

# AMIR HASSANZADEH

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## RESEARCH INTERESTS

Remote Sensing (RS), Machine Learning (ML), Deep Learning (DL), Computer Vision (CV), Geospatial Problem-Solving

## EDUCATION

AUG 2017 – Current	<b>Ph.D. in IMAGING SCIENCE</b> Chester F. Carlson Center for Imaging Science Rochester Institute of Technology, Rochester, NY <b>Advisor:</b> Dr. Jan van Aardt <b>Thesis Title:</b> On the Use of Imaging Spectroscopy from UAS to Model Yield and Assess Growth Stages of a Broadacre Crop
SEP 2011 – JUL 2016	<b>B.S. in CHEMICAL ENGINEERING</b> Faculty of Engineering, University of Guilan, Rasht, Iran <b>Thesis Title:</b> Numerical Simulation of Oil Extraction from Plants

## PUBLICATIONS

TBD	<b>Hassanzadeh, A.</b> & van Aardt, J. Hyperspectral Denoising Using Generative Adversarial Networks. <i>Under Preparation</i>
TGRS	<b>Hassanzadeh, A.</b> , Zhang, F., Murphy, S. P., Pethybridge, S. J., & van Aardt, J. (2021). Toward Crop Maturity Assessment via UAS-based Imaging Spectroscopy - A Snap Bean Pod Size Classification Field Study. <i>TGRS</i> , <i>Under Review</i>
RS	<b>Hassanzadeh, A.</b> , Zhang, F., van Aardt, J., Murphy, S. P., & Pethybridge, S. J. (2021). Broadacre crop yield estimation using imaging spectroscopy from unmanned aerial systems (UAS): A field-based case study with snap bean. <i>Remote Sensing</i> , 13(16), 3241.
RS	Zhang, F., <b>Hassanzadeh, A.</b> , Kikkert, J., Pethybridge, S. J., & van Aardt, J. (2021). Comparison of UAS-Based Structure-from-Motion and LiDAR for Structural Characterization of Short Broadacre Crops. <i>Remote Sensing</i> , 13(19), 3975.
RS	<b>Hassanzadeh, A.</b> , Murphy, S. P., Pethybridge, S. J., & van Aardt, J. (2020). Growth Stage Classification and Harvest Scheduling of Snap Bean Using Hyperspectral Sensing: A Greenhouse Study. <i>Remote Sensing</i> , 12(22), 3809.
JARS	<b>Hassanzadeh, A.</b> , van Aardt, J., Murphy, S. P., & Pethybridge, S. J. (2020). Yield modeling of snap bean based on hyperspectral sensing: a greenhouse study. <i>Journal of Applied Remote Sensing</i> , 14(2), 024519

## CONFERENCE PAPERS & TALKS

SciPy	<b>Hassanzadeh, A.</b> , van Aardt, J. (2021). <i>Jostar</i> : A Feature Selection Library for Data Sciences in Python. SciPy 2021 [ <a href="https://github.com/amirhszd/jostar">github.com/amirhszd/jostar</a> ]
IGARSS	<b>Hassanzadeh, A.</b> , van Aardt, J., Kikkert, J., Pethybridge, S. J., Murphy, S. P., Cross, D. (2021). Plant Counts in Dense Red Beet Crops: A Computer Vision Approach. IGARSS, 6508-6511

AGU	<b>Hassanzadeh, A.,</b> van Aardt, J., Zhang, F., Murphy, S. P., Pethybridge, S. J. (2021). Multi-objective Wavelength Selection for Snap-bean Yield Assessment Using Remote Sensing: A Field Study. AGU Fall Meeting Abstracts, B004-0006
IGARSS	Zhang, F., <b>Hassanzadeh, A.,</b> Kikkert, J., Pethybridge, S. J., van Aardt, J. (2020). Toward a Structural Description of Row Crops Using UAS-Based LiDAR Point Clouds. IGARSS, 465-468

## RESEARCH EXPERIENCE

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JUL 2021 – OCT 2021	<b>MACHINE LEARNING INTERN</b> AGERpoint <b>Mentor:</b> Dr. Bobby Vick <b>Highlights:</b> Developed end-to-end deep learning pipelines to assess corn damage using UAV.
JUN 2020 – SEP 2020	<b>REMOTE SENSING INTERN</b> PrecisionHawk, Raleigh, NC <b>Mentor:</b> Dr. Colin Axel   <b>Group:</b> Data Services <b>Highlights:</b> Implemented deep learning approaches to solve geospatial problems tied to LiDAR point cloud segmentation, semantic segmentation, and time series (video) classification.
JUN 2018 – AUG 2018	<b>RESEARCH ASSISTANT</b> Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, Rochester, NY <b>Mentor:</b> Dr. Anthony Vodacek <b>Highlights:</b> Developed computer vision and statistical approaches to evaluate cloud height via LANDSAT-8 Thermal (TIRS) data.

## TEACHING EXPERIENCE

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SEP 2017 – APR 2021	<b>TEACHING ASSISTANT</b> Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, Rochester, NY <b>Highlights:</b> Organized and instructed a two-week workshop on Applications of Deep Learning in Hyperspectral Remote Sensing for Advanced Environmental Applications of Remote Sensing Course. Teaching assistant for Imaging System Analysis course.
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## HONORS & AWARDS

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- Top third (among 20 students) in Ph.D. qualification exam.
- Top 2% (among 300,000 candidates) in undergraduate university entrance exam.
- Top student (among 90 students) in undergraduate level for three consecutive semesters.

## PROFESSIONAL SERVICES

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<ul style="list-style-type: none"> <li>• <b>Journal Reviewing</b></li> </ul>	
Plant Disease Journal	2021
Field Crop Research	2021
Journal of Applied Remote Sensing (JARS)	2021
Journal of Open Source Software (JOSS)	2021
Journal of Supercomputing (SUPE)	2020, 2021
<ul style="list-style-type: none"> <li>• <b>Conference Reviewing</b></li> </ul>	
International Geoscience and Remote Sensing Symposium (IGARSS)	2020, 2021
Scientific Computing with Python (SciPy)	2021

## SKILLS

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- **Deep Learning Frameworks:** PyTorch, Tensorflow, Keras
- **Scientific Computing Packages:** Numpy, Scipy, OpenCV, Scikit-learn, Pandas, Geopandas, RasterIO, Shapely, GDAL
- **Programming (Proficient):** Python
- **Programming (Basic/Past):** C, C++, MATLAB
- **Software/others:** Git, LATEX, QGIS, Cloud Compare, ENVI, ArcGIS, LAStools, Pix4D, LaTeX, Office, Photoshop, InDesign, Microsoft Office