Tewodros Wondifraw Ayalew

Updated April 14, 2025

Email: tewodros.w.ayalew@gmail.com **GitHub**: https://github.com/tedywond
Phone: (773) 754-6829

Education

The University of Chicago Chicago, Illinois
PhD in Computer Science Sept 2022 – Present
Supervisor: Dr. Matthew Walter

The University of Saskatchewan Saskatoon, Saskatchewan
M.S. in Computer Science Sept 2018 – Nov 2020
Supervisor: Dr. Ian Stavness
Thesis: "Unsupervised Domain Adaptation for Object Counting"

Addis Ababa University Addis Ababa, Ethiopia
BSc in Software Engineering Sept 2011 – July 2016
GPA: 3.86

Research experience

Global Institute for Food Security
Mentors: Dr. Ian Stavness and Professor Leon Kochian Oct 2021 – Present
I work as a Research Technician (Machine Learning Engineer) at Global Institute for Food Security. In the project, I develop computer vision approaches to phenotype plants specifically roots targeting to extract information that entails yield.

University of Saskatchewan and Honda R&D
Sidewalk Scene Recognition Joint Research
Mentors: Dr. Ian Stavness and Dr. Masaki Yamazaki Jan 2021 – Sept 2021
I worked as a Research Associate (Machine Learning Engineer) on an autonomous robot navigation collaborative project with Honda R&D. In the project, I designed and evaluated different GAN-based approaches to overcome the effects of adverse weather conditions in the performance of semantic segmentation models.

Publications

PROGRESSOR: A Perceptually Guided Reward Estimator with Self-Supervised Online Refinement
Tewodros W. Ayalew*, Xiao Zhang*, Kevin Yuanbo Wu*, Tianchong Jiang, Michael Maire, Matthew Walter
In Submission at CVPR 2025

Enabling End Users to Program Robots Using Reinforcement Learning

Tewodros W. Ayalew*, Jennifer Wang, Michael L. Littman, Blase Ur, Sarah Sebo
HRI, 2025.

Automatic Microplot Localization Using UAV images and a Hierarchical Image-based Optimization Method
Sara Mardanisamani, **Tewodros W. Ayalew**, Minhajul Arfin Badhon, Nazifa AzamKhan, Gazi Hasnat, Hema Duddu, Steve Shirtliffe, Sally Vail, Ian Stavness, and Mark Eramian.
Plant Phenomics, 2021.

Unsupervised Domain Adaptation for Plant Organ Counting
Tewodros W. Ayalew, Jordan Ubbens, Ian Stavness.
Proceedings of the European Conference on Computer Vision (ECCV), 2020.

AutoCount: Unsupervised Segmentation and Counting of Organs in Field Images
Jordan Ubbens, **Tewodros W. Ayalew**, Steve Shirtliffe, Anique Josuttes, Curtis Pozniak, Ian Stavness.
Proceedings of the European Conference on Computer Vision (ECCV), 2020.

Talks

Unsupervised Domain Adaptation for Plant Organ Counting 2020
ECCV 2020 Workshop on COMPUTER VISION PROBLEMS IN PLANT PHENOTYPING (CVPPP 2020)

Unsupervised Domain Adaptation for Plant Organ Counting 2020
5th Annual Plant Phenotyping and Imaging Research Center Symposium

Pheno-Canola plot localization using an optimization method 2019
4th Annual Plant Phenotyping and Imaging Research Center Symposium

Posters

Hierarchical Image-based Optimization Method for Automatic Microplot Localization Using UAV-Acquired Images
Sara Mardanisamani, **Tewodros W. Ayalew**, Minhajul Arfin Badhon, Nazifa Azam Khan, Gazi Hasnat, Hema Duddu, Steve Shirtliffe, Sally Vail, Ian Stavness, and Mark Eramian.
5th Annual Plant Phenotyping and Imaging Research Center Symposium

Automatic microplot localization from uav-acquired images using an optimization method
Sara Mardanisamani, **Tewodros W. Ayalew**, Minhajul Arfin Badhon, Nazifa Azam Khan, Gazi Hasnat, Hema Duddu, Steve Shirtliffe, Sally Vail, Ian Stavness, and Mark Eramian.
Phenome, February 24–27, Tucson, AZ 2020

Towards (Real Time) automatic localization and labeling of field plots from drone imagery
Tewodros W. Ayalew, Blanche Leyeza, Minhajul Arifin Badhon , Michael Horsch, Ian Stavness
Black in AI workshop, NeurIPS 2019

Pheno-Canola plot localization using an optimization method
Tewodros W. Ayalew, Sara Mardanisamani, Minhajul Arfin Badhon, Nazifa Azam Khan, Gazi Hasnat, Hema Duddu, Steve Shirtliffe, Sally Vail, Ian Stavness, and Mark Eramian.
4th Annual Plant Phenotyping and Imaging Research Center Symposium

Predicting the Impact of Field Topography on Yield of Canola: A Comparison of Linear Modelling and Machine Learning Approaches
Tewodros W. Ayalew, SNsuhoridem Jackson, Kanmi-Obembe Olakorede, Michael Beyene, Minhajul Badhon, Kevin Stanley, Christopher Dutchyn, Kevin A. Schneider, and Ian Stavness.
4th Annual Plant Phenotyping and Imaging Research Center Symposium

Honors and scholarships

Crerar Fellowship 2022
Computer Science PhD Fellowship at the University of Chicago

Best Paper Award 2020
"Unsupervised Domain Adaptation for Plant Organ Counting" paper
ECCV 2020 Workshop on COMPUTER VISION PROBLEMS IN PLANT PHENOTYPING (CVPPP 2020)

Best Poster Award 2020
Poster titled "Hierarchical Image-based Optimization Method for Automatic Microplot Localization Using UAV-Acquired Images"
5th Annual Plant Phenotyping and Imaging Research Center Symposium

Best Poster Award 2019
Poster titled "Pheno-Canola plot localization using an optimization method"
4th Annual Plant Phenotyping and Imaging Research Center Symposium

Graduate Teaching Fellowship 2018
The University of Saskatchewan

Professional

Workshop Reviewer Aug 2021

Service

7th workshop on Computer Vision in Plant Phenotyping and Agriculture at ICCV 2021

AI Chair Oct 2021 – Aug 2022

Serving as a chair for the Artificial Intelligence stream in the School of Information Technology and Engineering, Addis Ababa Institute of Technology

Volunteer Work

Teaching programming for High school students Summer 2018

Designed a short summer course to teach programming for high school students. I thought the Scratch and Python programming languages