

Sunoj Shajahan

Postdoctoral Associate,
Nutrient Management Spear Program,
Department of Animal Science, 318 Morrison Hall,
Cornell University, Ithaca, NY 14853.
Phone: 701-404-3909 || Email: ss2678@cornell.edu

EDUCATION

- Ph.D. Agricultural and Biosystems Engineering** Fall 2015 – Fall 2019
North Dakota State University (NDSU), Fargo, ND, USA
- M.Tech., Agricultural Processing and Food Engineering** 2012–2014
Tamil Nadu Agricultural University (TNAU), Coimbatore, India
- B.Tech., Food Process Engineering** 2008–2012
Tamil Nadu Agricultural University (TNAU), Coimbatore, India

PROFESSIONAL EXPERIENCE

- Postdoctoral Associate** Oct. 2019– Present
Department of Animal Science, Cornell University, Ithaca, NY, USA
Role: Processing and managing yield monitor data; Developing automated image analysis algorithms for remotely sensed UAS and satellite image analysis; Developing corn yield prediction tool for farmers.
- Graduate research assistant** Aug. 2015–Oct. 2019
Department of Agricultural & Biosystems Engineering, NDSU, Fargo, ND, USA
Role: Developed image processing and artificial intelligence algorithms in precision agriculture applications; Presented findings in technical meetings; Published 8 peer-reviewed journal articles; Assisted in grant writing.
- Teaching instructor** Jan. 2015–May 2015
Ramakrishna Mission Vivekananda Educational & Research Institute, Coimbatore, India
Role: Handled theory classes for a course titled "Principles of food science and processing" for BS Agriculture students (class strength = 60); Assisted and partly handled practical classes for the course.
- Graduate research fellow** July 2012–May 2014
Department of Food & Agricultural Process Engineering, TNAU, Coimbatore, India
Role: Conducted research on nondestructive quality analysis using NIR spectroscopy; Presented and published research results; Assisted in conducting practical classes for crop process engineering and principles of food process engineering.
- Product development trainee** Jan. 2014–Feb. 2014
Britannia Industries Private Limited, Chennai, India
Role: Conducted a short-term project on cream consistency of sandwich cookies; Trained in product development and recipe trials.
- Quality assurance and product development trainee** Nov. 2011–Feb. 2012
Perfetti Van Melle Private Limited, Chennai, India
Role: Trained in candy packaging quality testing and performance evaluation of a candy sorting equipment.

RELEVANT TECHNICAL SKILLS

- **Programming languages:** Java, JavaScript, Python, R, Dart, HTML, CSS.
- **Image processing:** ImageJ (Java), MATLAB, OpenCV (Python).
- **Machine learning:** Scikit-learn package (Python), Classification learner app (MATLAB), caret package (R Studio).
- **Mobile application:** Android Studio (Java), Flutter (Dart).
- **Robotics:** RaspberryPi (Pi 3B+), Arduino (Uno).
- **Document preparation:** \LaTeX , Microsoft Office.
- **Statistical analysis:** R Studio, SAS, Minitab.
- **GIS/Remote sensing:** ArcGIS, QGIS, ENVI.
- **UAV/Precision agriculture software:** Farm Works™, DroneDeploy, Pix4D.

AWARDS AND HONORS

1. NDSU GSC 3rd Annual Research Symposium, People Choice Award, 2019.
2. UMN Production Ag Symposium, Travel Award, 2019.
3. ASABE Superior Paper Award, 2018.
4. ASABE AABFEIO Graduate Student Research Award, PhD first place, 2017.
5. ASABE AABFEIO Graduate Student Research Award, PhD first place, 2016.
6. ASABE ITSC Technical Community Paper Award, 2016.
7. NDSU College of Engineering, Travel grant, 2016.
8. Graduate Research Assistantship, Aug. 2015–Oct. 2019.
9. TNAU Merit Scholarship, 2012–2014.
10. Tamil Nadu State Council for Science & Technology – Best undergraduate project, 2012.

