

# Dr. Jurjen de Jong

Postdoctoral researcher at Leiden University

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## Profile

Radio astronomer and software developer with experience in designing data HPC pipelines for processing data from radio telescopes, and in designing and delivering commercial machine-learning-powered data solutions. Combines expertise in astronomy, data science, and software engineering to tackle large-scale scientific and industrial challenges. Also interested in studying galaxy cluster mergers and the cosmic evolution of radio-loud AGN.

## Professional Experience

<b>Software Developer (part-time)</b> , ASTRON Developing (parts of) the LOFAR VLBI calibration and imaging pipeline in collaboration with Leiden Observatory.	Jan 2025–present
<b>Radio Astronomer &amp; Postdoc</b> , Leiden Observatory PhD candidate (2021–2024), postdoctoral researcher (2025–now)	Jan 2021–present
<b>Data Scientist</b> , Matrixian Group Developing machine-learning pipelines, address validators for (inter)national postal companies, and APIs for various commercial clients.	Feb 2019–Jan 2021
<b>Astronomer Intern</b> , ESA Testing Benford’s law on stellar distances on Gaia data; resulted in A&A publication.	Sep 2018–Jan 2019
<b>Science Writer</b> , Scientias Authored popular-science articles on physics, mathematics, computing, and space engineering.	Aug 2017–Jan 2020
<b>Mechanical Engineer Intern</b> , EPPM Tunisia Automated stress-calculation workflows for lifting-lug designs.	Jun 2017–Aug 2017

## Education

<b>PhD in Radio Astronomy</b> , Leiden University (the Netherlands)	2021–2025
<b>Advanced MSc in Space Studies</b> , KU Leuven (Belgium) Including summer exchange program to National Cheng Kung University ( 國立成功大學 ) (Taiwan)	2017–2018
<b>MSc in Mathematics</b> , Ghent University (Belgium) Including Erasmus+ exchange to Uppsala University (Sweden)	2015–2017
<b>BSc in Physics</b> , Utrecht University (the Netherlands)	2013–2015
<b>BSc in Mathematics</b> , Utrecht University (the Netherlands)	2012–2015

## Selected Publications

### First-authored

- De Jong et al., “Advanced sub-arcsecond wide-field imaging pipeline with LOFAR,” submitted to MNRAS (2025)
- De Jong et al., “Unlocking ultra-deep wide-field imaging with sidereal visibility averaging,” A&A (2025)
- De Jong et al., “Into the Depths: Unveiling ELAIS-N1 with LOFAR’s deepest sub-arcsecond wide-field images,” A&A (2024)
- De Jong et al., “Cosmic evolution of FRI and FRII sources out to  $z = 2.5$ ,” A&A (2024)
- De Jong et al., “Deep study of A399–401: Application of a wide-field facet calibration,” A&A (2022)
- De Jong et al., “Benford’s law in the Gaia Universe,” A&A (2020)

### Co-authored

- Clews et al., “Radio-loud AGN morphology and host-galaxy properties in the LOFAR Two-Metre Sky Survey Data Release 2,” MNRAS (2025)
- De Rubeis et al., “Revealing the intricacies of radio galaxies and filaments in Abell 2255,” A&A (2025)
- Morabito et al., “A decade of sub-arcsecond imaging with the International LOFAR Telescope,” Ap&SS (2025)
- Shimwell et al., “LoTSS Deep Fields DR2,” A&A (2025)
- Morabito et al., “A hidden AGN population: radio luminosity functions by physical process,” MNRAS (2024)
- Pignataro et al., “Abell 0399–0401 radio bridge spectral index,” A&A (2024)
- Groeneveld et al., “The Decameter sky at sub-arcminute resolution,” Nature Astronomy (2024)
- Ye et al., “1 arcsec imaging of ELAIS-N1 at 144 MHz using LoTSS,” A&A (2024)

