

## ***Abdul Qadir***

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## ***Summary of Qualifications and Skills***

Geospatial Data Science specialist with seven years work experience in research and applications based projects. I use multi-scalar satellite images, machine learning algorithms, Geographical Information System (GIS) tools and field surveys to investigate crop responses to weather variability on small farm holders, crop mapping forest degradation, forest biomass estimation and flood management. My main expertise is in Polarimetric SAR data analysis for crop and forest monitoring.

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## ***Education***

M.S. in **Data Science**, University of Delaware, USA. (2018-2020)

- **Major Subjects:** Machine Learning, Regression Analysis, Time Series Analysis

Bachelor of Technology in **Physical Sciences**, Indian Institute of Space Science and Technology (IIST), India.  
(2008-2012)

- **Major Subjects:** Remote Sensing, Earth Sciences
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## ***Work Experience***

**Research Assistant (RA), University of Delaware, USA** (August, 2018 – Current)

I am working on a project “Study of weather variability on small farm holders using Geospatial tools”. This research is focused on understanding how nature and human-induced phenomenon are affecting the small farm holders in tropical regions and the implications of changing climatic conditions on global food security and agriculture sustainability.

**Scientist, North Eastern Space Applications Centre (NESAC), ISRO, India** (Sept, 2012 – Aug, 2018)

My major work was in the field of Synthetic Aperture Radar (SAR) and Unmanned Aerial Vehicle (UAV) Remote Sensing for natural resource and disaster management studies. Projects, in which I contributed are crop productivity and acreage, crop damage, drought monitoring, forest biomass mapping, flood inundation, embankment breach monitoring, time series data analysis for land use change studies etc.

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## ***Achievements and Awards***

- 1<sup>st</sup> prize for the ESRI-ISI poster competition organized during World Statistical Congress in August 2019 at Kuala Lumpur Malaysia.
  - Research work presented in AGU-2018 featured in NASA Landsat Science website (2018) (<https://landsat.gsfc.nasa.gov/watching-river-islands-grow-on-the-brahmaputra/>)
  - Principal Investigator (PI) for JAXA's Alos-2 6th Research Announcement, PI Number: 3378. (upto Aug, 2018)
  - Second prize for the paper titled “Utility of model based scattering power decomposition for LULC features extraction using PolSAR data, (2014), at ICMARS-2014 (a conference for Radar and signal processing), India.
  - Full assistantship for the Master’s degree funded by University of Delaware, Department of Geography, 2018-2020.
  - Full assistantship for the four years’ bachelor degree funded by Department of Space, Govt. of India (2008-2012).
  - Paper "Mineralogical mapping of Tsiolkovsky crater in the lunar far side using Hyperspectral analysis" published in the book "Population Dynamism and Resource Utilization", Academic Publication 2015.
  - Third prize on the event of Astro reflections in the annual technical and astronomy festival, 2011 at IIST.
  - First prize in the Astronomy quiz during college technical fest in 2012.
  - First prize for the Hindi Poem recitation during Hindi Fortnight Celebration from 31st Aug-14th Sept-2017 at NESAC.
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## *Selected Publications*

