Curriculum Vitae
Mahyar Aboutalebi
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PERSONAL DETAILS

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Address: Utah State University, Utah Water Research Laboratory, 1600 Canyon Rd, Logan, UT 84321.

EDUCATION

PhD Candidate in Civil and Environmental Engineering, Remote Sensing in Precision Agriculture (2016-present), Utah State University, Logan, Utah.
PhD thesis: Incorporation of Unmanned Aerial Vehicle (UAV) products into remote sensing Evapotranspiration (ET) and yield models.
Supervisor: Dr. Alfonso Torres-Rua

Master of Science in Water Resources Engineering and Management (2011-2014)
College of Agriculture and Natural Resources, Faculty of Agricultural Engineering and Technology, Department of Irrigation and Reclamation Engineering, University of Tehran
M.Sc. thesis: Multi-objective optimization of water quality monitoring network in river reservoir system under injection of sudden contamination
Supervisor: Dr. Omid Bozorg Haddad

Bachelor of Science in Water Resources Engineering and Management (2007-2011)
College of Agriculture and Natural Resources, Faculty of Agricultural Engineering and Technology, Department of Irrigation and Reclamation Engineering, University of Tehran

HONORS AND AWARDS

- Top Peer Reviewer in the Global Peer Review Awards 2019. Link
- UWRL Outstanding Student Spotlight, 2019. Link
- Best Paper Award in 'Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping IV' Conference, April 2019. Link
- Winner of "Water Data Visualization Competition". Link
- Best Reviewer Award 2018, Remote Sensing Journal, MDPI. Link
- Runner-up for the 'Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping III' Conference Best Paper Award, 2018. Link
- Awarded from J. Paul Riley AWRA Paper Competition, 2017. Link
- Awarded Full Scholarship of PhD Program, Utah State University, 2016-2020.
- Outstanding Master's Thesis Award issued by Water & Wastewater Association

RESEARCH EXPERIENCES

- Evapotranspiration, yield and soil moisture modelling using UAV high-resolution imagery
- LiDAR and Point Cloud datasets in order to derived canopy structural parameters
- Downscaling land surface temperature using a Wavelet-Machine Learning technique

- Harmonization of UAV sensors with Satellite sensors
- Image classification using index-based, physically-based and object-based approaches
- Simulation-optimization modelling for water resources management

RESEARCH INTEREST

- Remote sensing with high-resolution imagery
- Precision agriculture activities
- Machine Learning
- Optimization Algorithms

PUBLICATIONS

Papers (peer-reviewed): Remote Sensing

1- **Aboutalebi, M.,** Torres-Rua, A., McKee, M., Kustas, W. P., Nieto, H., Alsina, M., White, A., Prueger, J., McKee, L., Alfieri, J., Hipps, L., Coopmans, C., and Dokoozlian, N. "Incorporation of Unmanned Aerial Vehicle (UAV) Point Cloud Product into Remote Sensing Evapotranspiration Models", **Remote Sensing,** (submitted) 2019.

2- Garousi-Nejad, I., Tarboton, D., **Aboutalebi, M.,** and Torres-Rua, A., "Terrain analysis enhancements to the height above nearest drainage flood inundation mapping method," **Water Resources Research.** Accepted (2019). Link

3- **Aboutalebi, M.,** Torres-Rua, A., Allen, N. (2018). "Spatial and Temporal Analysis of Precipitation and Effective Rainfall using Gauge Observations, Satellite, and Gridded Climate Data for Agricultural Water Management in the Upper Colorado River Basin", **Remote Sensing.** Link

4- **Aboutalebi, M.,** Torres-Rua, A., Kustas, W.P., Nieto, H., Coopmans, C., and McKee, M. (2018). "Assessment of different methods for shadow detection in high-resolution imagery and evaluation of shadows impact on calculation of NDVI, LAI, and evapotranspiration", **Irrigation science.** Link

Papers (peer-reviewed): Water Resources Optimization Methods

5- Bozorg-Haddad, O., Mani, M., **Aboutalebi, M.,** and Loaiciga, H.A. (2017). "Choosing an optimization method for water resources problems based on the features of their solution spaces", **Journal of Irrigation and Drainage Engineering,** 144 (2). Link