PROFESSIONAL MEMBERSHIPS

1. American Society of Agronomy, Soil Science Society of America, since 2019 (Membership #: 741548).
2. International Society of Precision Agriculture, since 2019 (Membership #: ISPA-01942).
3. American Society of Agricultural and Biological Engineering, 2015–Present (Membership #: M1050764).
4. Indian Society of Agricultural Engineers, Lifetime member since 2016 (Membership #: LM-11444).
5. Alpha Epsilon Honor Society – Agricultural, Food, and Biological Engineering.

GRANT WRITING

1. Assisted in grant writing for the project titled “Scalable corn yield management using in situ sampling, airborne remote sensing, and satellite-based monitoring” for a total budget of \$1,189,489. Submitted to National Science Foundation – Cyber-Physical Systems (CPS) (2021-2024) — Waiting for decision.
2. Assisted in grant writing for the project titled “Giving all farmers access to yield estimates through satellite and automated drone imagery” for a total budget of \$148,999. Submitted to Northeast SARE (2021-2023) — Not funded.
3. Project titled “UAV based corn population stand and weeds distribution with mapping” for a total budget of \$48,606. Submitted to North Dakota Corn Council (2020-2022) — Funded.
4. Project titled “Plant phenotyping in dry beans (*Phaseolus vulgaris* L.) using Unmanned Aerial Systems (UAS)” for a total budget of \$69,196. Submitted to North Dakota Agricultural Experiment Station Precision Ag Grants Program (2016–2018). — Not funded.

PEER-REVIEWED PUBLICATIONS (JOURNAL/BOOK CHAPTER)

Published/Accepted

1. **Sunoj, S.**, Kharel, D., Kharel, T.P., Cho, J., Czymmek, K., and Ketterings, Q.M. 2020. Impact of headland area on whole field and farm corn silage and grain yield. *Agronomy Journal*. (In-press)
2. Ajayi-Banji, A.A., **Sunoj, S.**, Igathinathane, C., and Rahman, S. 2020. Kinetic studies of alkaline-pretreated corn stover co-digested with upset dairy manure under solid-state. *Renewable Energy*. (Accepted)
3. Ajayi-Banji, A.A., Rahman, S., **Sunoj, S.**, and Igathinathane, C. 2020. Impact of corn stover particle size and C/N ratio on reactor performance in solid-state anaerobic co-digestion with dairy manure. *Journal of the Air & Waste Management Association*, 70(4): 436–454.
4. Pandiselvam, R., Manikantan, S., **Sunoj, S.**, Sreejith, S., and Beegum, S., 2019. Modeling of coconut milk residue incorporated rice-corn extrudates properties using multiple linear regression and artificial neural network. *Journal of Food Process Engineering*, 42(2): e12981.
5. **Sunoj, S.**, Igathinathane, C., N. Saliendra, J. Hendrickson, and Archer, D. 2018. Color calibration of digital images for agricultural and other applications. *ISPRS Journal of Photogrammetry and Remote Sensing*, 146: 221–234.
6. **Sunoj, S.**, Subhashree S N., Dharani, S., Igathinathane, C., Franco, J., Mallinger, R.E. Prasifka, J.R., and Archer, D. 2018. Sunflower floral dimension measurements using digital image processing. *Computers and Electronics in Agriculture*, 151: 403–415.

7. **Sunoj, S.**, Igathinathane, C., and Jenicka, S. 2018. Cashews whole and splits classification using a novel machine vision approach. *Postharvest Biology and Technology*, 138: 19–30.
8. **Sunoj, S.**, Sivarajan, S., Maharlooei, M., Bajwa, S.G., Harmon, J.P., Nowatzki, J.F., and Igathinathane, C. 2017. Identification and counting of soybean aphids from digital images using shape classification. *Transactions of the ASABE*, 60(5): 1467–1477.
9. Subhashree, S.N., **Sunoj, S.**, Xue, J., and Bora, G.C. 2017. Quantification of browning in apples using colour and textural features by image analysis. *Food Quality and Safety*, 1(3): 221–226.
10. Shidenur, H.T., Mathew, S.M., Sankalpa, K.B., Pandiselvam, R., and **Sunoj, S.** 2017. Engineering Properties of Jackfruit (*Artocarpus heterophyllus* L.). *Agricultural Engineering Today*, 41(1): 56–60.
11. Pandiselvam, R., **Sunoj, S.**, Manikantan, M.R., Kothakota, A., and Hebbar, K.B. 2016. Application and kinetics of ozone in food preservation. *Ozone: Science & Engineering*, 39(2): 115–126.
12. **Sunoj, S.**, Igathinathane, C., and Visvanathan, R. 2016. Nondestructive determination of cocoa bean quality using FT-NIR spectroscopy. *Computers and Electronics in Agriculture*, 124: 234–242.
13. Pandiselvam, R., **Sunoj, S.**, and Uma, D. 2016. Development of multivariate regression model for quantification of proximate content in *Vigna radiata* using Fourier transform–NIR spectroscopy. *Scientific Journal Agricultural Engineering*, 41(2): 61–70.

