Report/Proceedings of the Data Analytics Training

The program was as below:

Data Analytics Training Programme 30th January 2023 – 3rd February 2023

Day/Date	Time	Activity	In charge

Monday, 30th January 2023	9:00am – 9:45am	**Arrival & Registration Introductions**
		 Welcome Remarks
		     o Project Manager
		 Opening Remarks
		     o Project Six Leader
		     o UCoBS Local Coordinator
			All
			
			 Ms. Sheila Niinye
			
			 Ms. Annah Amwikirize
			
			 Dr.ir. Fred Kaggwa
			 Assoc. Prof. Charles T Kazooba/Dr. Medard T

	9:45am – 10:00am	Tea	Catering team
	10:00am – 12:00pm	Lecture: Introduction to Data Analytics	Prof. Dr. Koen Vanhoof
	12:00pm – 12:30pm	Q&A session	Amos/Rogers
	12:30pm – 1:45pm	Lunch	Catering team
	2:00pm – 4:00pm	Lecture: Diagnostic Analytics	**Prof. Dr. Koen Vanhoof**
	4:00pm – 4:30pm	Q&A session	Amos/Rogers
	9:30am – 10:00am	Arrival and Registration of Members, Tea	All/ Catering team

Tuesday, 31st January 2023	10:00am – 12:00pm	Lecture: Predictive Analytics	Prof. Dr. Koen Vanhoof
	12:00pm – 12:30pm	Q&A session	Amos/Rogers
	12:30pm – 1:45pm	Lunch	Catering team
	2:00pm – 4:00pm	Master of Data Science Curriculum Discussion	Department of Computer Science & selected Interested Members
	4:00pm – 4:30pm	Q&A session	Amos/Rogers
Wednesday, 1 February 2023	FREE (DAY OFF)	FREE (DAY OFF)	FREE (DAY OFF)
Thursday, 2nd February 2023	9:30am – 10:00am	Arrival and Registration of Members, Tea	All/ Catering team
	10:00am – 12:00pm	Lecture: Prescriptive Analytics	Prof. Dr. Koen Vanhoof
	12:00pm – 12:30pm	Q&A session	Amos/Rogers
	12:30pm – 1:45pm	Lunch	Catering
	2:00pm – 4:00pm	Lecture: Applications	Prof. Dr. Koen Vanhoof
	4:00pm – 4:30pm	Q&A session	Amos/Rogers
	9:30am – 10:00am	Arrival and Registration of Members, Tea	All/ Catering team

Friday, 3rd February 2023	10:00am – 12:00pm	Research Seminar	Data Science Research Related Masters & PhD students and Supervisors
	12:00pm – 12:30pm	Q&A session	Amos/Rogers
	12:30pm – 1:45pm	Lunch	Catering team
	2:00pm – 4:00pm	Master of Data Science Curriculum Discussion and wrap up	Department of Computer Science & selected Interested Members
	4:00pm – 4:30pm	Q&A session	Amos/Rogers

Member attendance and affiliation

NAMES	INSTITUTION	FACULTY/AFFILIATION
Aggrey Obbo	MUST	Faculty of Computing And Informatics
Mugisha Jim	MUST	Faculty of Applied Sciences And Technology
Ambrose Atuheire	MUST	Faculty of Computing And Informatics
Kenneth Baguma	MUST	Faculty of Computing And Informatics
Aarone Atuhe	MUST	Faculty of Computing And Informatics
Galiwango Martin	MUST	Faculty of Applied Sciences And Technology
Peter Bambanza	MUST	Faculty of Computing And Informatics
David Bamutura	MUST	Faculty of Computing And Informatics
Asasira Justus	MUST	Faculty of Interdisciplinary Studies
John Ziine	MUST	Faculty of Applied Sciences And Technology
Tony Engwau	MUST	Faculty of Computing And Informatics
Walter Angol Okello	MUST	Faculty of Computing And Informatics

Felix Atuhaire	MUST	Faculty of Applied Sciences And Technology
Oyo Jude	MUST	Faculty of Computing And Informatics
Brenda Ainomugisha	MUST	Faculty of Medicine
Noel Tumwebaze	BSU	Faculty of Business
Nakato Constance Nakimuli	USJM	Faculty of Education And Sciences
Bwaana Antony	MUST	Faculty of Computing And Informatics

Proceedings

Day One

Information Concerning the Data Analytics

Self-Introductions- Sheila

The international Relations Officer welcomed members to the training and informed them how important it was for them to introduce themselves and know one another.

