

## Curriculum Vitae

### **Abia Katimbo**

(402) 560 9628 | [abia.katimbo@huskers.unl.edu](mailto:abia.katimbo@huskers.unl.edu) | West Central Research, Extension and Education Center (WCREEC), University of Nebraska-Lincoln, 402 West State Farm Road, 69101, NE, USA.

*“Love being at the center of Water, Food and Energy Nexus – Clean Water and Food should be for all”*

## **EDUCATION**

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PhD., Biological Engineering (Irrigation engineering) Jan 2019 – May 2022  
*University of Nebraska – Lincoln, Nebraska, USA*

Masters., Land and Water Systems (Watershed science and modeling) Sept 2017 – Nov 2018  
*The University of British Columbia – Vancouver, Canada*

Bsc., Agricultural Engineering (Water Resources Engineering) Aug 2009 – May 2013  
*Makerere University, Kampala, Uganda*

## **RELEVANT EXPERIENCE**

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### **Graduate Research and Teaching Assistant**

**Jan 2019 – Present**

In the period I have been in this position I have engaged with producers to understand the challenges they face, mentored students and shared knowledge with students through lectures and field days.

- Designed experiments and data collection protocols, participated in procurement of instruments, writing their communication programs and field installations.
- Mentored summer interns mainly undergraduate students interested in becoming top-notch researchers and academicians.
- Trained and shared knowledge to producers and students through prepared presentations on field days and fall terms, respectively.
- Developed independent research acumen under advisor’s guidance and close cooperation with colleagues.
- Supervised and guided undergraduate students during their summer mini-projects.
- Investigated the application of remote sensing tools to monitor water and nitrogen stress and application timings in irrigated fields.
- Offered programming lessons to upcoming graduate students using softwares like Microsoft Excel’s Visual Basic and Python and geo-processing tools (i.e., ArcGIS, QGIS).
- Designed and documented sensor mounting platform to study sensor application in crop water use and phenotyping over irrigated and non-irrigated settings.

### **Master Card Foundation Scholar, Cohort 2017**

**Sept 2017 – Nov 2018**

The Cohort had students coming from different backgrounds and we were meant to represent an African child at a North American University in Canada. Many experiences were acquired as listed:

- Participated in the wellness program and offered support and advice to undergraduates and my colleagues who were struggling with the new education system.
- Actively involved in the mentorship programs where seniors mentored undergraduate students to shape their perspectives and career goals.

- Acquired modeling skills using SWAT model and it was extensively used to address water quality and quantity issues in forested watershed under forest fire attack.
- Developed inter-personal communication and organizational skills while searching for forest fire information from relevant offices in province of British Columbia, Canada.
- Researched, studied, and developed a well calibrated model based on historical forest fire datasets for easy prediction of the future impacts of forest fires in forested watershed.

**Research Engineer: Smallholder Fortunes and Thermogenn, Uganda      Jan 2014 – July 2017**

The main task of this job was to reach out to smallholder dairy farmers and solve the problem of money losses from poor preservation of evening milk and poor transportation causing delays or failures to reach to consumer markets. Different research ideas were collected from stories shared by the farmers which resulted in creation of an off-grid milk cooler known as EvaKuula where the Principal Investigator was Dr. William Kisaalita. Experiences gained are as follows:

- Cooperated with smallholder dairy farmers and documented their stories narrating challenges of transporting evening milk to urban consumers as well as poor preservations resulting into spoilages and economic losses.
- Designed questionnaires and collected information with entire team to capture the evening milk preservation and marketing problem.
- Developed reports highlighting key gaps where our expertise was needed to provide evening milk cooling solutions.
- Participated in writing research proposals to find grants from partners to offer a solution to dairy smallholder farmers.
- Organized company meetings with different stakeholders and coordinated field visits to farmers who were testing innovated cooling prototypes.
- Nurtured research skills through research planning, data collection and writing manuscripts published in different journals.
- Developed and evaluated milk preservation technologies. Successful solution was EvaKuula used as off-grid milk preservation solution by smallholder farmers in Wakiso district, Uganda.
- Supervised fabrications and worked closely with technicians to help them interpret technical drawings.

**SKILLS AND INTERESTS**

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**Skills:** Hydrological modeling with SWAT software, Vado-zone modeling with HYDRUS-1D, Sensor communication programming with CR-Basic program, Programming with Python, MATLAB and Microsoft Excel Visual Basic (VBA), Data collection with remote sensing sensors such as thermal and spectral sensors as well as soil moisture sensing with neutron soil moisture meters and capacitance sensors.

**Interests:** Remote sensing application in water and crop management, watershed management and hydrological modeling in water quality and supply, machine learning application in precision agriculture and water quality/quantity assessments and crop growth simulation and soil water modeling.

**PUBLICATIONS**

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It is worth noting that the publications presented here, some are under review, others are being prepared for review while others are already peer reviewed. They can be accessed on my google scholar account: <https://scholar.google.ca/citations?user=gap9ZngAAAAJ&hl=en>

### **Under Review**

**Katimbo A**, Rudnick D.R, Lo T.H, Liang, W, DeJonge K.C, Qiao X, Ge Y, Trenton, F, Nakabuye H.N, Duan, J. Two Source Energy Balance coupled with mobile infrared and spectral sensors for estimating maize evapotranspiration. Journal: Agricultural and Forestry Meteorology.

