SUSTAINABLE DEVELOPMENT GOALS

Multispectral image analysis for the detection of diseases in coffee production

Authors: Jesus Silva; Noel Varela; Omar Bonerge Pineda Lezama

Abstract: Coffee is produced in Latin America, Africa and Asia, and is one of the most traded agricultural products in international markets. The coffee agribusiness has been diversified all over the world and constitutes an important source of employment, income and foreign exchange in many producing countries. In recent years, its global supply has been affected by adverse weather factors and pests such as rust, which has been reflected in a highly volatile international market for this product [1]. This paper shows a method for the detection of coffee crops and the presence of pests and diseases in the production of these crops, using multispectral images from the Landsat 8 satellite.

Keywords: Coffee production, Detection of diseases, Multispectral image analysis
DCAI 2020: Distributed Computing and Artificial Intelligence, 17th International Conference pp 198–205 vol 1237
https://doi.org/10.1007/978-3-030-53036-5_21

Classification of fruit ripeness grades using a convolutional neural network and data augmentation

Authors: Mauricio Rodriguez; Franco Pastor; Willy Ugarte

Abstract: Currently the classification processes of the degree of maturity of fruits require the use of complex systems, which, most of the times, are not within the reach of small farmers or consumers who do not have knowledge of the characteristics that a fruit must have in order to be catalogued as immature, mature or rotten. For this reason, a tool that can be accessed by anyone, was designed and implemented through a mobile application that served as an interface. This article describes the use of a convolutional neural network for the classification of the degree of maturity of the following fruits: red apple, green apple, banana, orange and strawberry. First, two sets of images were constructed. Secondly, the data augmentation technique was performed and then the training of the convolutional neuronal network was performed using the dataset images as input. In order to know the performance of the different models generated, the following metrics were used: precision, accuracy, recall, log loss, and f1 score. The best average precision obtained was 96.34%.

Keywords: Training, Measurement, Technological innovation, Tools, Mobile applications, Convolutional neural networks, Complex systems
2021 28th Conference of Open Innovations Association (FRUCT), 2021, pp. 374-380
https://doi.org/10.23919/FRUCT50888.2021.9347597

Sustainable use of natural resources to improve the quality of life in the alto palcazu population center, iscozazin-peru

Authors: Doris Esenarro; Ciro Rodriguez; Jennifer Arteaga; Godilia Garcia; Fabiana Flores

Abstract: The present research aims at the sustainable use of natural resources in Iscozazin to improve the quality of life of its inhabitants. It proposes an architectural design of sustainable, productive housing that integrates agro-industry and ecotourism, which allows the optimization of the formative processes of sacha-inchi and cocoa with a growing export demand using clean energy in its production processes, minimizing the negative impacts on the environment. The methodology used was focused on three techniques "diagnosis", "adaptation," or "application" for the promotion of sustainable development. The analysis and export demand of existing products in the international market area were carried out. As a result, we have an architectural design proposal that respects the culture, customs, and climate of the place, allowing the excellent development and promotion of ecotourism and agro-industry. It also provides both residents and tourists with an option or recreational space focused on natural resources, presented in an orderly manner and preserving natural areas to generate a better activity flow without causing long-term damage.

Keywords: Index Terms—Natural resources; quality of life; productive housing; export; clean energy; agroindustrial; Sacha inchi.
International Journal of Environmental Science and Development vol. 12, no. 5, pp. 146-150, 2021.
https://doi.org/10.18178/ijesd.2021.12.5.1332

Maternal depressive symptoms are not associated with child anaemia: A cross-sectional population study in Peru, 2015

Authors: Alarcón-Guevara Samuel; Peñafiel-Sam Joshua; Chang-Cabanillas, Sergio; Pereyra-Elías, Reneé

Abstract: Approximately, one in three Peruvian children aged 6 to 59 months old have anaemia. Maternal depression, which may be disabling and affect the proper care of children, is associated with chronic malnutrition in their offspring. Therefore, the aim of this study is to evaluate if there is an association between depressive symptoms of mothers with the presence of anaemia in their children. Methods: Analytical cross-sectional study of the Peruvian Demographic Health Survey 2015, which is nationally representative. Depressive symptoms were measured with the Patient Health Questionnaire-9 (PHQ-9) using a score of 10 as cut-off. The presence of anaemia was measured using HemoCue® and was considered positive when the haemoglobin was less than 11 g/dl. Results: Crude and adjusted prevalence ratios (PR and aPR) were calculated with 95% confidence interval (CI), using generalized linear models of the Poisson family. We analysed 6683 mother–child binomials. The prevalence of anaemia in the children and depressive symptoms in women were 28.7% (95% CI: 27.3–30.2) and 6.9% (95% CI: 6.1–7.9), respectively. We found no statistically significant association between these variables in the bivariable analysis or in the different multivariable models (aPR: 1.05, 95% CI: 0.85–1.30).

The sample did not have moderate or severe malnutrition. Conclusions: There is no statistically significant difference between the prevalence of anaemia in children of mothers with or without depressive symptoms. We recommend continuing research in this field to determine more associate factors to childhood anaemia in order to improve primary prevention interventions. Ideally, conducting longitudinal studies such as prospectives cohorts to determine risk factors should be done.

Keywords: anaemia; children health; depressive symptoms; Peru (MeSH NLM)
Journal Child: Care, Health and Development Volume47, Issue2 March 2021 Pages 228-242
https://doi.org/10.1111/cch.12827

Multispectral image analysis for the detection of diseases in coffee production

Authors: Jesus Silva; Noel Varela; Omar Bonerge Pineda Lezama

Abstract: Coffee is produced in Latin America, Africa and Asia, and is one of the most traded agricultural products in international markets. The coffee agribusiness has been diversified all over the world and constitutes an important source of employment, income and foreign exchange in many producing countries. In recent years, its global supply has been affected by adverse weather factors and pests such as rust, which has been reflected in a highly volatile international market for this product [1]. This paper shows a method for the detection of coffee crops and the presence of pests and diseases in the production of these crops, using multispectral images from the Landsat 8 satellite.

Keywords: Coffee production, Detection of diseases, Multispectral image analysis
DCAI 2020: Distributed Computing and Artificial Intelligence, 17th International Conference pp 198–205 vol 1237
https://doi.org/10.1007/978-3-030-53036-5_21

Applying lean agriculture in organic apple production: Case study in peru

Authors: Gonzales-Gutierrez, Francisco; Huaman-Sanchez, Vanessa; Sotelo-Raffo, Fernando; Ramos,

Abstract: In this document it was proposed to apply Lean Agriculture, using the five Lean principles focused on the production of organic apples, which would allow to achieve a differentiated product, through the reduction of waste, improvements in the quality of activities and the commitment of the farmers. For this, a review of the literature that corroborated the impact of the methodology was carried out. In addition, surveys were conducted, taking a sample of farmers, which evidenced the gap. Finally it was obtained as a conclusion that after the implementation of the Lean Agriculture methodology in the processes, an increase in production suitable for sale in traditional and organic markets is achieved. In addition, the increase in quality achieved a percent of production suitable for exporting.

Keywords: Lean Agriculture; Lean principles; Organic apple; Peru
IHIET 2020: Human Interaction, Emerging Technologies and Future Applications III pp 539–544 vol 1253
https://doi.org/10.1007/978-3-030-55307-4_82