A Week of Webinars

Machine Learning for Earth Observation in Agriculture

Monday, 20 June 2022 (17H00 – 19H15)

Theme: Indigenous Knowledge

Mr Nyadzani Rerani is an entrepreneur in farming in Maluma Village, Ha-Mphaila, outside Thohoyandou in Limpopo and holds a degree in nature conservation. His farming business provides permanent employment and close to one hundred seasonal workers. Mr Rerani's business supplies major retail shops around the district of Vhembe and as well as exports to neighbouring countries.

Topic: Farming in Ha-Mphaila.

Date/time: 20 June 2022, presentation 17H00 to 17H40, discussion 17H40 to 18H00

Ms Felicity Joy Mitchell is from the KZN Department of Agriculture and Rural Development, in the Agricultural Resource Management Directorate. Ms Felicity holds an MSc and certificates in Soil Classification and Land Potential, Advanced Soil Fertility, Natural Area Management, Advanced Sugarcane Production and Wetland Delineation. As a professional scientist in the agricultural and environmental industry for 30 years, she has held positions of Soil Physicist, Principal Scientist and currently Scientific Manager leading a multidisciplinary scientific research team. She has a wide knowledge and understanding of the pressures placed on natural resources through development pressure, climate change, pollution and loss of habitat and biodiversity, making her highly functional in designing programs relating to environmental resilience and compliance, natural resource management and monitoring, formulating and pioneering state level policy, legislation and guidelines documentation. She is deeply passionate about ensuring that challenges impacting natural resources are addressed in a positive proactive manner wherein mitigation strategies are discussed, developed and implemented so as to offer solution-focused outcomes that benefit society as a whole.

Topic: The value of technological advances in agricultural resource management.

Date/time: 20 June 2022, presentation 18H00 to 18H20, discussion 18H20 to 18H35

Mr Musa Mishamo Musa is the sales manager at Hexagon Precision Agriculture, for Eastern and Western Africa. His expertise is in precision farming and machine control. Mr Musa holds a Bachelor of Science in Agricultural Engineering.

Topic: Indigenous knowledge in precision agriculture and machine control.

Date/time: 20 June 2022, presentation 18H40 to 19H00, discussion 19H00 to 19H15

A Week of Webinars

Machine Learning for Earth Observation in Agriculture

Tuesday, 21 June 2022 (17H00 – 18H00)

Theme: Introducing Trends in Machine Learning in Agriculture

Professor Paidamwoyo Mhangara is Head of School for the School of Geography, Archaeology and Environment Studies at the University of Witwatersrand and holds a PhD in Environmental Geography with specialization in Remote Sensing and GIS. Professor Mhangara was also Manager for Research and Applications Development at the South African National Space Agency Earth Observation unit. He had successfully established a partnership with NEPAD and developed a web geo-portal for the reporting of Agenda 2063 goals and UN SDGs and provided NEPAD with geo-information products and training.

Topic: Machine Learning in Agriculture - Review

Date/time: 21 June 2022, presentation 17H00 to 17H45, discussion 17H45 to 18H00

A Week of Webinars

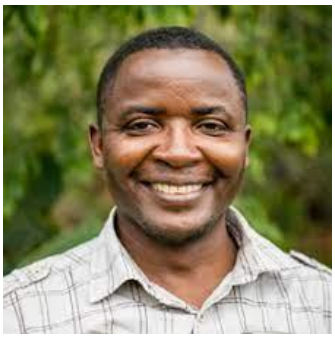
Machine Learning for Earth Observation in Agriculture

Wednesday, 22 June 2022 (17H00 – 19H00)

Theme: Climate Variability/Climate Adaptation/Precision Agriculture

Dr Johan Malherbe is a senior researcher in Climate Change and Variability. Johan has 20 years' experience in the fields of climate variability, climate change, agro-meteorology and remote sensing. He currently serves on the National Crop Estimates Committee and the Disaster Management Centre's Drought Task Team. With his professional career at the Agricultural Research Council and the Council for Scientific and Industrial Research, he focusses on climate change (dynamics and impacts), climate variability, and climate-agriculture interactions. As a scientist he authored and co-authored 21 peer-reviewed papers on climate change and climate variability in high-impact international scientific journals.

