

Dr. Jurjen de Jong

Postdoctoral researcher at Leiden University

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Profile

Radio astronomer and software developer with extensive experience in designing data pipelines for HPC clusters for 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

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

Education

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

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

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)

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)

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 program award (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)