## Software development experience

- Co-developer of CWL workflows for performing automated data processing for high-resolution LOFAR imaging (2023-now)
- Co-developer of calibration software for radio telescopes (2021-now)
- Lead developer of Sidereal Visibility Averaging to obtain an order of magnitude speed improvements for interferometric imaging (2025)
- Lead developer of Python package with tools for data processing with LOFAR (2021-2025)
- Lead developer of Python package to move radio sources to higher redshifts (2021-2023)
- Lead developer of Python package for assessing Benford’s law (2021)
- Co-developer for Machine Learning pipeline to predict house prices in the Netherlands, as employee of Matrixian Group (2019-2021)
- Lead developer for Address Validator for PostNL and DPD, as employee of Matrixian Group (2019-2021)

## Colloquia

**Chalmers University of Technology**, Gothenburg, Sweden (2025)

**Leiden University**, Leiden, the Netherlands (2025)

**ASTRON**, Dwingeloo, the Netherlands (2025)

## Invited Talks

**NAC**, Berg en Dal, the Netherlands (2025)

**URSI**, Gran Canaria, Spain (2024)

## Contributed Talks

**OSCARS AGM**, Rome, Italy (2025)

**ADASS**, Valletta, Malta (2024)

**Teaser talk - ASTRON**, Dwingeloo, the Netherlands (2024)

**LFM**, Leiden, the Netherlands (2024)

**SPARCS**, Bologna, Italy (2024)

**SALF**, Amsterdam, the Netherlands (2023)

**LFM**, Olsztyn, Poland (2023)

**Deep field symposium**, Online (2023)

**SPARCS**, Johannesburg, South-Africa (2022)

**IAU**, Busan, South-Korea (2022)

## Teaching & Supervision

**Msc research project** – S.E. Bokhove (2025)

**Bsc research project** – V. Chakawri (2024)

**Bsc research project** – D. de Jong & Q. van Zegveld (2024)

**Summer student internship** – L. Deniaud (2024)

**Bsc research project** – A. Villarrubia-Aguilar & F.F. Vecchi (2021)

**Teaching Assistant**: “Radio Astronomy” master’s course, Leiden University (2021–2024)

## Organisational experience

**Hackathon 2025**: Main organiser for 4-day hackathon in Leiden for the LOFAR VLBI pipeline.

**LFM 2024**: Co-organised the LOFAR family meeting (150 participants).

**Stamilly meetup 2023**: Main organiser for 3-day meeting for people who stutter (40 participants).

**Stamilly meetup 2022**: Main organiser for 3-day meeting for people who stutter (40 participants).

**Co-founder Stamilly 2020**: Co-founder of the organisation Stamilly.

## Technical Skills

**Operating Systems:** Linux, Windows

**Programming Languages:** Python, Bash, R, Julia, SQL, Rust

**Database management:** MySQL, MongoDB

**Workflow/cluster management:** HPC, Slurm, CWL, Toil

**Machine learning:** scikit-learn, Keras, Tensorflow, PyTorch

**DevOps tools:** Singularity, Docker, Git

**Project management:** Scrum, Jira, Trello

**Other:** Tableau, SolidWorks, LaTeX

## Languages

**Dutch** (native)

**English** (fluent)

**German** (intermediate)

**Swedish** (basic)

## Awards

### Computing grants

NWO computing grant (2024) – 5 million CPU core hrs + 500 TB disk space + 250 TB tape

SURF computing grant (2023) – 1 million CPU core hrs + 200 TB disk space

SURF computing grant (2022) – 1 million CPU core hrs + 200 TB disk space

### Scholarships

Leids Kerkhoven-Bosscha Fonds travel grant (2025)

Leids Kerkhoven-Bosscha Fonds travel grant (2021)

Flanders Trainee award for international internships (2018)

Scholarship from Leuven University for exchange to Taiwan (2017)

Erasmus+ scholarship for exchange to Sweden (2016)

### Other activities

Co-Founder & Chair, Stamily – non-profit for people who stutter, since 2018

Science communication through blogs on Towards Data Science and Scientias (2019–2021)