Venkata Shashank Konduri

PhD Candidate, Northeastern University, Boston, USA
Geospatial Data Science Intern, Oak Ridge National Laboratory, USA

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EDUCATION

Northeastern University — Boston, USA
PhD, Interdisciplinary Engineering — 2015 - present
Dissertation: Understanding the Pattern and Drivers of Vegetation Distribution using Remote Sensing Data and Machine Learning Approaches

Indian Institute of Technology Kharagpur — Kharagpur, India
Five year dual degree program of B.Tech (Hons.) in Agricultural and Food Engineering and M.Tech in Financial Engineering — 2010 - 2015

PROGRAMMING/SOFTWARE SKILLS

- Experience in handling multi-temporal moderate to high resolution remote sensing data in netCDF/GeoTIFF formats in Python and GRASS GIS
- **Programming**: Python, bash scripting and R
- **Deep learning Frameworks**: Keras
- **GIS software**: GRASS GIS, QGIS and ArcGIS
- **Geospatial Libraries**: GDAL/OGR, Rasterio, Shapely, GeoPandas
- **Version Control**: Git, Mercurial
- **OS**: Linux, Windows

DOCTORAL RESEARCH

Topic 1: **Within-season crop identification using satellite data analytics**
Collaborators: Scientists from **Oak Ridge National Laboratory, TN and USDA Forest Service, NC**
Won the **Best Student Poster award** in the hydrology section, AMS annual meeting, 2020

- Timely and accurate knowledge about the geospatial distribution of crops at national scales is crucial for forecasting crop production and estimating crop water use.
- Developed a MODIS NDVI-based semi-supervised machine learning classifier to enable near-real-time monitoring of crops at continental scales.
- This work involved processing of large geospatiotemporal datasets in an HPC environment.

Topic 2: **Mapping vegetation using high-resolution airborne hyperspectral imagery**
Collaborators: Scientists from **Oak Ridge National Laboratory, TN and University of Alaska, AK**

- Created high-resolution (5m) watershed-scale plant community maps using Deep Neural Network-based classification of airborne hyperspectral imagery collected from NASA AVIRIS-NG.
- Developed an environmental niche model to understand the drivers (climatological, topographic and hydrologic) of plant community distribution.

Topic 3: **Understanding the impact of mean and extreme weather on crop yield**
Collaborators: Scientists from **NASA Ames Research Center/BAERI, CA**

- Private businesses as well as public sector and federal agencies are interested in the predictive understanding of weather impacts on crop yield.
- Employed linear and nonlinear methods for pairwise dependence and regression for improved scientific understanding and enhanced predictive modeling.

AWARDS/ACHIEVEMENTS

First place poster presentation among student entries 2020
Hydrology section of the American Meteorological Society (AMS) annual meeting, Boston 2020

Distinguished Dean's Fellowship, College of Engineering, Northeastern University, Boston 2015-'16
This prestigious fellowship is awarded to the most exceptional PhD applicants.

Graduate student Scholarship 2014-'15
Ministry of Human Resource Development, Government of India

Ranked among top 1% of the students, Joint Entrance Examination 2010
the most competitive Engineering entrance exam conducted (in Physics, Chemistry and Math) for undergraduate admissions in India

PEER-REVIEWED PUBLICATIONS

Konduri, V. S., Kumar, J., Hargrove, W., Hoffman, F. M., Ganguly, A. R. Mapping Crops Within the Growing Season Across the United States. *Remote Sensing of Environment*. doi: https://doi.org/10.1016/j.rse.2020.112048

Konduri, V. S., Thomas J. Vandal, Sangram Ganguly, and Auroop R. Ganguly. "Data Science for Weather Impacts on Crop Yield." *Frontiers in Sustainable Food Systems (2020): 52*. doi: https://doi.org/10.3389/fsufs.2020.00052

Konduri, V. S., Kumar, J., Hoffman, F. M., Salmon, V. G., Iversen, C. M., Breen, A. L. Hargrove, W. W. Understanding the Pattern and Drivers of Plant Communities across the Arctic Tundra Landscape. *Manuscript in Preparation*

RELEVANT GRADUATE-LEVEL COURSES TAKEN

- **Remote Sensing**, Prof. R. Edward Beighley, Grade: A
- **Applied Time Series/Spatial Stats**, Prof. Auroop Ganguly, Grade: A
- **Pattern Recognition/Machine Learning**, Prof. Jennifer Dy, Grade: A

POSITIONS OF RESPONSIBILITY

Teaching Assistant, Fluid Mechanics **Spring 2018**
Graded assignments and quizzes and held office hours for answering students' queries on the subject.

Student Chair, International Conference on Networked Digital Earth **March 2018**
In-charge of developing and maintaining the website for the research conference.

Teaching Assistant, Probability and Statistics **Fall 2016, Spring 2017**
Taught lectures, created study material, designed and graded assignments and conducted tutorial sessions for undergraduate students. Received excellent reviews from students in the anonymous feedback collected at the end of the semester.

Teaching Assistant, Civil and Environmental Engineering (CEE) **Spring 2017**
Helped in organizing the CEE Distinguished Seminar Series and responsible for the upkeep of the CEE design studio

HOBBIES/INTERESTS

Enjoy doing theatre, hiking, yoga, listening to music and volunteering