Bijan Seyednasrollah, Ph.D.

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US Work Authorization / Residency Status: US Permanent Resident (Green Card Holder)

HIGHLIGHTS

- Multi-disciplinary environmental data scientist
- Advanced knowledge in image understanding, data fusion techniques, and optimization algorithms
- Proficient in numerical analysis, data analysis, mathematical modeling, and estimation theory
- Excellent communication skills for diverse audience
- Proficient developer in multiple platforms and programing languages, e.g., C/C+, R, Fortran, python
- Strong quantitative, engineering and data science background and advanced knowledge in remote sensing
- Published a dozen scientific articles in peer-reviewed remote sensing and environmental science journals
- Presented for technical and non-technical audience at international and professional meetings
- Developed several R-packages on image processing, statistics, and data wrangling, with 20,000+ downloads
- Developed several web-based geospatial and image processing applications based on R Shiny
- Led efforts on big data processing: 40 million PhenoCam images + one million new images per month

EDUCATION

Ph.D. in Quantitative Environmental Science, Duke University, Durham, NC, USA — 2017

M.Sc. in Mechanical Engineering (Energy Conversion), Sharif University of Technology, Tehran, Iran — 2006

B.Sc. in Mechanical Engineering (Heat and Fluid Flow), University of Semnan, Semnan, Iran — 2003

PROFESSIONAL EXPERIENCE

Environmental Data Scientist / Geospatial Image Scientist — 2017-
Harvard University / Northern Arizona University (PhenoCam Network)

- Leading data curation of the PhenoCam Dataset, a total of 2500 site-years of data from more than 600 sites around the globe: https://doi.org/10.3334/ORNLDAAC/1674
- Developed web-based applications for interactive image processing and environmental science applications, e.g.: DrawROI App: http://phenocam.nau.edu/drawroi/ and Tree Ring Image Analysis and Database: http://phenocam.nau.edu/triad
- Developed R packages including *xROI*, *phenocamapi*, *hazer* to facilitate data and image processing
- Organized technical workshops on image processing and quantitative methods for environmental sciences, e.g., https://www.neonscience.org/agu-2018-phenocam

Doctoral Research Assistant / Quantitative Environmental Scientist — 2011-2017
Duke University, Nicholas School of the Environment

- Designed and developed hierarchical state-space model to study climate change impacts across the continental U.S. using daily MODIS remotely sensed reflectance imagery
- Designed and developed drought monitoring interface across the US using MODIS imagery: http://phenocam.nau.edu/droughteye/
- Developed physics-based models (FoRM and GaRM) to quantify energy fluxes in watersheds
- Served as Teaching Assistant for course “GIS for Water Quantity and Quality Assessment”

Senior Researcher / Research and Development Engineer — 2006-2011
Research Institute of Petroleum Industry, Department of Energy and Environment, Iran

- Developed a 3D model of multiphase flow in porous media in C/C++ to simulate oil/gas reservoirs
- Developed Energy Performance and Assessment Tools in C# to audit energy in power plants
- Developed Pars Basin Modeler (PBM) in C/C++/Fortran to model sedimentary basins

SKILLS

Programming and Scripting:

- R, C/C++/C#, Markdown, MATLAB, Python, Mathematica
- Java, VBA, Fortran, Pascal, Shell, HTML/CSS,
- Object Oriented Programming (OOP), High Performance Computing (HPC), Multithreaded Programming

Quantitative, Geospatial and Visualizations:

- Hierarchical Modeling, Bayesian Statistics, Markov Chain Monte Carlo (MCMC), Machine Learning, Optimizations
- GIS, Geospatial Analysis, Remote Sensing, Data Elevation Model (DEM) Processing, Image Processing

SELECTED AWARDS

NASA Advanced Information Systems Technology, "The bridge from canopy condition to continental scale biodiversity forecasts, including the rare species of greatest conservation concern", J. Swenson (PI), B. Seyednasrollah (Co-I), $574,926	2020
ESA Early Career Scholar Award, Ecological Society of America	2019
NEON Data Institute Fellowship, National Ecological Observatory Network	2018
Outstanding Accomplishments Fellowship, Duke University, $22,470	2017
Pathfinder Fellowship, The Consortium for the Advancement of Hydrologic Science Inc. (CUAHSI), $4,996	2014

SELECTED PUBLICATIONS

Seyednasrollah, B., A. M. Young, X. Li, T. Milliman, T. Ault, S. Frolking, M. Friedl, A. D. Richardson (2020) "Sensitivity of deciduous forest phenology to environmental drivers: Implications for climate change impacts across North America", *Geophysical Research Letters*, 47, e2019GL086788.

Seyednasrollah, B., A. M. Young, K. Hufkens, T. Milliman, M. A. Friedl, S. Frolking and A. D. Richardson (2019), "Tracking vegetation phenology across diverse biomes using PhenoCam imagery: The PhenoCam dataset v2.0", *Scientific Data*, Volume 6, 22

Seyednasrollah, B., T. Milliman and A. D. Richardson (2019), "Data extraction from digital repeat photography using xROI: An interactive framework to facilitate the process", *ISPRS Journal of Photogrammetry and Remote Sensing*, Volume 152, June 2019, Pages 132-144

Seyednasrollah, B., J. C. Domec and J. S. Clark (2019), "Spatiotemporal sensitivity of thermal stress for monitoring canopy hydrological stress in near real-time", *Agricultural and Forest Meteorology*, Volumes 269270, 15 May 2019, Pages 220-230.

Seyednasrollah, B., J. J. Swenson, J. C. Domec and J. S. Clark (2018), "Leaf phenology paradox: Why warming matters most where it is already warm", *Remote Sensing of Environment*, Volume 209, May 2018, Pages 446-455, ISSN 0034-4257.

SELECTED MEDIA COVERAGE

KNAU Arizona Public Radio: *Earth Notes: Drought Eye* https://www.knau.org/post/earth-notes-drought-eye/	June 26, 2019
LTER Network Science Update: *Keeping an eye out for drought* https://lternet.edu/stories/eye-out-for-drought/	May 29, 2019
Weather Nation: *A Faster and More Accurate Way to Monitor Drought* http://www.weathernationtv.com/news/a-faster-and-more-accurate-way-to-monitor-drought/	March 13, 2019
Science Daily: Thermal Stress Measurements Sound the Alarm About Drought Conditions Sooner https://www.sciencedaily.com/releases/2019/03/190304154858.htm	March 4, 2019

REFERENCES

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