

Inian Moorthy, Ph.D.

Nationality: Canadian

Date of Birth: 19/12/1979

WORK EXPERIENCE

04/2015 – current

Research Scholar

*International Institute for Applied Systems Analysis (IIASA)
Laxenburg, Austria*

Coordinate within the Center for Earth Observation and Citizen Science (EOCS) to build inventive projects in the areas of Earth Observation and Citizen Science as applied to Land Use and Land Cover Monitoring. Serve as the Senior Project Manager of the large-scale collaborative Horizon 2020 project LandSense, aimed at creating an EU-scale Citizen Observatory and Innovation Marketplace. Co-create competitive research proposals and grants, as well as raise awareness of EOCS activities at international conferences and symposia.

12/2013 – 01/2015

Research Manager

*SYNYO GmbH
Vienna, Austria*

Collaborate with an interdisciplinary team of researchers and software engineers across Europe, to develop modern technology solutions which address a range of key societal challenges (e.g. climate change, disaster resilience, urban governance, etc.). Co-managed two large scale Seventh Framework Programme (FP7) collaborative projects in the field of open data and collaboration platforms. Generate numerous high-quality analytical reports and proposals for various research and development programmes including Horizon 2020.

02/2011 - 02/2013

Postdoctoral Fellow (Marie Curie Seventh Framework)

*Institute of Sustainable Agriculture (IAS), Spanish Research Council
Cordoba, Spain*

Developed novel methods and algorithms for determining temporal changes in agricultural crops in Southern Spain from high resolution multi/hyperspectral and thermal imagery. The project specialized in the use of ground-based laser scanning systems and unmanned aerial vehicle (UAV) technology for precision monitoring and management of olive crops.

04/2011 - 02/2013

Lecturer

*Assessment and Restoration of Agricultural & Forestry Systems, University of Cordoba
Course: Application of Remote Sensing for Forest Resource Management
Cordoba, Spain*

As part of a European network of researchers in remote sensing, I gave technical seminars to postgraduate students and forestry professionals. The lecture series are now part of *e-learning forest*, an on-line platform of specialized training courses for researchers and entrepreneurs in the field of forest management and conservation.

07/2009 - 12/2010

Research Assistant

*Geospatial Information & Communication Technology Lab (GEOICT), York University
Toronto, Canada*

Worked with a collaborative network of professors, students and industry professionals on monitoring vegetation conditions in Ontario, Canada. Local to regional-scale forest health monitoring systems were established using aerial and ground-based imaging instruments.

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09/2002 - 06/2009 **Teaching Assistant**
*Department of Earth, Space Science & Engineering, York University
Toronto, Canada*

My responsibilities included preparing training material and teaching courses on environmental technology and digital imaging. On behalf of my department, I coordinated with the Center for Support and Teaching at York University to improve practices in teaching and learning, through workshops and discussion panels.

EDUCATION

09/2004 - 06/2009 **Ph.D. Earth and Space Science**
Department of Earth, Space Science & Engineering
York University, Toronto, Canada
Dissertation: Tree Crown Structural Characterization: A Study Using Terrestrial Laser Scanning and 3D Radiative Transfer Modeling

09/2001 - 06/2004 **M.Sc. Earth and Space Science**
Department of Earth, Space Science & Engineering
York University, Toronto, Canada
Thesis: Chlorophyll Content Retrieval of Boreal Conifers using Hyperspectral Remote Sensing

09/1997 - 04/2001 **B.Sc. Honors Environmental Earth Sciences**
Department of Earth & Atmospheric Sciences
University of Alberta, Edmonton, Canada
Thesis: Establishment of a Biological Corridor between the Arenal-Monteverde Protected Area and the Gulf of Nicoya, Costa Rica

PROJECTS

2017 - current WeObserve – An Ecosystem of Citizen Observatories for Environmental Monitoring
Horizon 2020 - Climate Action, environment, resource efficiency and raw materials

2017 - current Restore+ - Addressing Landscape Restoration on Degraded Land in Indonesia and Brazil
ICI – German Climate Initiative

2016 - current LandSense - A Citizen Observatory and Innovation Marketplace for Land Use and Land Cover Monitoring
Horizon 2020 - Climate Action, environment, resource efficiency and raw materials

2014 - 2015 OpenDataMonitor - Monitoring, Analysis, and Visualisation of Open Data Catalogues, Hubs and Repositories
Seventh Framework Programme (FP7) - Information & Communication Technologies

2014 - 2015 Graffolution - Awareness and Prevention Solutions against graffiti vandalism in public areas and transport
Seventh Framework Programme (FP7) - Security

2011 - 2013 Precision agricultural crop monitoring using laser scanning and unmanned aerial vehicles
Seventh Framework Programme (FP7) - Marie Curie Actions