All participants introduced themselves, mentioning their names, department/faculty/institution, as well as the research background or area of interest.

Welcome remarks – Project manager

Welcomed members to the PSU, and to the training.

"I already see that there will be a great achievement from the training", said the UCoBS Project manager.

Communication from Project Six Leader

The project six leader Dr. Fred Kaggwa welcomed members and thanked them for taking off their time to come for the training in Data Analytics

He went ahead to thank Professor Koen for also taking off time to come all the way from Belgium

Dr. Kaggwa introduced the UCoBS project that it has six subprojects and informed members that this was specifically project six.

He shared the main objective of project six as; "Improved Institutional and Community ICT Capacity to Access and Utilise Information".

He finally presented to the members the specific objectives and the key thematic areas of project six as follows:

Sub Project Six Objectives (Long term desired changes)

1. To build capacity in demographic data management and utilisation of community-based information for research, policy development and service delivery

2. To strengthen internationalisation for increased collaboration, information access and usage

Key Thematic areas of the Sub project

✓ ICT infrastructure, Security and Capacity Building

✓ Internationalisation

✓ Data management

✓ Data Analytics, Artificial Intelligence (AI)&Machine Learning (ML)

✓ Gender and ICT

He went ahead to note that, the reason members had been invited was because of one of the thematic areas of Data Analytics, Artificial Intelligence (AI)&Machine Learning (ML).

"Each one of us generates data on a daily basis and it is therefore a good opportunity to know how we can make good use of the data we generate". He said in his concluding remarks.

Local coordinator Communication

The Principal Investigator or the Local Coordinator, Prof Charles Tushabomwe Kazooba welcomed members to the PSU.

He started by emphasizing the importance of the overall UCoBS project in solving demographic challenges within the western region of the selected districts.

He thanked the sub-project six leader for organizing such an important training and also welcomed Professor Koen from Belgium.

He encouraged members to utilize the opportunity to learn data analytics to improve their skills in managing data.

Each person generates data and they know what data they have generated. It is however important to perform certain computations on this generated data to make it or translate it to information and make it usable to others (the public).

He said that members should have been sharpened and gained addition information in their respective areas at the end of the training.

Beginning of the training

Professor Koen started by giving an introduction to data analytics for Business applications. The concepts concerning Data, Analytics, types of Data Analytics, Decisions, and Actions and issues of where we are making money from data were presented and discussed.

He explained that the core focus for the whole weeks training was to learn and understand *"How to go from data to* **actionable insights** *that can support a business goal"*

Day two

Training continued on day two and this was about machine learning where the basic concepts of machine learning where introduced to members as also the advanced issues concerning supervised and unsupervised learning were taught.

Day three

Day three training focused on prescriptive analytics where business process modelling was taught with the different levels of Analysis. The aspects of how to model, analyze, improve, manage decisions were discussed with a number of practical case studies. Critical issues concerning how to evaluate policies were also presented and discussed.

Data Science Curriculum Discussions

The afternoon of Day three involved discussions concerning the proposed currilum for data science at the University under the Faculty of Computing and Informatics.

The Discussions

Members noted that at the moment there was a restriction on begining new Bachelors programs and it was better to concentrate on the masters program. Informed members also made aware the participants that data science masters had picked up interest by many people wanting to enroll for it but not finding it at MUST. It was therefore from this background that members chose to put efforts in a masters program contrary to a bachelors program.

Specializations Vs Open program

Discussion were made pertaining whether there should be specializations or it should be open to choice. Members noted that specializations needed more teaching staff which limit the smooth operations so an open one would be better.

Target Students

Members noted that students from backgrounds from Computer science, all engineering courses, Information Technology, Statistics, and Mathematics would be fit to apply for the Masters program in data science.

Pre-skills needed

Member noted that there was need for pre-skills for anyone to attempt the program. The identified skills needed were: programming, databases, as well as statistics and probability.