Topic: Climate variability and change and the implications for agriculture in South Africa
Date/time: 22 June 2022, presentation 17H00 to 17H45, discussion 17H45 to 17H55



Prof Moses Azong Cho is a chief researcher and the Precision Agriculture Research group leader at the Council for Scientific and Industrial Research (CSIR), and a professor with the plant and soil science department, University of Pretoria. He holds a Ph.D. degree in Hyperspectral remote sensing of vegetation from Wageningen University and the International Institute from Geoinformation Science and Earth Observation, The Netherlands. His research focus involves developing Earth Observation tools and applications that support planning and decision making for precision agriculture and biodiversity conservation. These include the use of satellite and drone imaging for assessing crop growth and stress, discriminating crop/vegetation types, mapping vegetation change (e.g., bush encroachment and alien species invasion) and understanding the impact of global change on vegetation systems e.g., drought. He is a National Research Foundation (NRF) C1 rated researcher, president of the African Chapter of the International Association of Landscape Ecology and an Associate editor for the International Journal of Applied Earth Observation and Geoinformation and Current landscape Ecology Reports. He has published over 100 journal and conference articles.

Topic: Precision Agriculture at CSIR
Date/time: 22 June 2022, presentation 18H00 to 18H45, discussion 18H45 to 18H55

A Week of Webinars

Machine Learning for Earth Observation in Agriculture

Thursday, 23 June 2022 (17H00 – 19H00)

Theme: Climate Variability/Climate Adaptation/Precision Agriculture

Mr Mahlatse Kganyago holds MSc degree (*cum laude*) in applied remote sensing and GIS. He currently works as a Remote Sensing Scientist at SANSA and has extensive experience in machine learning applications, image analysis (multispectral and hyperspectral), spectral analysis (NNIR-MIR range), land-cover/use mapping, retrieval of agricultural crop biophysical variables for precision agriculture, statistical and spatial modelling of landscapes, and both research and teaching of RS/GIS for natural and agro-ecological resources management. His work in recent times focuses on enhancing the use, understanding, development, and implementation of novel remote-sensing technologies and robust machine learning models to aid agro-ecological systems research and application development. He participates in internationally funded projects such as CropWatch for South Africa funded by UK Space Agency, EU H2020 Enhancing Food Security in African AgriCultural Systems with the support of Remote Sensing (AfriCultuReS, http://www.africultures.eu/), and Wetlands Monitoring and Assessment Service for Transboundary Basins in Southern Africa (WeMAST, http://wemast.sasscal.org/) funded GMES and Africa programme (EU-AU).Mr Kganyago is also a RPAS Pilot, an academic researcher as well as writer & reviewer. He is also the T & F/RPSoc Best paper award winner 2020.

Topic: Addressing food security challenges in Africa

Date/time: 23 June 2022, presentation 17H00 to 17H45, discussion 17H45 to 17H55

Mr Jaun van Loggerenberg joined the C4 EcoSolutions team in 2022 and works as a remote sensing specialist. He holds a MSc in Environmental Science from the North-West University where he investigated the spatial and temporal variability of rainfall in South Africa. He is also pursuing a PhD in Environmental Sciences which focuses on using remote sensing to characterize maize crops in South Africa. Jaun has over 8 years of experience in using GIS and remote sensing in numerous conservation, climate, agriculture and ecosystem projects. Prior to joining C4, he worked on developing bespoke remote sensing solutions for farmers in South Africa to monitor crops, implementing climate change adaptation programs in Sahel, West Africa and developing GIS solutions for complex environmental challenges. Jaun is passionate about the climate, conservation and ecology. He is particularly interested in using remote sensing to better our environment and ensure the future of our planet.

