Denis Pastory Rubanga

Curriculum Vitae

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Professional Summary

- An innovative and self-motivated research scientist with 10+ years of practical experience implemented using applied data science, agro-informatics, G.I.S and remote sensing, translated in 5+ scientific publications and 10+ scientific talks.
- Excellent interpersonal, effective communication skills, with the capability to understand, interpret, and communicate scientific findings to the audience, evidenced by 10+ oral presentations experience, teaching, and mentoring teams.
- Analytic problem-solving skills, attention to detail, time management, advanced planning, project management, and ability to multi-tasking evidenced by collaborations in international scientific multidisciplinary teams in 2+ universities.

Working Experience

Apr 2021– Present **PostDoctoral Research Fellow**, Tokyo University of Agriculture, Tokyo, Japan

- Collaboration in national project by integrating remote sensing and GIS based images in deep learning algorithms for land surface fault detection in semi-arid lands in Djibouti.
- Development of deep learning models to aid in underground water cycle simulation models and creation of water resource potential maps in semi-arid lands in Djibouti to enhance economic production

Apr 2016 – Mar 2021 **Research Scientist**, Gained as a PhD and MSc at Tokyo University of Agriculture, Tokyo, Japan

Research and Innovation,

- Undertook experimental and analytical research into integrating of emerging technologies (ICT and AI) to enhance production of low-resourced communities using advanced data Science, applied computer vision algorithms that resulted into 5+ publications
- Well-evidenced research management skills, undertaking several independent research consultants as well as helping graduate students in their statistical and data analysis tasks
- Demonstrated excellent oral and written communication skills in conference presentations that resulted into 5+ publications and 10+ conference presentations.
- Developed and oversaw an international research project awarded by Network of Excellence in Artificial Intelligence for Development (AI4D) in sub-Sahara Africa collaborating with 3 universities

Project management and Leadership,

- Led a multi-disciplinary team to conceive and execute research projects that led to 5+ publications, 10+ conference presentations, and USD 70,000+ in grant funding
- Facilitated and guided teams of about 10 undergraduate students annually during an international intercultural exchange program between Japan and Tanzania which resulted into strong partnership

Jul 2019 – Present **Machine Learning Engineer**, MDIU, Tokyo Japan

- Consultation and strategic project management of the practical implementation of A.I. technology for clients - from automobile, Food, Agriculture and livestock industry resulting into company improved production
- Mentoring local and international company data science team adopting A.I skill sets achieved through training and coaching resulted into companies securing data science projects

▪ Successfully managed and led offshore/remote machine learning engineers resulting to successful PoC of clients.

Dec 2019– Mar 2021 **Data Science Consultant**, iNet, Tokyo, Japan

▪ Provided training and team building of company Data Science team resulting into team presentation and exhibiting at 2+ workshops in less than a year.

▪ Advised on strategic planning of business potentials for data science team and facilitated in developing strategic partnership resulting to collaborative research and training between the company and 2 national and 1 international university

Jan 2009– Mar 2016 **Engineering Agriculture Expert**, Ministry - RALG, Tanga - Tanzania

▪ Successfully developed, surveyed, designed and supervised 5+ irrigation projects summing up to USD 120,000 for the benefit of increasing food production

▪ Initiated and developed 5+ new irrigation programs to improve irrigation agriculture locally resulting to increased production of 20+ villages

▪ Maintained and managed agricultural machinery and land Use Planning for Agriculture.

▪ Trained 1000+ farmers on construction of local modernized storage house from local resources for food security

▪ Maintained and managed agricultural equipment, machinery and Land Use Planning for Agriculture in River Basin areas

Jan 2007– Mar 2009 **Data Analyst**, Ministry of Agriculture, Food Security and Co-operative, Tanzania

▪ Data collection and socio-economic feasibility studies of potential +20 national irrigation projects that contributed to national irrigation master plan

▪ Organised a team to carry out socio-economic analysis of +20 national irrigation schemes

Education

2018–2021 **Ph.D. Agricultural Engineering**, Tokyo University of Agriculture, Tokyo, Japan.

Thesis; Integration of ICT and Artificial Intelligence to Enhance Tomato Production.

2016–2018 **MSc. Agribusiness Management**, Tokyo University of Agriculture, Tokyo, Japan.

Thesis: Development of a Simplified Smart Agriculture System for Small Scale Horticultural Greenhouse Farmer.

2012–2016 **BSc. International Agriculture and Food Studies**, Tokyo University of Agriculture, Tokyo, Japan.

Thesis: Study of Conflicting Water Use and Demand and its Impacts to River Basin.

2010–2012 **BSc. Irrigation and Water Resource Engineering**, Sokoine University of Agriculture, Morogoro.

Best student transferred to Tokyo University of Agriculture.

2006–2008 **Associate Degree Land Use Planning**, Agriculture Training Institute, Mbeya, Tanzania.

Publications

2020 **Rubanga, D. P,** Loyani,K.L,(2020), (2020), A Deep Learning Dataset for Tomato Pest Leafminer *Tuta absoluta*

2020 Taguchi Kentaro and **Rubanga, D. P**, (2020), "Sensitivity Analysis of Neural Network through Meta-Learning". In: Proceedings of the conference of Japanese Society for Artificial Intelligence. 2020, pp. 1J4GS201–1J4GS201. doi.org/10.11517/pjsai.JSAI2020.0$_1$$J4GS201$

2020 **Rubanga, D. P,** Loyani,K.L,(2020), A Deep Learning Approach for Determining Effects of *Tuta absoluta* in Tomato Plants.*ICLR- CVPR-Workshop*

2020 Lilian Mkonyi, **Rubanga, D. P.**, Lilian Mkonyi,(2020), A Early identification of *Tuta absoluta* in tomato plants using deep learning.*Scientific African.*