Book chapter

1. Subhashree, S.N., **Sunoj, S.**, Hassanijalilian, O., and Igathinathane, C. 2020. Decoding common machine learning methods: Agricultural application case studies using open source software. *Applied Intelligent Decision Making in Machine Learning*. Taylor & Francis Group. pp 21–52.

Submitted/In preparation

1. **Sunoj, S.**, McRoberts, K.C., Benson, M., and Ketterings, Q.M. 2020. Digital image analysis estimates of biomass, carbon, and nitrogen uptake of winter cereal cover crops. *Computers and Electronics in Agriculture*. (Submitted – under review).
2. Cho, J., Guinness, J., Kharel, T.P., **Sunoj, S.**, Kharel, D., Oware, E., Aardt, J.V., and Ketterings, Q.M. 2020. Spatial estimation methods for mapping corn yield monitor data. *Precision Agriculture*. (Submitted – under review).
3. **Sunoj, S.**, Igathinathane, C., Saliendra, N., Hendrickson, J., Archer, D., and Liebig, M. 2020. PhenoCam guidelines for phenology measurement and analysis in agricultural cropping environment: A case study of soybean. *Agricultural and Forest Meteorology*. (Submitted – under review).
4. **Sunoj, S.**, Cho, J., Guinness, J., Aardt, J., Oware, E., Czymbek, K., and Ketterings, Q.M. Corn grain yield prediction and mapping from unmanned aerial system imagery. (In-preparation)

CONFERENCE PROCEEDINGS AND EXTENSION PUBLICATIONS

1. **Sunoj, S.**, Kharel, D., Kharel, T.P., Cho, J., Czymbek, K., and Ketterings, Q.M. 2020. Headlands often reduce overall field yield. Are they worth fixing?. *What's Cropping Up?*. October, 2020. Link: <http://blogs.cornell.edu/whatscroppingup/2020/10/20/headlands-often-reduce-overall-field-yield-are-they-worth-fixing/>
2. **Sunoj, S.**, Igathinathane, C., Saliendra, N., Hendrickson, J., Archer, D., and Liebig, M. Soybean phenology measurement and analysis from PhenoCam images. *Research Results*, February 2020, pp 6–7.
3. Igathinathane, C., **Sunoj, S.**, and Subhashree, S.N. Agricultural engineering research excellence in image processing using open source software. National Conference on Strategic for Developing World-Class Agricultural Universities. Paper no: WCAU/FLP/5, March 2019, pp 76–89.
4. **Sunoj, S.**, Igathinathane, C., Flores, J.P., Archer, D., and Hendrickson, J. Sunflower plant-stand count, spatial distribution, and vigor analysis from UAV images using ImageJ. Integrator, February 2019, pp 12–13.
5. Subhashree, S.N., **Sunoj, S.**, Igathinathane, C., Franco, J.G., Mallinger, R.E., Archer, D.,. Digital image processing for classification and quantification of cover crop flowers. Integrator, February 2019, pp 14–15.
6. **Sunoj, S.**, Subhashree, S.N., Dharani, S., Igathinathane, C., Franco, J.G., Mallinger, R.E., Prasifka, J.R., and Archer, D. 2018. Sunflower head, disc, and petal dimensions measurement using image processing. ASABE Paper No. 1801328. St. Joseph, MI: ASABE.

