits to local high schools, and writing online blogs and articles. Here, I advanced my communication and presentation skills by presenting complex topics to non-expert audiences in a comprehensive way.

- **Experimental design and on-site observations with the Mercator telescope situated on the island of La Palma, Spain (2018-2022).**

Principal investigator of HERMES observing programme 99, focused on the gathering of high-resolution spectroscopic data with the HERMES spectrograph mounted on the Mercator telescope (<http://www.mercator.iac.es>). Included two on-site solo observing runs of two weeks where I operated the telescope autonomously.

- **Member of the international IACOB project (2019-2022).**

International collaborative project focused on the analysis and gathering of high-resolution spectroscopic data sets of massive stars in the Milky way. (<http://research.iac.es/proyecto/iacob/>).

- **Member of the local organising committee of the TASC6/KASC13 Astronomy conference, Leuven, Belgium, 11-15 July 2022 (300 participants).**