Yield Estimation and Drought Monitoring Through Image Processing Using MATLAB

Smart Computing Techniques and Applications pp 525-536 | Cite as

- Shaikh Akbar Shaikh Rasul (1) Email author (shaikh.akbar@mitaoe.ac.in)
- Jadhav Swamini Narendra (1)
- Dipti Y. Sakhare (1)

1. MIT Academy of Engineering, , Pune, India

Conference paper
First Online: 08 July 2021

Part of the Smart Innovation, Systems and Technologies book series (SIST, volume 225)

Abstract

This paper elucidates the pre-harvest yield estimation method and technique for cotton crop by image processing. This pixel-based image analysis of image processing is done using the image processing toolbox of the MATLAB 2019b. The images for abovementioned purpose are taken through camera armed drone (quadrotor). Further, there is a need for a better and transparent surveying method to assess the eligibility of a particular farm, for claiming the agricultural insurance. From the findings of proposed research, a suggestion for Agriculture Insurance Companies is made. From this research, it is concluded that yield estimation can be used for the purpose of detection of the damage and impact of the drought. The impact of drought can be assessed on individual farm level, i.e., on each acre of cotton farmland.

Keywords

Yield estimation Agriculture insurance Cotton crop Drought Image processing MATLAB

References

1. Chen, Y., Mei, X., Liu, J.: Cotton growth monitoring and yield estimation based on assimilation of remote sensing data and crop growth model. In: 23rd International Conference on Geoinformatics. IEEE (2015)
Google Scholar (https://scholar.google.com/scholar?q=Chen%2C%20Y.%2C%20Mei%2C%20X.%2C%20Liu%2C%20J.%3A%20Cotton%20growth%20monitoring%20and%20yield%20estimation%20based%20on%20assimilation%20of%20remote%20sensing%20data%20and%20crop%20growth%20model.%20In%3A%2023rd%20International%20Conference%20on%20Geoinformatics.%20IEEE%20%282015%29)

2. Kansara, M., Maity, P., Malgaonkar, H., Save, A.: A novel approach for early prediction of drought. In: 6th International Conference on Advanced Computing and Communication Systems (ICACCS). IEEE (2020)
Google Scholar (https://scholar.google.com/scholar?q=Kansara%2C%20M.%2C%20Maity%2C%20P.%2C%20Malgaonkar%2C%20H.%2C%20Save%2C%20A.%3A%20A%20novel%20approach%20for%20early%20prediction%20of%20drought.%20In%3A%206th%20International%20Conference%20on%20Advanced%20Computing%20and%20Communication%20Systems%20%28ICACCS%29.%20IEEE%20%282020%29)

3. Urbanski, K.: Control of the quadcopter position using visual feedback. In: 2018 18th International Conference on Mechatronics—Mechatronika (ME). IEEE (2018)
Google Scholar (https://scholar.google.com/scholar?q=Urbanski%2C%20K.%3A%20Control%20of%20the%20quadcopter%20position%20using%20visual%20feedback.%20In%3A%202018%2018th%20International%20Conference%20on%20Mechatronics%E2%80%94Mechatronika%20%28ME%29.%20IEEE%20%282018%29)

4. Seifert, E., Seifert, S., Vogt, H., Drew, D., Van Aardt, J., Kunneke, A., Seifert, T.: Influence of drone altitude, image overlap, and optical sensor resolution on multi-view reconstruction of forest images. Remote Sens. **11**(10) (2019) (Article citation)
Google Scholar (https://scholar.google.com/scholar?q=Seifert%2C%20E.%2C%20Seifert%2C%20S.%2C%20Vogt%2C%20H.%2C%20Drew%2C%20D.%2C%20Van%20Aardt%2C%20J.%2C%20Kunneke%2C%20A.%2C%20Seifert%2C%20T.%3A%20Influence%20of%20drone%20altitude%2C%20image%20overlap%2C%20and%20optical%20sensor%20resolution%20on%20multi-view%20reconstruction%20of%20forest%20images.%20Remote%20Sens.%2011%2810%29%20%282019%29%20%28Article%20citation%29)

5. Abu Bakr Siddique, Md., Arif, R.B., Rahman Khan, M.M.: Digital image segmentation in Matlab: a brief study on OTSU's image thresholding. In: 2018 International Conference on Innovation in Engineering and Technology (ICIET). IEEE (2018)
Google Scholar (https://scholar.google.com/scholar?q=Abu%20Bakr%20Siddique%2C%20Md.%2C%20Arif%2C%20R.B.%2C%20Rahman%20Khan%2C%20M.M.%3A%20Digital%20image%20segmentation%20in%20Matlab%3A%20a%20brief%20study%20on%20OTSU%E2%80%99s%20image%20thresholding.%20In%3A%202018%20International%20Conference%20on%20Innovation%20in%20Engineering%20and%20Technology%20%28ICIET%29.%20IEEE%20%282018%29)

6. Li, Y., Zhang, J., Gao, P., Jiang, L., Chen, M.: Grab cut image segmentation based on image region. In: IEEE 3rd International Conference on Image , Vision and Computing (ICIVC) (2018)
Google Scholar (https://scholar.google.com/scholar?q=Li%2C%20Y.%2C%20Zhang%2C%20J.%2C%20Gao%2C%20P.%2C%20Jiang%2C%20L.%2C%20Chen%2C%20M.%3A%20Grab%20cut%20image%20segmentation%20based%20on%20image%20region.%20In%3A%20IEEE%203rd%20International%20Conference%20on%20Image%20%2C%20Vision%20and%20Computing%20%28ICIVC%29%20%282018%29)

7. Gonzalez,R.C., Woods, R.E.: Digital Image Processing, pp. 711–807. Pearson, New Delhi (2017)
Google Scholar (https://scholar.google.com/scholar?q=Gonzalez%2CR.C.%2C%20Woods%2C%20R.E.%3A%20Digital%20Image%20Processing%2C%20pp.%20711%E2%80%93807.%20Pearson%2C%20New%20Delhi%20%282017%29)

8. Horstrand, P., Guerra, R., Rodríguez, A., Díaz, M., López, S.: A UAV Platform based on a hyperspectral sensor for image capturing and on-board processing. IEEE Access 7 (2019)
Google Scholar (https://scholar.google.com/scholar?q=Horstrand%2C%20P.%2C%20Guerra%2C%20R.%2C%20Rodr%C3%ADguez%2C%20A.%2C%20D%C3%ADaz%2C%20M.%2C%20L%C3%B3pez%2C%20S.%3A%20A%20UAV%20Platform%20based%20on%20a%20hyperspectral%20sensor%20for%20image%20capturing%20and%20on-board%20processing.%20IEEE%20Access%207%20%282019%29)

Copyright information

About this paper

Cite this paper as:

Rasul S.A.S., Narendra J.S., Sakhare D.Y. (2021) Yield Estimation and Drought Monitoring Through Image Processing Using MATLAB. In: Satapathy S.C., Bhateja V., Favorskaya M.N., Adilakshmi T. (eds) Smart Computing Techniques and Applications. Smart Innovation, Systems and Technologies, vol 225. Springer, Singapore. https://doi.org/10.1007/978-981-16-0878-0_52

- First Online 08 July 2021
- DOI https://doi.org/10.1007/978-981-16-0878-0_52
- Publisher Name Springer, Singapore
- Print ISBN 978-981-16-0877-3
- Online ISBN 978-981-16-0878-0
- eBook Packages Intelligent Technologies and Robotics Intelligent Technologies and Robotics (R0)

Personalised recommendations