6- **Aboutalebi, M.,** Bozorg Haddad, O., and Loaiciga, H.A., (2016). "Multi-objective design of water-quality monitoring networks in river-reservoir systems", **Journal of Environmental Engineering,** DOI : 10.1061/(ASCE)EE.1943-7870.0001155. Link

Papers (peer-reviewed): Machine Learning

7- Bozorg-Haddad, O., **Aboutalebi, M.,** and Loaiciga, H.A. (2018). "Real-time reservoir operation using data mining techniques", **Environmental Monitoring and Assessment.** Link

8- **Aboutalebi, M.,** Bozorg Haddad, O., and Loaiciga, H.A., (2016). "Simulation of methyl tertiary butyl ether concentrations in river-reservoir systems using support vector regression", *Journal of Irrigation and Drainage Engineering,* DOI: 10.1061/(ASCE)IR.1943-4774.0001007. Link

9- **Aboutalebi, M.,** Bozorg Haddad, O., and Loaiciga, H.A., (2015). "Application of the SVR-NSGAII to hydrograph routing in open channels", **Journal of Irrigation and Drainage Engineering**, 142 (3), DOI : 10.1061/(ASCE)IR.1943-4774.0000969, Link

10- **Aboutalebi, M.,** Bozorg Haddad, O., and Loaiciga, H.A., (2015). "Optimal monthly reservoir operation rules for hydropower generation derived with SVR- NSGAII". **Journal of Water Resources Planning and Management,** 141 (11), DOI : 10.1061/(ASCE)WR.1943-5452.0000553, Link

Papers (peer-reviewed): Human-Environment Interactions

11- Bozorg-Haddad, O., Zolghadr-Asli, B., Sarzaeim, P., **Aboutalebi, M.,** Chu, X., and Loaiciga, H.A. (2019). "Evaluation of water shortage crisis in the Middle East and possible remedies", **Journal of Water Supply: Research and Technology - AQUA,** Accepted. 2019.

12- Bozorg-Haddad, O., **Aboutalebi, M.,** Chu, X., and Loaiciga, H.A. (2019). "Assessment of potential of intraregional conflicts, interbasin water transfers, and their impacts on the water resources", **Environmental Monitoring and Assessment,** Major Revision.

Discussion and Closure (peer-reviewed):

1- **Aboutalebi, M. (2018).** Discussion of "Equation to Predict Riverine Transport of Suddenly Discharged Pollutants", Journal of Irrigation and Drainage Engineering, 144 (4). Link

2- **Aboutalebi, M.,** Bozorg-Haddad, O., and Loaiciga, H.A. (2017). Closure to "Simulation of Methyl Tertiary Butyl Ether concentrations in river-reservoir systems using support vector regression", Journal of Irrigation and Drainage Engineering, 143 (6). Link

3- **Aboutalebi, M.** and Garousi-Nejad, I., (2015). "Discussion of Application of the water cycle algorithm to the optimal operation of reservoir systems". Journal of Irrigation and Drainage Engineering. DOI: 10.1061/(ASCE)IR.1943-4774.0000947. Link

4- Garousi-Nejad, I., Bozorg Haddad, O., and **Aboutalebi, M.,** (2015). "Discussion of investigating parameters of two-point hedging policy for operating a storage reservoir". ISH Journal of Hydraulic Engineering, 21(3), 312-314 DOI: 10.1080/09715010.2015.1021282. Link

5- Bozorg Haddad, O., **Aboutalebi, M.,** and Garousi-Nejad, I., (2014). "Discussion of Hydro climatic stream flow prediction using least square-support vector". ISH Journal of Hydraulic Engineering, 20(3)-274-275. Link

6- Bozorg Haddad, O., **Aboutalebi, M.,** and Marino, M. A., (2014). "Discussion of Prediction of missing rainfall data using conventional and artificial neural network". ISH Journal of Hydraulic Engineering, 19(2), 76-77. Link