Courses needed to be reflected in the program

Members suggested that for starters, the masters program should atleast include courses or modules   related   to:

- ✓ Machine learning
- ✓ Deeplearning
- ✓ Applied Mathematics
- ✓ Computer Vision
- ✓ Data Analytics
- ✓ Data Architectures and
- ✓ Image Processing

Nature of program

Members presented the issue of whether the program should be technical or Applied i.e., Data sciecne or Applied data science respectively.

Dicsussions concerning the plan of the program were also made. Whether the program sohuld be research intensive (i.e., for academicians, using Plan A: where one year is class work while the other year is final year research) or for practioners, using Plan B: where one year and a half is class work while the last semester is a medium sized research project.

There was no critical agreement on what plan to choose and this was left for FCI Department of Computer Science to discuss and agree.

Agreement on the name of the proposed program was not reached.

Way forward

Members recommended that a benchmark be done to provide the different names and modules provided for by the different unviersities elsewhere in the world.

Members also agreed that a table be shared with a benchmark of the different programs elsewhere in the world for the team to make informed choices of which courses or modules to include in the MUST data science masters program.

Feedback

This was done and the documents where sent to all participants to provide their feedback. The process started and once complete we shall be able to extract the curriculum structure and later assign different members course or modules to develop the content

Day five

Day five was a research seminar where 10 students (4 Masters and 6PhD) presented their work to get some insights and guidance from the members present. Each presenter was given a maximum of 10 minutes to talk about the problem they are handling, provide status of how far they have reached and also seek for help or guidance where need be.

Below is a summary of the presenters and the topics presented about

No.	NAME	TOPIC	LEVEL
1	Nakato Ruth	A model for assessing the Banking Sectors employees' ethical behavior towards cyber security	PhD
2	Ojok Steven	Family Influence on self-esteem and career decision making	Masters
3	Niwaha Beneth	Micro-systems and Reading Readiness among lower Primary School learners- Mbarara City North	Masters
4	David Bamutura	Computational Lexical and Grammatial Resources for Runyankore-Rukiga	PhD
5	Agnes Masika	Academic Motivation and Life Satisfaction among in-service Teachers- Kasese District	Masters
6	Nakato Constance Nakimuli	Impact of Code Clones on the energy efficiencey of Mobile Applications	PhD
7	Obbo Aggrey	People Crowd Detection Algorithms using Wireless sensor networks	PhD

8	Asasira Justus	Socie economic factors influencing uptake or renewable energy technologies among female-headed Household and slum dwellers in southwestern Uganda	PhD
9	Arinda Queen Docus	A framework for identifying social media fake news using real-time analytics	Masters
10	John Ziine	Unmet electricity need among solar home system users in Uganda	PhD

Closure

The project leader thanked members for the turning up and also thanked the trainer professor Koen for the good work done.

The training was closed and members invited for lunch.

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Photo Galery

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Prof. Koen training Data analytics

Group photo for the data analytics workshop

Participants in the data analytics workshop

Prof. Koen in UCOBS Boardroom training data analytics

Participants in the data analytics workshop

More Group Photo of participants with Prof. Koen

Data analytics workshop –participants free time

Summary of the training- Prof. Koen

The goal of the training week was to give a foundational knowledge of Data Analytics. Students will be able to explain what Data Analytics actually is, list the key tools and technologies within the data analytics ecosystem, look at the different roles associated with the modern data analytical ecosystem, and will have a conceptual understanding of the data analysis lifecycle. Concepts introduced were :

- Descriptive analytics

- Diagnostic analytics

- Predictive analytics

- Prescriptive analytics

- Process modelling

- Decision modelling

- Machine learning canvas

Machine learning algorithms were described. One day of the training focused on applications and the interplay of the different concepts were demonstrated. Also failed

projects were given and the main reasons for failure explained. Most of the applications are PH.D. projects from Hasselt University. For more details, students can download the related publications from Uhasselt document server.

On average every day 15 students participated the training. Their attitude was positive.

In a research seminar students explained own research. Knowledge was shared and comment/advice given. There is a huge variety in the topics, but students learned from the participants.

Prepared By

Dr. ir. Fred Kaggwa

Project Six Leader

UCoBS