7. **Sunoj, S.**, Subhashree, S.N., Dharani, S., Igathinathane, C., Franco, J.G., Mallinger, R.E., Prasifka, J.R., and Archer, D. Sunflower dimensions — Are two manual measurements sufficient?. Integrator, February 2018, p 12.
8. **Sunoj, S.**, Igathinathane, C., Hendrickson, J., and Archer, D. Color image calibration — Vital step in color agricultural image processing. Integrator, July 2017, pp 10–11.
9. **Sunoj, S.**, Igathinathane, C., and Jenicka, S. 2017. Identification of whole and split cashew nuts using machine vision. ASABE Paper No. 1701246. St. Joseph, MI: ASABE.
10. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2017. Phenocam color image calibration using image analysis. ASABE Paper No. 1701245. St. Joseph, MI: ASABE.
11. **Sunoj, S.**, Sivarajan, S., Maharlooei, M., Bajwa, S.G., Harmon, J.P, Nowatzki, J.F, and Igathinathane, C. 2016. Identification and counting of soybean aphids from digital images using particle separation and shape classification. ASABE Paper No. 162462927. St. Joseph, MI:ASABE.
12. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2016. Monitoring plant phenology using phenocam: A review. ASABE Paper No. 162461829. St. Joseph, MI:ASABE.
13. **Sunoj, S.**, Igathinathane, C., and Visvanathan, R. 2016. Quantification of fermentation levels in cocoa beans using FT-NIR spectroscopy. ASABE Paper No. 162461813. St. Joseph, MI:ASABE.

CONFERENCE PRESENTATIONS

1. **Sunoj, S.**, Cho, J., Guinness, J., Aardt, J.V, Oware, E., Czymmek, K., Ketterings, Q.M. 2020. Corn grain yield mapping from high resolution UAS imagery. Abstract No. 126350, 2020 ASA-CSSA-SSSA International Annual Meeting (Virtual), Nov. 9–13, 2020 (Oral presentation).
2. **Sunoj, S.**, Kharel, D., Kharel, T.P., Cho, J., Czymmek, K., Ketterings, Q.M. 2020. Impact of headland area on whole field and farm corn silage and grain yield. Abstract No. 126163, 2020 ASA-CSSA-SSSA International Annual Meeting (Virtual), Nov. 9–13, 2020 (Oral presentation).
3. **Sunoj, S.**, McRoberts, K.C., Benson, M., Ketterings, Q.M.. 2020. Digital image analysis estimates of biomass and nitrogen uptake of winter cereal cover crops in the northeast US. Abstract No. 126373, 2020 ASA-CSSA-SSSA International Annual Meeting (Virtual), Nov. 9–13, 2020 (Oral presentation).
4. Cho, J., Maresma, A., Kharel, T.P., Godwin, G., **Sunoj, S.**, Kharel, D., Oware, E., Aardt, J.V, Guinness, J., Ketterings, Q.M. 2020. Spatial estimation methods for mapping corn yield monitor data. Abstract No. 126151, 2020 ASA-CSSA-SSSA International Annual Meeting (Virtual), Nov. 9–13, 2020 (Oral presentation).
5. Berlinger, J.M., Lawrence, J., **Sunoj, S.**, Czymmek, K., Ketterings, Q.M. 2020. Influence of hybrid selection, field, and within-field yield variability on cropland nitrogen balances in NewYork corn silage cropping systems. Abstract No. 126351, 2020 ASA-CSSA-SSSA International Annual Meeting (Virtual), Nov. 9–13, 2020 (Poster presentation).
6. **Sunoj, S.**, Igathinathane, C., Flores, J.P, Schatz, B., Archer, D., Hendrickson, J., Halvorson, J., Toledo, D. 2020. Plant stand spatial distribution analysis for whole field using unmanned aerial system (UAS) imagery. ASABE Paper No. 2000222, ASABE Annual International Meeting (Virtual), July 13–15, 2020 (Oral presentation).
7. **Sunoj, S.**, Igathinathane, C. 2020. Simplified no-code approach for phenological analysis from PhenoCam images using kymograph. ASABE Paper No. 2000574, ASABE Annual International Meeting (Virtual), July 13–15, 2020 (Oral presentation).
8. **Sunoj, S.**, Igathinathane, C., Flores, J.P 2019. Automatic plot extraction in field crop trials using digital image processing from UAV images. ASABE Paper No. 1901263, ASABE Annual International Meeting, July 7–10, 2019, Boston, Massachusetts, USA (Poster presentation).
9. **Sunoj, S.**, Igathinathane, C., Flores, J.P, Sidhu, H., Monono, E., Wiesenborn, D., Archer, D. 2019. Plant stand count and spatial distribution mapping from UAV images. ASABE Paper No. 1901259, ASABE Annual International Meeting, July 7–10, 2019, Boston, Massachusetts, USA (Poster presentation).
10. **Sunoj, S.**, Igathinathane, C., Hendrickson, J. 2019. Vegetation indices comparison with green chromatic coordinates from PhenoCam images. ASABE Paper No. 1901261, ASABE Annual International Meeting, July 7–10, 2019, Boston, Massachusetts, USA (Oral presentation).
11. Subhashree, S.N., **Sunoj, S.**, Igathinathane, C., Franco, J.G., Mallinger, R., Archer, D. 2019. Web tool for classification and quantification of flowers for pollinators interaction using R. ASABE Paper No. 1901275, ASABE Annual International Meeting, July 7–10, 2019, Boston, Massachusetts, USA (Oral presentation).