Topic: Making science useful

Date/time: 23 June 2022, presentation 18H00 to 18H45, discussion 18H45 to 18H55

A Week of Webinars
Machine Learning for Earth Observation in Agriculture

Friday, 24 June 2022 (17H00 – 19H30)
Theme: Business Models, Insurance and Investments

Precious Nengwekhulu is a senior Economist at the National Agricultural Marketing Council (NAMC) and holds a BA Honours in Agribusiness Management, a Masters in Business Leadership as well as a post-graduate diploma in public management and administration. She is a developmental specialist, developing and training female agri-preneurs in South Africa to gain market access in the formal sector. Ms Nengwekhulu also designs and develops cooperative agricultural schemes including business plans. Her mission brings together government, private and not for profit sectors to find solutions to problems related to market access of agricultural products.

Topic: The Ha-Mphaila Irrigation Scheme
Date/time: 24 June 2022, presentation 17H00 to 17H30, discussion 17H30 to 17H45

Joint presentation by Mr. Mukosi Mukwevho and Mr. Seffat Chowdhury

Mr. Mukosi Mukwevho is a well-seasoned professional. He has over 24 years of IT experience that he obtained through serving in the private and public sectors. It all began when he acquired his BSc degree in Computer Science and Mathematics from the University of Cape Town, in 1997. He further obtained his BSc(Hons) and MSc degrees in computer science from the University of South Africa, in 2001 and 2009, respectively. He has a diverse work experience which spans across many different industries. The key industries he served include manufacturing (chemicals), consulting, retail, banking, telecommunications and now space. He has occupied different roles in the areas of Software Development, Systems Engineering, Technology Leadership, Enterprise Architecture, Senior Management and Consulting. He is currently the Chief Data Systems under the Earth Observation (EO) directorate of SANSA. He is leading the Data Systems Management department which takes care of all systems and infrastructure requirements for hosting EO data. His research interests include the areas of Remote Sensing, Earth Observation, IP networks, Artificial Intelligence, and Cloud Computing.

Mr. Seffat Chowdhury is an engineer specialising in the Aerospace and Defence industry. He obtained his BSc and MSc qualifications in Mechanical Engineering and Aerospace Engineering respectively, from UKZN in 2009 and 2012 respectively. He is currently pursuing his PhD at the University of Pretoria with a focus on the use of machine learning in increasing autonomous vehicle safety. His professional experience has encompassed guidance and control engineering of key aerospace and defence flying systems and the exploitation of a range of remotely sensed big-data for various commercial and social applications. His research interests include artificial intelligence, geographic data systems, remote sensing, aerospace systems and big data. He currently serves as the Systems Engineer in the Data Systems Management team at the South African National Space Agency's Earth Observation directorate. His responsibilities encompass the end-to-end architecture and life-cycle management of a variety of satellite data reception, processing and dissemination systems.

Topic: Digital Earth Africa: Introduction to the platform and its machine learning capabilities
Date/time: 24 June 2022, presentation 18H00 to 18H30, discussion 18H30 to 18H45.

Ms. Jessica Davies is from Aerobotics and is the general manager for Agricultural Investors. She works with agricultural investors, financiers and insurers to provide precision agricultural data to analyse risk and returns. Ms Jessica holds a Bachelor of Business in Actuarial Science from the University of Cape Town and as a Senior Disruption Analyst in Nedbank's Disruption and Innovation team, Ms Jessica managed Nedbank's partnerships with Plug and Play Tech Center, Startupbootcamp, Google Launchpad Accelerator and select universities, and connects the world's best tech talent, startups, scaleups and venture capital firms to one of Africa's leading banks and its clients.

Topic: Holistic risk management for growers, investors and insurers
Date/time: 24 June 2022, presentation 18H50 to 19H10, discussion 19H10 to 19H20.