

# AG2PI SEED GRANT - PROJECT FINAL REPORT

PROJECT NAME	<b>Sharing Unoccupied Aerial System (UAS) based High-Throughput Plant Phenotyping Data via Public Cloud</b>
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PROJECT PRINCIPAL INVESTIGATOR	TODAY'S DATE	PROJECT START DATE	DATE OF COMPLETION
Jinha Jung	2/12/2023	1/1/2022	12/31/2022
TEAM MEMBERS (co-PI, co-I, personnel)		COLLABORATORS	
Zhou Zhang		Alison Derbenwick Miller	

## ACCOMPLISHMENTS

PI and CoPI of the project created a public GitHub repository ([https://github.com/gdslab/uas\\_data\\_sharing\\_via\\_clouds](https://github.com/gdslab/uas_data_sharing_via_clouds)) to share training material developed in this project with the public. We developed 3 modules in this project – Module 1: Configuring a web server using an OCI instance, Module 2: How to share raster geospatial data products as a web service, and Module 3: How to share 3D point cloud data as a web service.

In addition to developing the training material, PIs of this project delivered multiple online workshops. PI of the project (Dr. Jinha Jung) gave a workshop on “How to share UAS data using public clouds” (<https://www.youtube.com/watch?v=E05FblOPFpQ>) in a Friday Hands-on 3.0 workshop series hosted by PhenomeForce on November 20, 2021. CoPI of the project (Dr. Zhou Zhang) also gave a workshop on “Alfalfa yield and quality prediction using UAV-based hyperspectral imagery” (<https://www.youtube.com/watch?v=of9LBzclaFU>) in a Friday Hands-on 3.0 workshop series hosted by PhenomeForce on Nov 13, 2021. Although both workshops were delivered before the project starting date, the PI and CoPI of the project went ahead and delivered the workshops before the project starting date with this project in mind.

PI (Jinha Jung) delivered another online workshop as a part of the AG2PI workshop series on 11/18/2022. This workshop was hosted via Zoom and also recorded workshop was made available to public via the AG2PI YouTube channel (<https://www.youtube.com/watch?v=of9LBzclaFU>). CoPI (Dr. Zhou Zhang) is planning to deliver another online workshop in the AG2PI workshop series in June of 2023.

CoPI (Zhou Zhang) has worked on Module 4: How to increase the discoverability of geospatial data products. CoPI Zhang explored the existing data publishing platforms and selected the USDA Ag Data Commons (<https://data.nal.usda.gov/>) and NSF CyVerse Data Commons (<https://cyverse.atlassian.net/wiki/spaces/DC/overview?homepageld=241867464>) as two of the most proper platforms due to their accessibility and user-friendly procedures. CoPI Zhang has completed testing the procedures for publishing geospatial data products on the two platforms.

CoPI (Zhou Zhang) has developed a tutorial for demonstrating the publishing procedures of geospatial data products and will distribute that to the public through AG2PI workshop in June 2023.

(HINT: You can expand sections as necessary by pulling down on the square in the lower right corner of each box)

## Products

Please list any products from this project. This may include (but not limited to) publication, concept/white paper, workshop, conference presentation, website, publicly available data or pipelines, etc. Reminder: you are required to make your products available to the broader stakeholder community using standard USDA practices, open source, FAIR, or other models.

ACTIVITY / PRODUCT	DESCRIPTION (include URL, if applicable)	OUTCOME / METRICS
Training material	<a href="https://github.com/gdslab/uas_data_sharing_via_clouds">https://github.com/gdslab/uas_data_sharing_via_clouds</a>	This is a public repository that anyone can access the training material developed from this project.
Online workshop	<a href="https://www.youtube.com/watch?v=E05FbL0PFpQ">https://www.youtube.com/watch?v=E05FbL0PFpQ</a>	An online workshop (How to share UAS data using public clouds) was given by PI on 11/19/2021.
Online workshop	<a href="https://www.youtube.com/watch?v=of9LBzclaFU">https://www.youtube.com/watch?v=of9LBzclaFU</a>	An online workshop (Alfalfa yield and quality prediction using UAV-based hyperspectral imagery) was given by Co-PI on 11/12/2021.
Online workshop	<a href="https://www.youtube.com/watch?v=X2vMq9jo5EQ">https://www.youtube.com/watch?v=X2vMq9jo5EQ</a>	An online workshop (Sharing UAS based high throughput plant phenotyping data via public clouds) was given by PI on 11/18/2022.

## Audience

With whom has this work been targeted to and shared? Please describe how this project and its products have been disseminated to a community of interest. Include any outreach activity or information sharing as well as training or professional development opportunities provided in this project.

Training material and online workshops targetted scientists with an agriculture background, but without strong computing skillsets. The training material developed from this project was disseminated via a public GitHub repository ([https://github.com/gdslab/uas\\_data\\_sharing\\_via\\_clouds](https://github.com/gdslab/uas_data_sharing_via_clouds)) and online workshops were recorded and made available via YouTube.

## CHALLENGES

Since all the workshops were delivered online, it was a little bit challenging to gauge participants' engagement. The good thing was that all the workshops were recorded, and they were made available to the public after the workshop, but it would have been great if we could have a chance to deliver these workshops in a hybrid mode where we do have in-person participants in the future.