12. **Sunoj, S.**, Igathinathane, C., Flores, J.P. 2019. UAV-based plant-stand count, plant vigor, and spatial distribution mapping using open source ImageJ. GSC 3rd Annual Research Symposium, North Dakota State University, Fargo, ND, April 3, 2019 (Poster presentation - People Choice Award).
13. Subhashree, S.N., **Sunoj, S.**, Igathinathane, C., Franco, J.G. 2019. Development of user-coded plugin and web application for classification and quantification of flowers for pollinator interaction. GSC 3rd Annual Research Symposium, North Dakota State University, Fargo, ND, April 3, 2019 (Poster presentation).
14. **Sunoj, S.**, Igathinathane, C., Flores, J.P., Archer, D., Hendrickson, J. 2019. Sunflower stand count and spatial distribution analysis using images from small-UAV. UMN Production Ag Symposium, University of Minnesota, St. Paul, Minnesota, USA (Oral presentation).
15. Subhashree, S.N., **Sunoj, S.**, Igathinathane, C., Franco, J.G. 2019. Digital image processing for classification and quantification of flowers for pollinators interaction. UMN Production Ag Symposium, University of Minnesota, St. Paul, Minnesota, USA (Oral presentation).
16. **Sunoj, S.**, Igathinathane, C., Flores, J.P., Sidhu, H. 2019. Early season row identification, plant-stand count, and spatial distribution analysis from UAV images. 2019 Precision Agricultural Summit, January 21& 22, 2019, Jamestown, North Dakota, USA (Poster presentation).
17. **Sunoj, S.**, Subhashree, S.N., Dharani, S., Igathinathane, C., Franco, J.G., Mallinger, R.E., Prasifka, J.R., and Archer, D. 2018. Sunflower head, disc, and petal dimensions measurement using image processing. ASABE Paper No. 1801328, ASABE Annual International Meeting, July 29–August 1, 2018, Detroit, Michigan, USA (Oral presentation).
18. **Sunoj, S.**, Igathinathane, C., Hendrickson, J., and Archer, D. 2018. A simple 3D image reconstruction using ImageJ. ASABE Paper No. 1801305, ASABE Annual International Meeting, July 29–August 1, 2018, Detroit, Michigan, USA (Oral presentation).
19. **Sunoj, S.**, Igathinathane, C., Saliendra, N., and Hendrickson, J. 2018. Phenocam color image calibration using higher order terms. ASABE Paper No. 1801318, ASABE Annual International Meeting, July 29–August 1, 2018, Detroit, Michigan, USA (Oral presentation).
20. Subhashree S.N., **Sunoj, S.**, Igathinathane, C., Franco, J.G., Mallinger, R.E., Prasifka, J.R., and Archer, D. 2018. Digital image processing for classification and quantification of flowers for pollinators interaction. ASABE Paper No. 1800764, ASABE Annual International Meeting, July 29–August 1, 2018, Detroit, Michigan, USA (Oral presentation).
21. Subhashree, S.N., **Sunoj, S.**, Igathinathane, C., Hendrickson, J., Halvorson, J., and Archer, D. 2018. A review on sensor-based crop stress assessment. ASABE Paper No. 1800763, ASABE Annual International Meeting, July 29–August 1, 2018, Detroit, Michigan, USA (Oral presentation).
22. Dharani, S., **Sunoj, S.**, Igathinathane, C., and Flores, P. 2018. Shape based weed discrimination in low-altitude unmanned aerial system images. ASABE Paper No. 1801570, ASABE Annual International Meeting, July 29–August 1, 2018, Detroit, Michigan, USA (Oral presentation).
23. **Sunoj, S.**, Dharani, S., Subhashree, S.N., and Igathinathane, C. 2018. Agricultural image processing applications of proximal and aerial imagery. 2018 Friends and Neighbors Day, NGRPL USDA-ARS, Bismarck, ND, July 19, 2018 (Poster presentation).
24. **Sunoj, S.**, Subhashree, S.N., Dharani, S., Igathinathane, C., Franco, J.G., Mallinger, R.E., Prasifka, J.R., and Archer, D. 2018. Dimensions measurement of sunflower floral components by image processing. 2018 Friends and Neighbors Day, NGRPL USDA-ARS, Bismarck, ND, July 19, 2018 (Poster presentation).
25. **Sunoj, S.**, Subhashree, S.N., Dharani, S., and Igathinathane, C. 2018. A machine vision approach to measure sunflower floral dimensions. GSC Annual Research Symposium, NDSU, Fargo, April 6, 2018 (Poster presentation).
26. **Sunoj, S.**, Subhashree, S.N., Dharani, S., Igathinathane, C. 2018. Sunflower head, disc, and floral dimensions measurement using image processing. Graduate Student Showcase, NDSU, Fargo, February 22, 2018 (Poster presentation).
27. **Sunoj, S.**, Subhashree, S.N., Dharani, S., Igathinathane, C., Franco, J.G., Mallinger, R.E., and Archer, D. 2017. An image processing approach to measure sunflower and seed head dimensions. SNRS Research Symposium, NDSU, Fargo, December 4, 2017 (Poster presentation).