2009 - 2011 Vegetation characterization for precision forestry and environmental protection
Natural Sciences & Engineering Research Council of Canada

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- 2004 - 2009 3D canopy measurement and modeling
Canadian Foundation for Innovation
- 2002 - 2005 Imaging spectroscopy: Developments for renewable & mineral resources
National Centres of Excellence, Geomatics for Informed Decisions
- 2001 - 2002 Hyperspectral indicators of forest condition: Jack Pine
Canadian Space Agency

AWARDS

- 2011 Marie Curie Seventh Framework Program International Incoming Fellowship
- 2009 Canadian Remote Sensing Society Best Ph.D. Thesis Award
- 2009 Natural Sciences & Engineering Research Council (NSERC) Visiting Fellowship in
Canadian Government Laboratories
- 2007 Teaching Development Graduate Assistantship - York University
- 2005 Natural Sciences & Engineering Research Council (NSERC) Postgraduate Scholarship

SELECTED PUBLICATIONS

- 2019 Moorthy I, See L, Batič M, Matheus A, Milčinski G, & Fritz S (2019). The LandSense Engagement Platform: Connecting citizens with earth observation data for Land Use and Land Cover Monitoring. In: Living Planet Symposium 2019, 13-17 May 2019, Milan, Italy.
- 2019 Lesiv, M., Laso Bayas, J.C., See, L., Dürauer, M., Dahlia, D., Durando, N., Hazarika, R. et al. Estimating the Global Distribution of Field Size using Crowdsourcing. *Global Change Biology* 25 (1): 174-186
- 2019 Fritz S, See L, Bayas JCB, Waldner F, Jacques D, Becker-Reshef I, Whitcraft A, Baruth B, et al. A comparison of global agricultural monitoring systems and current gaps. *Agricultural Systems* 168: 258-272.
- 2018 Laso Bayas JC, Moorthy I, Sturn T, Karner M, Perger C, Fraisl D, Domian D, Gardeazabal A, et al. (2018). Citizen Scientists Monitoring the Environment: The Latest Apps from IIASA. In: Citizen Observatories for natural hazards and Water Management, 27-30 November 2018, Venice, Italy.
- 2018 Moorthy I, See L, Batic M, & Matheus A (2018). The LandSense Engagement Platform: Connecting citizens with earth observation data to promote environmental monitoring. In: The ESA Earth Observation Week, 12-16 November, 2018, Frascati, Italy.
- 2018 Fraisl D, Fritz S, See L, McCallum I, & Moorthy I (2018). Citizen Science & SDGs: Opportunities, Challenges, Recommendations. In: Eye on Earth Summit, 22-24 October 2018, Mina A'Salam, Madinat Jumeriah, Dubai.
- 2018 Olteanu-Raimond A-M, Jolivet L, Van Damme M-D, Royer T, Fraival L, See L, Sturn T, Karner M, et al. (2018). An Experimental Framework for Integrating Citizen and Community Science into Land Cover, Land Use, and Land Change Detection Processes in a National Mapping Agency. *Land* 7 (3): p. 103.
- 2018 Danylo O, Moorthy I, Sturn T, See L, Laso Bayas J-C, Domian D, Fraisl D, Giovando C, et al. (2018). The Picture Pile Tool for Rapid Image Assessment: A Demonstration using Hurricane Matthew. *ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences IV-4*: 27-32.