### **In-preparation for Review**

**Katimbo A**, Rudnick D.R, DeJonge K.C, Lo T.H, Qiao X, Heeren D.M, Ge Y, Trenton, F, Nakabuye H.N, Duan, J. Crop water stress index computation approaches and their sensitivity to soil water dynamics.

**Katimbo A**, Rudnick D.R, DeJonge K.C, Lo T.H, Qiao X, Heeren D.M, Ge Y, Trenton, F, Nakabuye H.N, Duan, J. Assessment of yield prediction accuracy using different machine learning algorithms and in-season maize remote sensing data collected over maize under different management practices.

### **Published**

Lo T.H, Rudnick D.R, DeJonge K.C, Bai G, Nakabuye H.N, **Katimbo A**, Ge Y, Franz T.E, Qiao X, Heeren D.M. **2020a**. Differences in soil water changes and canopy temperature under varying water x nitrogen sufficiency for maize. Irrigation Science. 38:519–534. <https://doi.org/10.1007/s00271-020-00683-2>.

Lo T.H, Rudnick D.R, Singh J, Nakabuye H.N, **Katimbo A**, Heeren D.M, Ge Y. **2020b**. Field assessment of interreplicate variability from eight electromagnetic soil moisture sensors. Agricultural Water Management. 231, 31. <https://doi.org/10.1016/j.agwat.2019.105984>

Kisaalita W.S, **Katimbo A**, Sempiira J.E, Mugisa D.J. **2018**. EvaKuula Kit and Process saves Ugandan smallholder farmers’ evening milk. Sustainable Energy Technologies and Assessments. 29: 155-163. <https://doi.org/10.1016/j.seta.2018.08.002>.

Kiggundu N, Wanyama J, Mfitumukizi D, Twinomuhangi R, Barasa B, **Katimbo A**, Kyazze F. **2018**. Rainwater Harvesting knowledge and Practice for Agricultural Production in a Changing Climate: A Review from Uganda’s Perspective. Agricultural Engineering International: CIGR Journal.

Kabenge I, **Katimbo A**, Kiggundu N, Banadda N. **2017a**. Bioremediation Technology Potential for Management of Soil and Water Pollution from Anticipated rapid industrialization and planned Oil and Gas Sector in Uganda: A Review. Journal of Environmental Protection, 8, 1393-1423. <https://doi.org/10.4236/jep.2017.811085>.

Zziwa A, Nabulime M.N, Kiggundu N, Kambugu R, **Katimbo A**, Komakech A.J. **2016a**. A critical Analysis of Physiochemical Properties Influencing Pit Latrine Emptying and Fecal Sludge Disposal in Kampala Slums, Uganda. African Journal of Environmental Science and Technology. 10(10): 316-328. DOI: 10.5897/AJEST2016.2163.

Sempiira J.E, **Katimbo A**, Kisaalita S.W, Mugisa D.J. **2016b**. Ghee Making in the Cattle Corridor of Uganda. African Journal of Food, Agriculture, Nutrition and Development, 17(1): 11771-11786.

**Katimbo A**, Sempiira J.E, Mugisa D.J, Kisaalita W.S. **2015a**: Ghee Consumption in Uganda. Livestock Research for Rural Development. Volume 27, Article # 131. Accessed on <http://www.lrrd.org/lrrd27/7/kati27131.html>.

Mugisa D.J, **Katimbo A**, Sempira J.E, Kisaalita W.S. **2015b**. Anthropometric characteristics of female small holder farmers of Uganda toward design of labor-saving tools. Applied Ergonomics, Elsevier, 54: 177-185.

Kisaalita, S.W, **Katimbo, A**, Sempira, J.E, Mugisa, D.J. **2015c**. Cultural Influences in women-friendly labor-saving hand-tools' designs: The Milk Churner Case. Human Factors, 58(1): 27-42. doi: [10.1177/0018720815623146](https://doi.org/10.1177/0018720815623146).

**Katimbo A**, Kiggundu N, Kizito S, Kivumbi H.B, Tumutegyereize P. **2014**. Potential of densification of mango waste and effect of binders on produced briquettes. Agricultural Engineering International: CIGR Journal. 16(4): 146-155.

## PRESENTATIONS

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**Katimbo A**, Rudnick D.R, Nakabuye H.N, Duan, J. Crop remote sensing with high clearance platform for irrigation and nitrogen management decisions. Presentation given on a field day at WCREEC on Aug 26, 2021.

**Katimbo A**, Rudnick D.R, Nakabuye H.N, Duan, J. Mobile sensing platform for diagnosing water and nitrogen interactions. Presentation given on a field day for Bazile Groundwater Management Project at Creighton, Nebraska on Aug 26, 2021.

## AWARDS

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MasterCard Scholarship at UBC for Sub-Saharan Africa **2017 – 2018**

## PROFESSIONAL MEMBERSHIP

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American Society of Agricultural and Biological Engineers (ASABE) **2019 – Present**  
American Society of Agronomy (ASA) and Soil Science Society of America (SSSA) **2021**

## References

1. Food and Agriculture Organization of the United Nations (FAO). 2021a. The state of Food Security and Nutrition in the World – The world is at a critical juncture. <http://www.fao.org/state-of-food-security-nutrition>
2. Food and Agriculture Organization of the United Nations (FAO). 2021b. Ecosystems Services and Biodiversity. <http://www.fao.org/ecosystem-services-biodiversity/en/>
3. AgriTech Tomorrow . (2021). Farmers are growing comfortable with mobile apps. <https://www.agritechtomorrow.com/article/2018/10/farmers-are-growing-comfortable-with-mobile-apps/11056>.