28. **Sunoj, S.**, Igathinathane, C., Saliendra, N., Hendrickson, J., and Archer, D. 2017. Color calibration of digital images using imageJ for phenocam application. 2017 Friends and Neighbors Day, NGPRL USDA-ARS, Bismarck, ND, July 27, 2017 (Poster presentation).
29. **Sunoj, S.**, Igathinathane, C., and Visvanathan, R. 2017. Mathematical modeling of thin-layer drying characteristics of black pepper. ASABE Paper No. 1701247, ASABE Annual International Meeting, July 16–19, 2017, Spokane, Washington, USA (Poster presentation).
30. **Sunoj, S.**, Igathinathane, C., and Jenicka, S. 2017. Identification of split and whole cashew nuts based on machine vision. ASABE Paper No. 1701246, ASABE Annual International Meeting, July 16–19, 2017, Spokane, Washington, USA (Oral presentation).
31. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2017. Phenocam color image calibration using image analysis. ASABE Paper No. 1701245, ASABE Annual International Meeting, July 16-19, 2017, Spokane, Washington, USA. (Oral presentation).
32. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2017. Phenocam color calibration using image processing. 2017 Winter Annual Workshop, “Farming and Ranching for the Bottom Line”, Area4 SCD, BSC, NDSU-Extension, and NGPRL USDA-ARS, Bismarck, February 28, 2017 (Poster presentation).
33. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2016. Color calibration of phenocam images using ANN algorithm. Solving real world problems: An interdisciplinary celebration of research, NDSU Fargo, ND, November 18, 2016 (Poster presentation).
34. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2016. Phenocam color calibration using artificial neural network. Agricultural Biosciences International Conference, Fargodome, Fargo, ND, September 19, 2016 (Poster presentation).
35. **Sunoj, S.**, Subhashree, S.N., and Igathinathane, C. 2016. Digital image processing in agriculture, TechXploration, NDSU Fargo, ND, September 15, 2016 (Poster presentation).
36. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2016. Application of phenocam for crop health and biomass estimation. 2016 Friends and Neighbors Day, NGPRL USDA-ARS, Bismarck, ND, July 28, 2016 (Poster presentation).
37. **Sunoj, S.**, Sivarajan, S., Maharlooei, M., Bajwa, S.G., Harmon, J.P., Nowatzki, J.F., and Igathinathane, C. 2016. Identification and Counting of Soybean Aphids from Digital Images using Particle Separation and Shape Classification. ASABE Paper No. 162462927, 2016 ASABE Annual International Meeting, July 17–23, 2016, Orlando, Florida, USA (Poster presentation).
38. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2016. Monitoring plant phenology using phenocam: A review. ASABE Paper No. 162461829, 2016 ASABE Annual International Meeting, July 17–23, 2016, Orlando, Florida, USA (Oral presentation).
39. **Sunoj, S.**, Igathinathane, C., and Visvanathan, R. 2016. Quantification of fermentation levels in cocoa beans using FT-NIR spectroscopy. ASABE Paper No. 162461813, 2016 ASABE Annual International Meeting, July 17–23, 2016, Orlando, Florida, USA (Poster presentation).
40. **Sunoj, S.**, Igathinathane, C., and Hendrickson, J. 2016. Application of phenocam for crop health and biomass estimation – A review. 2016 Bio Industry Summit, NDSU Fargo, ND, May 12, 2016 (Poster presentation).