Conference

1- **Aboutalebi, M.,** Torres-Rua, A., McKee, M., Nieto, H., Kustas, W.P., Sanchez, L., Alsina, M., White, W.A., Hipps, L., Prueger, J.H., McKee, L., Alfieri, J., Dokoozlian N., and Coopmans, C. (2019) "Incorporation of Unmanned Aerial Vehicle (UAV) Point Cloud Product into Remote Sensing Evapotranspiration Models and Yield Estimation in Grapevine Vineyards", AGU Annual Meeting 2019, San Francisco, California. Link

2- **Aboutalebi, M.,** Nieto, H., Torres-Rua, A., McKee, M., Kustas, W.P., Coopmans, C., Alfieri, J., White, W.A., McKee, L., Hipps, L., Prueger, J.H. (2019) "Two source energy balance model (TSEB) with internal LAI estimation for evapotranspiration estimation using sUAS high-resolution imagery over vineyards" AMS Annual Meeting 2019, Phoenix, Arizona. Link

3- **Aboutalebi, M.,** Torres-Rua, A., McKee, M., Kustas, W.P., Nieto, H., and Coopmans, C. "Validation of Digital Terrain Models Retrieved from UAV Point Clouds using Geometrical

Information from Shadows." SPIE DEFENSE + Commercial Sensing 2019, *Baltimore, Maryland.* Link

4- **Aboutalebi, M.,** Torres-Rua, A., McKee, M., Nieto, H., Kustas, W.P., and Coopmans, C. "The Impact of Shadows on Partitioning of Radiometric Temperature to Canopy and Soil Temperature Based on the Contextual Two-Source Energy Balance Model (TSEB-2T)." SPIE DEFENSE + Commercial Sensing 2019, *Baltimore, Maryland.* Link

5- **Aboutalebi, M.,** Allen, N., Torres-Rua, A., McKee, M., and Coopmans, C. "Estimation of Soil Moisture at Different Soil Levels using Data Mining Techniques and UAV Multispectral Imagery" SPIE DEFENSE + Commercial Sensing 2019, *Baltimore, Maryland.* Link

6- McKee, M., Torres-Rua, **Aboutalebi, M.** Nassar, A., Coopmans, C., Kustas, W., Gao, F., Dokoozlian, N., Sanchez, L., Maati, A. "Challenges that beyond-visual-line-of-sight technology will create for UAS-based remote sensing in agriculture" SPIE DEFENSE + Commercial Sensing 2019, *Baltimore, Maryland.* Link

7- Torres-Rua, A., **Aboutalebi, M.,** Wright, T., Nassar, A., Guillevic, P., Hipps, L., Gao, F., Jim, K., Alsina, M., Coopmans, C., McKee, M., and Kustas, W. P. "Estimation of surface thermal emissivity in a vineyard for UAV microbolometer thermal cameras using NASA HyTES hyperspectral thermal, and landsat and AggieAir optical data" SPIE DEFENSE + Commercial Sensing 2019, *Baltimore, Maryland.* Link

8- **Aboutalebi, M.,** Torres-Rua, A., McKee, M., Nieto, H., Kustas, W.P., Prueger, J.H., McKee, L., Alfieri, J., Hipps, L., Coopmans, C. (2018). "Assessment of Landsat Harmonized sUAS reflectance products using point spread function (PSF) on vegetation indices (VIs) and evapotranspiration (ET) using the two-source energy balance (TSEB) model", AGU Fall Meeting 2018, Washington, D.C. Link

9- Torres-Rua, A., **Aboutalebi, M.,** Esfahani, L., Elarab, M., Kustas, W. P., McKee, M., and Coopmans, C. (2018). "Fusion of satellite and UAV imagery and big data for smarter farming", AGU Fall Meeting 2018, Washington, D.C. Link

10- Nassar, A., Nieto, H., **Aboutalebi, M.,** Torres-Rua, A., McKee, M., Kustas, W.P., Prueger, J.H., McKee, L., Alfieri, J., Hipps, L., Coopmans, C. (2018). "Pixel resolution sensitivity analysis for the estimation of evapotranspiration using the two-source energy balance model and sUAS imagery under agricultural complex canopy environments ", AGU Fall Meeting 2018, Washington, D.C. Link