- **Abdul Qadir**, Pinki Mondal, “Synergistic use of optical and SAR imagery for improved mapping of monsoon crops for small-scale farmers”, Remote Sensing. (in preparation).
- **Abdul Qadir**, Pinki Mondal, “A novel machine learning based approach to generate dynamic monsoon crop mask for small-scale farms in tropical regions using a combination of radar and optical satellite data”, AGU Fall meeting -2019 (submitted).
- P. Mondal, McDermid, S., **Abdul Qadir**, et al. “A reporting framework for Sustainable Development Goal 15: Multi-scale monitoring of forest degradation using MODIS, Landsat and Sentinel data” Remote Sensing of Environment, November-2018 (under review).
- T.Sivasankar, **Abdul Qadir** et al., “Estimation of Above Ground Biomass Using Support Vector Machines and ALOS/PALSAR Data”, Vietnam Journal of Earth Sciences 41 (2), 95-104, 2019.
- B.K. Handique, **A. Q. Khan**, et al. “Crop discrimination using multispectral sensor onboard UAV”, “**Special Issue on Remote Sensing**”, Journal of National Academy of Sciences India, November, 2017. (Springer)
- **Md. Abdul. Q. Khan**, et al. “Crop discrimination based on spectral, spatial and height variation using UAV” Asian Conference of Remote Sensing (ACRS), New Delhi, October 23-27, 2017.
- Junaid Lone, **Abdul Qadir**, et al., "Influence of slope aspect on above ground biomass estimation using Alos-2 data", International Journal of Science and Research(IJRS), Volume 6 Issue 6, June 2017.
- B. K. Handique, **Abdul Qadir**, et al., "Rapid assessment of boro paddy infestation by brown plant hopper in Morigaon district, Assam, India using unmanned aerial vehicle", Current Science, Vol. 111, No. 10, 25 November 2016.
- **Md. Abdul. Q. Khan**, et al. "Study of discrimination of rice cultural types using multi-temporal, C-band RISAT-1 SAR data in Morigaon district, Assam", ISG-ISRS/ISPRS National Symposium on Geomatics for Digital India, on December 16-18, 2015, Jaipur, India.
- **Md. Abdul Qadir**, et al., “Utility of model based scattering power decomposition for LULC features extraction using PolSAR data, (2014) , Proceedings of 10th International Conference on Microwaves, Antenna, Propagation & Remote Sensing, ICMARS-2014, Jodhpur, India, 9-12th December,2014. Pg: 271-276. Paper ID - ICMARS 14436. **(2nd best paper award)**
- K.M Sreejith, Kuntala Bhusan, **M. A. Qadir Khan**, et al., "RISAT SAR Data Utilization for Earthquake Deformation Studies" in RISAT-Utilization Programme, Space Applications Centre (SAC), ISRO, Ahmedabad.
- **Md. Abdul Qadir**, et al., “Mineralogical mapping of Tsiolkovsky crater in the lunar far side using Hyperspectral analysis”(2012), International Conference on "Population Dynamism and Sustainable Resource Development, March 25-27, 2012, Aligarh Muslim University(AMU), Aligarh, India.

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## *Research Projects (As a team member)*

- Developing monsoon crop mapping methods using optical and radar data (2018-present)
- Monitoring forest degradation in South Asia using multi source satellite data (2018)
- Identification and mapping of stable river islands (chars) in Brahmaputra using Google Earth Engine (GEE) (2018)
- Crop phenology study using multispectral(Sentinel-2), SAR (Sentinel-1) and UAV data (2016 -2018)
- Forest biomass mapping over undulating terrain of North East India using Alos-2 Palsar satellite data (2016-2018)
- Assessment, Development and Management of area under Mulberry plantation in Major Sericulture Districts of West Bengal using Geospatial Techniques. (2015-2017)
- Remote Sensing based rice acreage and yield estimation by integrating Crop Cutting Experiment (CCE) (2014-2015)
- Assessment and monitoring of river embankment breach locations (2014-2015)
- Winter rice acreage estimation in Nagaon Assam using satellite remote sensing and ground surveys (2013-2014)
- SAR data utilization for deformation studies in Shillong plateau (2012-2013)
- Developing model for multi component polarimetric scattering decomposition (2012, graduation thesis project)
- Hyperspectral analysis of Tsiolkovsky Crater on the Lunar far side using Chandrayaan -1, M<sup>3</sup> data.

### *Invited Talks / Presentations*

- Basic of UAV data processing and analysis. (Pre-symposium tutorial, ISG-ISRS Seminar on Advances in Remote Sensing and GIS on 9th May, 2018)
  - UAV data processing for agriculture applications. (GEOGLAM, Pre-Symposium tutorial, Asian Conference of Remote Sensing on 22nd October, 2017)
  - Principles and Applications of Microwave Remote Sensing, Department of Geological Sciences, Gauhati University, 10<sup>th</sup> Dec, 2016.
  - Microwave Remote Sensing and its applications, at National workshop on Remote Sensing and GIS organized by Department of Computer Science, Gauhati University, 24-30<sup>th</sup> Oct 2016.
  - Principles of Microwave Remote Sensing, University of Science, Technology & Management (USTM), Meghalaya, 15<sup>th</sup> July, 2016.
  - SAR data utilization for deformation studies at Kopilli fault in North East India, NASA-ISRO, NISAR mission workshop, 2014.
  - Microwave Remote Sensing and its applications, Assam Don Bosco University, Guwahati, 25<sup>th</sup> April, 2014.
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### *Skills and competence*

- **Software and Tools:** Python, R, MATLAB, IDL, SAS, JMP, ArcGIS, QGIS, ENVI, SARscape, ILWIS, ERDAS, Sentinel Toolbox, PolSAR Pro, PIX4D
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### *Interests*

- Sports (badminton, table tennis, cricket), travelling, trekking, social entrepreneurship.