EXTENSION/OUTREACH PRESENTATIONS

1. Manned a technical booth in the theme "Digital imaging for crop growth monitoring" on Friends and Neighbors day 2019 held in the Northern Great Plains Research Laboratory, USDA-ARS, Mandan on July 18, 2019 (Around 40 members attended).
2. Manned a technical booth in the theme "Digital imaging for crop growth monitoring" on Friends and Neighbors day 2018 held in the Northern Great Plains Research Laboratory, USDA-ARS, Mandan on July 19, 2018 (Around 40 members attended).
3. Conducted a field tour and presented on “Remote sensing and image analysis applications on agriculture” in Area IV research farms in connection with Friends and Neighbors day 2018, held on July 19, 2018 (Around 25 members attended).

4. Manned a technical booth in the theme “Digital imaging for crop growth monitoring” on Friends and Neighbors day 2017 held in the Northern Great Plains Research Laboratory, USDA-ARS, Mandan on July 27, 2017 (Around 30 members attended).
5. Participated in TechXploration Fair 2016 and presented on “Digital image processing in agriculture” held in NDSU Great Plains Ballroom on September 15, 2016. (Around 40 members attended).

PROFESSIONAL DEVELOPMENT ACTIVITIES

1. Attended a 5-week research mentor training on “Building mentoring skills for an academic career” organized by Center for the Integration of Research, Teaching, and Learning (CIRTL) at Cornell University between January 29 and April 7, 2020.
2. Attended a workshop on “Demystifying Your Dissertation: Communicating to a General Audience” arranged by NDSU Graduate School on October 31, 2018.
3. Attended a workshop on “UAS applications on agriculture” as a part of Drone Focus 2018, May 31, 2018.
4. Attended a workshop on “How to correct common grammar and punctuation mistakes” arranged by NDSU Center for writers on November 2, 2016.
5. Attended a workshop on “Writing the results section” arranged by NDSU Center for writers on October 13, 2016.

RELATED WEBLINKS

Google Scholar

- <https://scholar.google.com/citations?user=PSu2s7YAAAAJ&hl=en>
Metrics as of Oct., 2020: Citations = 149; h-index = 6; i10-index = 4.

ResearchGate

- https://www.researchgate.net/profile/Sunoj_Shajahan
Metrics as of Oct, 2020: RG score = 12.8; Percentile = 55; Total reads = 5446; h-index = 5.

News

- <https://www.ndsu.edu/news/view/detail/34679/>
- https://bismarcktribune.com/news/local/mandan/students-share-in-science-at-research-farm/article_5262ad3d-bf26-53c9-acf1-c532bd6c0f29.html