



УНИВЕРЗИТЕТ У НОВОМ САДУ
UNIVERSITY OF NOVI SAD

TOP ACHIEVEMENTS 2022

BIONSENSE INSTITUTE

Innovative solution - Application for digital insurance in agriculture

Generali Osiguranje Srbija, DDOR

Senior Research Associate Dr. Gordan Mimić, Research Associate Dr. Oskar Marko, Research Associate Dr. Marko Panić, Research Associate Željana Grbović, Research Associate Milica Brkić and Dr. Vladimir Crnojević

A software solution was implemented in the form of a mobile application and a web platform that enable digital management of insurance in agriculture. The mobile application was implemented in the Android environment, while the monitoring of policies and claims was implemented through the web environment, as a geographic information system (GIS). The solution enables digital conclusion and management of policies, review of damage status, navigation of appraisers to appropriate parcels, centralized management of tasks for appraisers and automatic report generation.

Hail, spring frost, storms and floods are happening suddenly and devastating the yields, which is why farmers are choosing to insure their crops. Damage assessment is often very subjective and opinions of farmers and representatives of insurance companies are known to differ drastically. This discrepancy leads to the lack of mutual trust, skepticism and a very small number of insured fields, as we are witnessing today in Serbia. Fortunately for both sides, new technologies are allowing us to analyse the state of the crops in a timely and objective manner and give estimates based on the facts. Crop classification and monitoring systems are something we have been working on even before Copernicus programme of European Space Agency, and now, with Sentinel satellites, we have a unique opportunity to monitor the crop growth from space every 5 days on a 10 m resolution. Satellite vegetation indices are excellent proxies for plants' needs for water and nutrients and clear indicators of their "health status". NDVI, EVI, NDMI and other indices indicate the regions within the field that are affected by fire or natural disasters. Advanced machine learning methods are trained on images from historical datasets and calibrated to recognise changes in crop status within time-series of satellite images. Algorithms developed in this way can differentiate between normal changes happening during the growing season and changes that happened due to fire or extreme weather events. In the next step, pixels are automatically counted and their area is summed up, giving rise to an objective system for assessment of damage intensity and affected area.