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- 2018 Wannemacher K, Birli B, Sturn T, Stiles R, Moorthy I, See L, & Fritz S. Using Citizen Science to Help Monitor Urban Landscape Changes and Drive Improvements. *Journal for Geographic Information Science-GI_Forum*.
- 2018 See L, Fritz S, Moorthy I, Danylo O, van Dijk M, & Ryan B. Using Remote Sensing and Geospatial Information for Sustainable Development. In: *From Summits to Solutions: Innovations in Implementing the Sustainable Development Goals*. Eds. Desai, R.M., Kato, H., Kharas, H. & McArthur, J.W., pp. 172-198 Brookings Institution Press. ISBN 9780815736639
- 2018 Lesiv M, Fritz S, Laso Bayas JC, Dürauer M, Domian D, See L, McCallum I, Danylo O, et al. Global Field Sizes Dataset for Ecosystems Modeling. In: *European Geosciences Union General Assembly 2018, 9-13 April 2018, Vienna, Austria*.
- 2018 Moorthy I, Fritz S, See L, Wehn U, Hemment D, Pau JM, Tsertou A, Vohland K, et al. WeObserve: An Ecosystem of Citizen Observatories for Environmental Monitoring. In: *European Geosciences Union General Assembly 2018, 9-13 April 2018, Vienna, Austria*.
- 2018 Moorthy I, Sturn T, Fraisl D, Karner M, Laso Bayas JC, See L, & McCallum I. FotoQuest Go: A citizen science tool for in-situ land use and land cover monitoring. In: *European Geosciences Union General Assembly 2018, 9-13 April 2018, Vienna, Austria*.
- 2018 Lesiv M, See L, Laso Bayas JC, Sturn T, Schepaschenko D, Karner M, Moorthy I, McCallum I, et al. Characterizing the Spatial and Temporal Availability of Very High-Resolution Satellite Imagery for Monitoring Applications. *Land 7 (4)*: p. 118.
- 2018 Foody G, See L, Fritz S, Moorthy I, Perger C, Schill D, & Boyd D. Increasing the Accuracy of Crowdsourced Information on Land Cover via a Voting Procedure Weighted by Information Inferred from the Contributed Data. *ISPRS International Journal of Geo-Information 7 (3)*: p. 80.
- 2018 McCallum I, See L, Sturn T, Salk C, Perger C, Dürauer M, Karner M, Moorthy I, et al. Engaging Citizens in Environmental Monitoring via Gaming. *International Journal of Spatial Data Infrastructures Research 13*: 15-23.
- 2017 Laso Bayas JC, Lesiv M, Waldner F, Schucknecht A, Dürauer M, See L, Fritz S, Fraisl D, et al. A global reference database of crowdsourced cropland data collected using the Geo-Wiki platform. *Scientific Data 4*: e170136.
- 2017 Aleksandrov M, Batic M, Milcinski G, See L, Perger C, Moorthy I, & Fritz S. Crowdsourcing EO datasets to improve cloud detection algorithms and land cover change. In: *Earth Observation Open Science 2017 Conference, 25-28 September 2017, Frascati, Italy*.
- 2017 Moorthy I, See L, Fritz S, McCallum I, Perger C, Dürauer M, Dresel C, Sturn T, et al. Crowd-driven tools for the calibration and validation of Earth Observation products. In: *Earth Observation Open Science 2017 Conference, 25-28 September 2017, Frascati, Italy*.
- 2017 See L, Laso Bayas JC, Schepaschenko D, Perger C, Dresel C, Maus V, Salk C, Weichselgartner J, et al. LACO-Wiki: A New Online Land Cover Validation Tool Demonstrated Using GlobeLand30 for Kenya. *Remote Sensing 9 (7)*: e754.

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- 2017 Fritz S, See L, Perger C, McCallum I, Schill C, Schepaschenko D, Duerauer M, Karner M, et al. A global dataset of crowdsourced land cover and land use reference data. *Scientific Data* 4: p. 170075.
- 2017 Moorthy I, Fritz S, See L, & McCallum I (2017). LandSense: A Citizen Observatory and Innovation Marketplace for Land Use and Land Cover Monitoring. In: European Geosciences Union (EGU) General Assembly 2017, 23–28 April 2017, Vienna, Austria.
- 2017 Danylo O, Sturn T, Giovando C, Moorthy I, Fritz S, See L, Kapur R, Girardot B, et al. Picture Pile: A citizen-powered tool for rapid post-disaster damage assessments. In: European Geosciences Union (EGU) General Assembly 2017, 23–28 April 2017, Vienna, Austria.
- 2016 See L, Dunwoody A, Laso Bayas J C, Moorthy I, McCallum I, Fritz S, Jacques D, & Waldner F. Global Agricultural Monitoring Systems: Current Gaps and Possible Solutions. In: Global Land Project 3rd Open Science Meeting (GLPOSM16), 24-27 October 2016, China National Convention Center, Beijing, China.
- 2016 McCallum, I., Liu, W., See, L., Mechler, R., Keating, A., Hochrainer-Stigler, S., Mochizuki, J., Fritz, S., Dugar, S., Arestegui, M., Szoenyi, M., Laso Bayas, J.C., Burek, P., French, A. and Moorthy, I. 2016. *Technologies to Support Community Flood Disaster Risk Reduction*. *International Journal of Disaster Risk Science*, 7 (2), 198-204.
- 2016 Hemment, D., Amditis, A., Fritz, S., Wehn, U., Moorthy, I. and Tsertou, A. 2016. *The Next Generation Citizen Observatories*. In: The First International ECSA Citizen Science Conference 2016, May 19 – 21, 2016, Berlin, Germany.
- 2016 Moorthy, I., Fritz, S., See, L., McCallum, I. and Laso Bayas, J. C. 2016. *LandSense: A Citizen Observatory and Innovation Marketplace for Land Use and Land Cover Monitoring*. In: The First International ECSA Citizen Science Conference 2016, May 19 – 21, 2016, Berlin, Germany.
- 2016 Laso-Bayas, J.C., See, L., Fritz, S., Sturn, T., Karner, M., Perger, C., Dürauer, M., Mondel, T., Domian, D., Moorthy, I., McCallum, I., Shchepaschenko, D., Kraxner, F. and Obersteiner, M. 2016. *Assessing the quality of crowdsourced in-situ land-use and land cover data from FotoQuest Austria application*. In: European Geosciences Union (EGU) General Assembly 2016, 17–22 April 2016, Vienna, Austria.
- 2016 See, L., McCallum, I., Liu, W., Keating, A., Hochrainer-Stigler, S., Mochizuki, J., Fritz, S., Dugar, S., Arestegui, M., Szoenyi, M., Laso-Bayas, J.C., Burek, P., French, A. and Moorthy, I. 2016. *The potential of crowdsourcing and mobile technology to support flood disaster risk reduction*. In: European Geosciences Union (EGU) General Assembly 2016, 17–22 April 2016, Vienna, Austria.
- 2015 Fritz, S., See, L., Moorthy, I., McCallum, I., Perger, C., Shchepaschenko, D., Lesiv, M., Shvidenko, A., Salk, C., Dürauer, M., Karner, M., Sturn, T., Dresel, C., Domian, D., Dunwoody, A., Kraxner, F. and Obersteiner, M. 2015. *The Role of Citizen Science and Crowdsourcing Tools in Supporting Systems Analysis at IIASA*. In: Systems Analysis 2015 - A Conference in Celebration of Howard Raiffa, 11 -13 November, 2015, Laxenburg, Austria.
- 2011 Moorthy, I., Miller J.R., Berni J.A.J., Zarco-Tejada, P., Hu B., Chen J. 2011. *Field characterization of olive (Olea europaea L.) tree crown architecture using terrestrial laser scanning data*. *Agricultural and Forest Meteorology*, 151, 204-214.

