Writeup for the talks of Dr. Brianna Posadas 9/24

Submitted by: Provakar Mondal

Dr. Brianna Posdas is a Postdoctoral Associate of the Department of Agriculture, Leadership, and Community Education. She received her PhD in Human Centered Computing from the University of Florida at the Department of Computer and Information Science and Engineering and received her MS in Agricultural Engineering from the same university.

During her talk she described why doing CS research in Agriculture is important. With the advance of technology agricultural data can be collected with the help of the technology and can be analyzed and decisions making in agriculture can also be done using computing. As an example, she told that she used hyperspectral imaging techniques to detect AMB in apples during her master's thesis.

Later she elaborated on topics as multispectral imaging for Marssonina Blotch Disease detection in Fuji apples, crowdsourcing ground truth data collection for precision agriculture using a Citizen Science Mobile application ad socially responsible AI assurance in precision agriculture for farmers and policymakers. To make a clear understanding of the Marssonina Blotch Disease she used a nice visualization that showed leaves of the apple trees fell. Korea, India, and China are the affected countries.

After that she mentioned the background methods like i) 2 week inspection, ii) self reporting, iii) spraying with fungicide but also the issues as i) environmental hazards, ii) worker safety, etc. Currently, as field experiment procedures three hyperspectral sensors are used and leaf samples are collected. She also elaborated on the feature selection based approaches including i) Convert Radiance to Reflectance using Flat Field Equation, ii) Extract unique information from each band using KL Divergence, iii) Band selection using Unsupervised Hierarchal Clustering and then iv) Detection algorithms using K- Nearest Neighbor and Evaluation sequentially. She also showed collected data for each step.

Next, she described her goal for the project **Crowdsourcing Ground Truth Data Collection for Precision Agriculture Using a Citizen Science Mobile Application.** To design and evaluate a usable technology to address the labor shortage in ground truthing through a crowdsourcing application is the main focus of her project. Then she mentioned four steps of a user-centered design process which are user requirement analysis, launch and maintenance, conceptual design, and the last design and implementation.

During her presentation, she talked about Wireframes created in Balsamiq and InVision for a mobile phone. She used some animation and nice graphics to demonstrate the cs methods applied in agriculture. In her presentation, she classified the data collection in agriculture as livestock data, climate and weather data, farm management data, machine data, and agronomic data. She also provided examples of each kind of data.

Dr. Posadas provided a very nice and informative presentation. Her seminar has opened a new window of thought for me on how cs techniques can be leveraged in agriculture for the betterment of it. And the resources and images she used in her seminar were very interesting and eye-catching.