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 – JUN 2022 (Anticipated)	**Ph.D. in IMAGING SCIENCE** Chester F. Carlson Center for Imaging Science Rochester Institute of Technology, Rochester, NY **Advisor**: Dr. Jan van Aardt **Thesis Title**: On the Use of Imaging Spectroscopy from UAS to Model Yield and Assess Growth Stages of a Broadacre Crop
SEP 2011 – JUL 2016	**B.S. in CHEMICAL ENGINEERING** Faculty of Engineering, University of Guilan, Rasht, Iran **Thesis Title**: Numerical Simulation of Oil Extraction from Plants

Publications

TBD	**Hassanzadeh, A.** & van Aardt, J. Hyperspectral Denoising Using Generative Adversarial Networks. *Under Preparation*
TGRS	**Hassanzadeh, A.**, 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. *TGRS, Under Review*
RS	**Hassanzadeh, A.**, 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. *Remote Sensing*, 13(16), 3241.
RS	Zhang, F., **Hassanzadeh, A.**, 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. *Remote Sensing*, 13(19), 3975.
RS	**Hassanzadeh, A.**, 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. *Remote Sensing*, 12(22), 3809.
JARS	**Hassanzadeh, A.**, van Aardt, J., Murphy, S. P., & Pethybridge, S. J. (**2020**). Yield modeling of snap bean based on hyperspectral sensing: a greenhouse study. *Journal of Applied Remote Sensing*, 14(2), 024519

Conference Papers & Talks

SciPy	**Hassanzadeh, A.**, van Aardt, J. (**2021**). *Jostar*: A Feature Selection Library for Data Sciences in Python. SciPy 2021 [github.com/amirhszd/jostar]
IGARSS	**Hassanzadeh, A.**, 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	**Hassanzadeh, A.**, 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., **Hassanzadeh, A.,** 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

JUL 2021 – OCT 2021	**MACHINE LEARNING INTERN** AGERpoint **Mentor:** Dr. Bobby Vick **Highlights**: Developed end-to-end deep learning pipelines to assess corn damage using UAV.
JUN 2020 – SEP 2020	**REMOTE SENSING INTERN** PrecisionHawk, Raleigh, NC **Mentor:** Dr. Colin Axel | **Group**: Data Services **Highlights**: 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	**RESEARCH ASSISTANT** Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, Rochester, NY **Mentor:** Dr. Anthony Vodacek **Highlights**: Developed computer vision and statistical approaches to evaluate cloud height via LANDSAT-8 Thermal (TIRS) data.

Teaching Experience

SEP 2017 – APR 2021	**TEACHING ASSISTANT** Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, Rochester, NY **Highlights:** 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.

Honors & Awards

- **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

- **Journal Reviewing**
  - Plant Disease Journal **2021**
  - Journal of Applied Remote Sensing (JARS) **2021**
  - Journal of Open Source Software (JOSS) **2021**
  - Journal of Supercomputing (SUPE) **2020, 2021**
- **Conference Reviewing**
  - International Geoscience and Remote Sensing Symposium (IGARSS) **2020, 2021**
  - Scientific Computing with Python (SciPy) **2021**

Skills

- **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