Rik J.G. Nuijten

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About Me

Over 5 years experience in drone-based remote sensing, machine learning and data fusion for the assessment and management of forest ecosystems. Produced related best practices guides and science that continues to be operationalized. Has instructed and created materials for students in post-secondary education related to geospatial data analysis and data science.

Work and Research Interests

Remote Sensing	Photogrammetric & LiDAR point clouds, drone datasets, satellite imagery, field sampling
Data Science	Data visualization, predictive modelling, unsupervised learning, object detection, spatial pattern analysis
Applications	Ecosystem assessment (*e.g.*, plant structure & community mapping), precision agriculture

Education

PhD – Remote Sensing in Forestry *Vancouver, BC, Canada*
Faculty of Forest Resources Management (UBC) *May 2019 — June 2024*

Explored the capabilities, limitations, and opportunities of drone-based remote sensing in assessing ecosystem recovery, with a specific focus on digital aerial photogrammetry.

- The first two chapters have been published in peer-reviewed journals, while the last two have recently been submitted for review.
- Contributed to creating a best practice guide for acquiring 3D imagery using drones.

MSc – Geographical Information Management and Application *Utrecht, The Netherlands*
Utrecht University *September 2016 — December 2018*

Thesis focussed on drone imagery and the use of object-based image analysis for measuring leafy vegetable crop productivity, which was published in a peer-reviewed journal.

- Participated in extracurricular courses at Wageningen University: Data Management (INF 21306), Python Programming (INF 22306), and Big Data (INF 33806).
- Awarded *cum laude* and completed an internship.

BSc – Human Geography and Spatial Planning *Utrecht, The Netherlands*
Utrecht University *September 2013 — July 2016*

- Pursued a minor in Geo Information at the Vrije Universiteit Amsterdam.
- Completed an internship.

Experience

Teaching Assistant *Vancouver, BC, Vancouver*
Faculty of Forest Resources Management (UBC) *June 2019 — November 2022*

Course material development & supervised applied exercises to guide student knowledge of remote sensing concepts.

- Developed graduate labs for Applications in Data Science in Forest Resources (FRST 505).
- Guest lectured in Geospatial Data Analysis with Python (GEM 530).
- Guided graduate students in research projects involving geospatial information, as part of Project Proposal Development and Proof of Concept (FCOR 599).
- Supervised applied exercises in Observing the Earth from Space (CONS 127) and Geospatial Data Analysis with Python (GEM 530).

Research Intern *Vancouver, BC, Vancouver*
Faculty of Forest Resources Management (UBC) *September 2018 — March 2019*

Investigated the effects of seasonal timing of drone image collection on individual tree detection and mensuration, which was published in a peer-reviewed journal.

- Attended the course Forestry in British Columbia (FRST 547).

Data Analyst *Amsterdam, The Netherlands*
CBRE *December 2017 — July 2018*

Prepared data and analysis for real estate market outlook reports.

GIS Intern *De Bilt, The Netherlands*
SWECO *November 2015 — June 2016*

Developed Geoweb (*i.e.*, Geocortex Essentials) demo applications.

Volunteering and Coaching

Indoor Cycling Instructor *Utrecht, The Netherlands*
Newstyle Healthcenters *December 2017 — July 2018*

Bootcamp Instructor *Utrecht, The Netherlands*
Utrechtse Studentenroeivereniging Triton *January 2016 — July 2017*

Applied Skills

Data Science	Scripting in Python & R, scikit-learn, various GIS software
Remote Sensing	Photogrammetric processing, point cloud processing, multispectral image processing, drone data collection, model training data collection

Soft Skills

Communication	Effective graphic design, reporting, and presentation
Languages	English, Dutch
Methodological	Analytical, creative problem-solving, organized
Personal	Accountable, adaptable, enthusiastic, reliable, respectful
Social	Conflict resolution, inclusive, positive, team-building

Conferences and Seminar Experience

- Seminar Talk: Surveying keystone plant communities and structures following ecological restoration using drone imagery (9 March 2023, Scion)
- Conference Talk: Mapping vegetation structure, following early regeneration in open boreal forests, using remotely piloted aerial systems (RPAS) based imaging (2 September 2022, ForestSAT)
- Webinar Talk: Monitoring environmental impacts through remote sensing: Innovations and advancements (17 February 2022, Canadian Conservation and Land Management (CCLM) Knowledge Network)

Guides and Peer-Reviewed Publications

Chadwick, AJ, TRH Goodbody, CW Bater, LA Martens, RJG Nuijten, S Smith-Tripp, S Grubinger, et al. 2022. "Best Practice Guide to Acquisition of 3D Imagery from (RPAS)." Vancouver, BC, Canada: Department of Forest Resource Management, Faculty of Forestry, University of British Columbia. https://irss-ubc.github.io/GOA_BPG_PUB/.

Nuijten, Rik JG, Nicholas C Coops, Tristan RH Goodbody, and Gaetan Pelletier. 2019. "Examining the Multi-Seasonal Consistency of Individual Tree Segmentation on Deciduous Stands Using Digital Aerial Photogrammetry (DAP) and Unmanned Aerial Systems (UAS)." *Remote Sensing* 11 (7): 739–57.

Nuijten, Rik JG, Nicholas C Coops, Cindy E Prescott, and Theberge Dustin. 2024. "Informing Reclamation Success in Forested Landscapes Using Drone-Based Plant Community Assessments: Enhancing Vegetation Assessments and Reference Site Selection." *Environmental Management* In review.

Nuijten, Rik JG, Nicholas C Coops, Dustin Theberge, and Cindy E Prescott. 2024. "Estimation of Fine-Scale Vegetation Distribution Information from RPAS-Generated Imagery and Structure to Aid Restoration Monitoring." *Science of Remote Sensing* 9: 100114.

Nuijten, Rik JG, Nicholas C Coops, Catherine Watson, and Dustin Theberge. 2021. "Monitoring the Structure of Regenerating Vegetation Using Drone-Based Digital Aerial Photogrammetry." *Remote Sensing* 13 (10): 1942.

Nuijten, Rik JG, Nicholas C Coops, Hisham Zerriffi, and Theberge Dustin. 2024. "Advances in Drone-Based Remote Sensing for Restoration Assessments: Information Uncertainty, Complexity, and Cost-Effectiveness." *Ecological Applications* In review.

Nuijten, Rik JG, Lammert Kooistra, and Gerlinde B De Deyn. 2019. "Using Unmanned Aerial Systems (UAS) and Object-Based Image Analysis (OBIA) for Measuring Plant-Soil Feedback Effects on Crop Productivity." *Drones* 3 (3): 54.

References

References available upon request.