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- 2010 Moorthy, I., Miller, J.R., Berni, J.A.J, Zarco-Tejada, P.J., North, P., Rosette, J. *Tree Crown Architecture of Discontinuous Canopies from Airborne and Ground-based Laser Scanning Data*. Third Recent Advances in Quantitative Remote Sensing, Torrent, Spain.
- 2008 Moorthy, I., Miller, J.R., Hu, B., Chen, J., Li, Q. 2008. *Retrieving crown leaf area index from an individual tree using ground-based LiDAR data*. Canadian Journal of Remote Sensing, 34 (3), 320-332.
- 2008 Moorthy, I., Miller, J.R., Noland, T.L. 2008. *Estimating chlorophyll concentration in conifer needles with hyperspectral data: An assessment at the needle and canopy level*. Remote Sensing of Environment. 112:6, 2824-2838.
- 2007 Moorthy, I., Miller, J.R., Berni, J.A.J, Zarco-Tejada, P.J., Li, Q. Extracting tree crown properties from ground-based scanning laser data. IEEE International Geoscience and Remote Sensing Symposium, IGARSS '07, Barcelona, Spain, ISBN: 978-1-4244-1211-2.
- 2006 Moorthy, I., Miller, J.R., Berni, J.A.J, Hu, B.,Zarco-Tejada, P. 2006.Radiative Transfer Modeling of Open-Canopy Tree Crops Using Hyperspectral Imagery and LiDAR. Second Recent Advances in Quantitative Remote Sensing, Valencia, Spain, ISBN: 84-370-6533-
- 2003 Moorthy, I., Miller, J., Noland, T.L., Nielsen, U., Zarco-Tejada, P.J. *Chlorophyll Content Estimation of Boreal Conifers using Hyperspectral Remote Sensing*. IEEE International Geoscience and Remote Sensing Symposium, Toulouse, France, ISBN: 0-7803-7929-2.
- 2002 Sanchez-Azofeifa, G.A., Rivard, B., Calvo, J., Moorthy, I. *Dynamics of tropical deforestation around national parks: Remote sensing of forest change on the Osa peninsula of Costa Rica*. Mountain Research and Development. 22:4, 352-358.

AREAS OF SPECIALIZATION

Multisensor Image Collection/Processing (multi/hyperspectral, thermal, laser)
Forestry/Agricultural Monitoring
Interdisciplinary Research Collaboration
Analytical & Proposal Writing
Project Management/Coordination/Budgeting
Stakeholder Consultation
Science Communication

TECHNICAL SKILLS

Software Windows O/S, Mac O/S, Microsoft Office, Adobe Photoshop, Adobe Lightroom

Remote Sensing ENVI, ERDAS Imagine, PCI Geomatica, Innovmetric Polyworks, FARO Scene, LEICA Cyclone, ARCGIS, QGIS

LANGUAGE SKILLS

English Mother tongue
Spanish Good knowledge
German Basic knowledge
French Basic knowledge