11- Garousi-Nejad, I., Tarboton, D., **Aboutalebi, M.,** and Torres-Rua, A. "Assessment and enhancement of National Water Model height above nearest drainage flood inundation mapping using Planet CubeSat for the 2017 Bear River flood event" AGU Fall Meeting 2018, Washington, D.C. Link

12- **Aboutalebi, M.,** Torres-Rua, A., and Allen, N. (2018). "Multispectral Remote Sensing for Yield Estimation Using High-Resolution Imagery from an Unmanned Aerial Vehicle." SPIE DEFENSE + Commercial Sensing 2018, *Orlando, Florida.* Link

13- **Aboutalebi, M.,** Torres-Rua, A., McKee, M., Kustas, W.P., Nieto, H., and Coopmans, C. (2018). "Behavior of vegetation/soil indices in shaded and sunlit pixels and evaluation of different shadow compensation methods using UAV high-resolution imagery over vineyards." SPIE DEFENSE + Commercial Sensing 2018, *Orlando, Florida.* Link

14- McKee, M., Nassar, A., Torres-Rua, A., **Aboutalebi, M.,** and Kustas, W.P., "Implications of sensor inconsistencies and remote sensing error in the use of small unmanned aerial systems for generation of information products for agricultural management" SPIE DEFENSE + Commercial Sensing 2018, *Orlando, Florida.* Link

15- **Aboutalebi, M.,** Torres-Rua, A., McKee, M., Kustas, W.P., and Nieto, H. (2017). "Evaluation of different shadow detection and restoration methods and their impact on vegetation indices using

UAV high-resolution imageries over vineyards." AGU Fall meeting 2017, *New Orleans, Louisiana.* Link

16- **Aboutalebi, M.** (2017). "Satellite-based Prediction of Internal Migratory Movement under the Lack of Sufficient water for the Entire U.S." Spring Runoff Conference, *Logan, Utah.*

17- **Aboutalebi, M.,** and Bozorg Haddad, O., (2014). "Support Vector Machine with Non-dominated sorting genetic algorithm for the monthly inflow prediction in hydropower reservoir". Proceedings of the Second International Conference on Advances in Civil, Structural and Environmental Engineering-ACSEE, *Zurich, Switzerland, 25-26, October.*

REVIEWER For JOURNALS (Link)

1-Science of the total environment (Elsevier)

2- Remote Sensing (MDPI)

3- Water (MDPI)

4- Sustainability (MDPI)

5- Forest (MDPI)

6- Hydrology Research (IWA)

7- Journal of Water and Climate Change (IWA)

8- Journal of Water Supply (IWA)

9- Interdisciplinary Sciences: Computational Life Sciences (Springer)

10- Irrigation and Drainage (WILEY)

PROGRAMMING EXPERIENCES

1- MATLAB programming (Advanced)

2- ArcGIS Pro (Advanced)

3- LINGO (Advanced)

4- Python (Intermediate)

5- ERDAS Imagine (Intermediate)

6- Google Earth Engine (Intermediate)

7- Jupyter Notebook (Intermediate)

FIELD EXPERIMENTS

1- LAI measurements with LAI-2200 LICOR sensor

2- Real-time kinematic (RTK) GPS

3- UAV sensor calibration

4- Soil moisture measurement with Augur kit

PERFORMED TASKS

1- Carried out TA for Agricultural Water Management, College of Civil and Environmental Engineering, Utah State University, USA, 2019

2- Carried out TA for Remote Sensing of Land Surfaces, College of Civil and Environmental Engineering, Utah State University, USA, 2018 and 2019

3- Carried out TA for Water resources engineering, College of Agriculture and Natural Resources, University of Tehran, 2015

4- Carried out Workshop, Faculty of environment, "The basis of evolutionary algorithms and artificial intelligence in MATLAB programming", University of Tehran, 2015

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Member, American Society of Civil Engineers (ASCE), 2015-present.

Member, American Geophysical Union (AGU), 2016-present

Member, American Meteorological Society (AMS), 2016-present