Dr. Jurjen de Jong

Postdoctal researcher at Leiden University

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Profile

Radio astronomer and software engineer with expertise in developing high-performance computing (HPC) pipelines for processing data from radio telescopes to study galaxy cluster mergers and the cosmic evolution of radio-loud AGN. Combines expertise in astronomy, data science, machine learning, and software engineering to tackle large-scale scientific and industrial challenges.

Professional Experience

Radio Astronomer & Software Developer, ASTRON — Jan 2025–present
Developing (parts of) the LOFAR VLBI calibration and imaging pipeline in collaboration with Leiden Observatory.

Radio Astronomer, Leiden Observatory — Jan 2021–present
PhD candidate (2021–2024), postdoctoral researcher (2025–now)
Studying radio galaxy evolution, pre-merging galaxy clusters, and developing the LOFAR-VLBI pipeline.

Visiting Researcher, Durham University — Nov 2025–Dec 2025
Working on the data release of the deepest ever radio image and the development of the LOFAR VLBI pipeline.

Data Scientist, Matrixian Group — Feb 2019–Jan 2021
Developing machine-learning pipelines, address validators for (inter)national postal companies, and APIs for various commercial clients.

Astronomer Intern, ESA — Sep 2018–Jan 2019
Testing Benford's law on stellar distances on Gaia data; resulted in A&A publication.

Science Writer, Scientias — Aug 2017–Jan 2020
Authored popular-science articles on physics, mathematics, computing, and space engineering.

Mechanical Engineer Intern, EPPM Tunisia — Jun 2017–Aug 2017
Automated stress-calculation workflows for lifting-lug designs.

Education

PhD in Radio Astronomy, Leiden University (the Netherlands) — 2021–2025

Advanced MSc in Space Studies, KU Leuven (Belgium) — 2017–2018
Including summer exchange program to National Cheng Kung University (國立成功大學) (Taiwan)

MSc in Mathematics, Ghent University (Belgium) 2015–2017
Including Erasmus+ exchange to Uppsala University (Sweden)

BSc in Physics, Utrecht University (the Netherlands) 2013–2015

BSc in Mathematics, Utrecht University (the Netherlands) 2012–2015

Propedeutics in Mechanical Engineering, Avans Breda (the Netherlands) 2011–2012

Selected Publications

First-authored

De Jong et al., "*Scalable and robust wide-field facet calibration with LOFAR's longest baselines*," *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., "*The LOFAR Two-metre Sky Survey: Deep Fields Data Release 2: I. The ELAIS-N1 field*," *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 Benfordś 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

CORTEX annual meeting, Leiden, the Netherlands (2025)

IVTW, Gothenburg, Sweden (2025)

LFM, Paris, France (2025)

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)

CORTEX annual meeting, Utrecht, the Netherlands (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 – E. Woest (2026)

Summer student internship – M.S. Abay (2025)

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

ISA World Congress 2025: Volunteer during world congress for people who stutter in Rovaniemi (160 participants).

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).

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

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

Co-founder Stamily 2020: Co-founder of the organisation Stamily.

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 association for people who stutter (2018-present)

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