2020 Ramadhona Saville, Katsumori Hatanaka, **Rubanga, D. P.**, Lilian Mkonyi,(2020),A study on factors affecting high quality fruit tomato production in green house by utilizing low cost smart agriculture framework. *IJoCED.*

2019 **Rubanga, D. P.**, Hatanaka, K., and Shimada, S. (2019). Development of a Simplified Smart Agriculture System for Small Scale Greenhouse Farming. *Sensors and Material Journal* doi.org/10.18494/SAM.2019.2154

2018 **Rubanga, D. P.**, Hatanaka, K., and Shimada, S. (2018). Spatiotemporal Analysis of small scale greenhouse microclimate based on smart agriculture system. AGROFOR *International Journal* DOI:10.7251/AGRENG1803056P

Invited Talks, Presentations and Conference

2020 **Rubanga, D. P, et al.**, (2020), Sensitivity Analysis of Neural Networks through Meta-Learning. JSAI - Japanese Society for Artificial Intelligence, **Tokyo, Japan**.

2020 **Rubanga, D. P**, (2020), A Computer Vision Tomato Pest Assessment and Prediction Tool. ICLR - AfNLP Workshop, **Addis Ababa, Ethiopia**.

Rubanga, D. P, Loyani,K.L,(2020), A Deep Learning Approach for Determining Effects of *Tuta absoluta* in Tomato Plants. ICLR Workshop on Computer Vision for Agriculture , **Addis Ababa, Ethiopia**.

2019 Loyani, K.L., **Rubanga, D. P**(2019), Decision Support System for Farmers against *Tuta absoluta* Effects on Tomato Plants. NeurIPS BlackInAI Workshop, **Vancouver, Canada**.

2019 Loyani, K.L., **Rubanga, D. P**(2019), Early Identification of *Tuta Absoluta* in tomato Plants using Deep Learning. NeurIPS BlackInAI Workshop, **Vancouver, Canada**.

2019 **Rubanga, D. P** (2019) Emerging Technological Transfer to Tackle Invasive Pest challenges in Sub-Sahara Africa: A computer vision Approach, A Webinar Presentation **Video**, 24th June 2019.

2019 **Rubanga, D. P** (2019) A Computer Vision Tomato Pest Assessment and Prediction Tool at CVPR (CV4GC-Workshop) 2019, Long Beach, **California-USA**, 16th June 2019.

2019 **Rubanga, D. P** (2019) Applied Computer Vision Application in Agriculture at IndabaX Tanzania. University of Dodoma-CIVE, **Dodoma–Tanzania**, on 12th April 2019.

2019 **Rubanga, D. P** (2019) Computer Vision Application at Nelson Mandela–African Institute of Science and Technology, **Arusha-Tanzania**, on 27th March 2019.

2019 **Rubanga,D.P** (2019), Katsumori Hatanaka (2017) Development of a simplified Smart Agriculture System for Small Scale Greenhouse Farming. A case Study of Tomato and Strawberry Farmers in Japan, presented at ISSAAS Congress, **Hanoi - Vietnam**, October 2017.

2018 **Denis Pastory**, Katsumori Hatanaka (2018) Development of a simplified Smart Agriculture System for Small Scale Greenhouse Farming. A case Study of Tomato and Strawberry Farmers in Japan, presented at Workshop on Sensors and Material, **Tokyo**, February 2018.

2018 **Rubanga, D. P** (2018) A Real-time Simplified Smart Agriculture System for Small Scale Greenhouse Farming at Data Science Africa 2018, **Nyeri - Kenya**, 8th June 2018.

2018 **Rubanga, D. P** (2018) Spatiotemporal Analysis of Small-Scale Greenhouse Microclimate Based on Smart Agriculture Systems at AGROSYM 2018, **Jahorina Bosnia and Herzegovina**, 5th October 2018.

2018 **Rubanga, D. P** (2018) Development of Tomato Plant Pest Assessment Tool; A deep Learning Approach at Deep Learning Indaba 2018, Stellenbosch, **Cape Town-South Africa**, 13th September 2018 (Poster).

2017 **Rubanga,D.P** (2017) A Real-time Environmental Monitoring and Analysis for A Simplified Smart Agriculture System, presented at HDE Co, 39th MTS **Tokyo**, 20th October 2017.

Grants, Scholarships and awards

2019–2020 A Computer vision Tomato Pest Assessment and Prediction tool. award by Artificial Intelligence for Development (AI4D) in sub-Saharan Africa.

2019 Computer Vision for Global Challenge. Awarded by Facebook and the Partnership on A.I.

2018-2021 Honjo International Scholarship Foundation. 2% Acceptance rate

2016-2019 Initiative Research Project of Graduate School, Awarded by Tokyo University Research Institute.

2012-2021 Tokyo University of Agriculture International Scholarship.

Leadership Skills

2019-Present Deep Learning IndabaX - Tanzania **Co-organiser** - Content Manager, Mentoring.

2019-Present **Mentor** - The Nelson Mandela -African Institution of Science and Technology A.I community

2019-Present **Co-Supervisor** The Nelson Mandela -African Institution of Science and Technology and Sokoine University of Agriculture MSc. Students

2019-Present **Co-Supervisor** Sokoine University of Agriculture MSc. Students

Professional Membership and Technical Program Committee

2021-Present Japanese Association for AridLand Studies

2019-Present Japanese Society for Artificial Intelligence

2018-Present IEEE RAS technical committee on Agricultural Robotics and Automation

Technical Skills

Programming Python, R, SQL, PHP.

Software ArcGIS 10+, Agisoft, Pix4D, ENVI.

Others OpenCV, Keras, TensorFlow, Pytorch, LaTeX

Languages

English Native

Kiswahili Native

Japanese Fluent