

# William Senfuma

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## Personal Profile

Self-motivated data scientist with over 8 years of combined experience in Telecom billing systems, Advanced Data Analytics/ Big Data Visualization and Mobile Financial Services (MFS)/ Digital Financial Services (DFS) with hands on experience in design, implementation, deployment and maintenance of machine learning predictive models for financial inclusion through nano credit scoring. .

## Education

- 2010-2012** Master of Science (Computer Science)  
(Machine Learning, Computer Vision, Image Processing and Pattern Recognition) Makerere University, Uganda  
CGPA: 4.45/5  
*Dissertation Title 'Meta Learning for Selection of Best Causal Discovery Algorithms'*
- 2005-2008** Bachelor of Science (Computer Science, Mathematics) Makerere University, Uganda  
First Class Honours CGPA: 4.55/5
- 1999-2004** Advanced Secondary Education - St. Peter's, Uganda  
*(Physics, Chemistry, Mathematics)*

## Certificates

- 2015-2016** Machine Learning | Stanford Online  
Stanford University, Coursera
- 2015-2016** Big Data Hadoop Foundations | IBM  
BigData University, IBM
- 2008-2009** Software Engineering  
*National Software Incubation Center (NSIC), Uganda*
- 2012** Project Monitoring and Evaluation  
*Makerere University College of Humanities and Social Sciences, Uganda*

## Publication

- 2015-2016** Meta-Learning for Selection of Best Causal Discovery Algorithms | ISBN: 978-3-659-93510-7  
LAP LAMBERT Academic Publishing

## Key Competencies and Skills

### ■ Data Science

*Excellent scripting skills in Python, Shell and Awk for advanced huge data manipulation  
Proficient in Machine Learning, Artificial intelligence, Data Mining, Data Warehousing and Data Modeling*

*Practical knowledge in applying machine learning techniques to implement Forecasting, Classification and Regression tasks*

*Hands-on with advanced Data Visualization tools like D3.js, Bokeh, QlickView and Tabluea*

*Working knowledge in Big Data technologies - Hadoop, Hive, Pig and Flume*

*Proficient in Microsoft Business Intelligence Suite (SSRS, SSAS and SSIS)*

*Proficient with Microsoft SQL Server 2008/2012 - database architecture and administration*

*ETL development using SSIS and Talend Open Studio*

*Clustering for market micro-segmentation and Market Basket Analysis (Association mining)*

*SQL tuning and designing parallel queries for data definition and manipulation*

### ■ Software Engineering Skills

*Programming and Scripting Languages: Python, Perl, Java, Awk, Shell, C, C++, LISP,ASP.NET, C#, VB.NET*

*(Toolboxes: MATLAB, Octave, PRTOOLS, VLFEAT, CLOP*

*Database Management Systems: Oracle, MSSQL, MySQL, Infobright, PostgreSQL*

*Source version control: Mercurial, git*

*Excellent knowledge in working with windows and Linux/Unix platforms*

### ■ Soft Skills

*Proficient in using Microsoft Office suite applications*

*Excellent communication, leadership, interpersonal and pedagogical skills*

*Management skills and ability to work with a team*

*High level of motivation and self-drive*

## Work Experience

**Aug 2016 -** Tiaxa Deutschland GmbH, Germany

**Present** Data Scientist

Scope of Service

- Review and enhance/ revamp current credit scoring model
- Lead data science practice implementation for Africa team
- Continuously analyze and segment Tiaxa product users across multiple client platforms
- Detect consumption-based commercial opportunities
- Discuss with internal and external clients additional information that may be required for the analysis and trigger decision making
- Maintain and add analysis in existing Business Intelligence models
- Define, develop and maintain required reports for each implementation
- Ensure commercial operation continuity and use of Tiaxa products
- Lead and operate commercial campaigns with clients
- Generate customer segments using automatic clustering algorithms
- Report to direct management about achievements, processes defined, actions taken
- Coordinate all ISO9001 related functions with the rest of the organization

**Sep 2013 -** Tecnotree Corporation, Espoo, Finland  
**Jul 2016** *Consultant SEA Region (Telecom Billing)*

**Loyalty and Campaign Management**

- Configure, launch and Monitor Campaigns and processes (prerating, Rating processes)
- Design, implement and deploy/ published reports in a timely manner
- Monitor and reprocess customer redemptions and rejections if any
- Support for patch movement
- Work on aggressive time lines to handling Emergency/ Critical Situations/ Escalations issues

**Roaming and Interconnect**

- Setting up new Roaming and Interconnect Partners in the billing system
- Carrying out TADIG (IREG) testing for newly configured operators and issuing TAP certificates (TCC) on successful completion
- Co-coordinating with the DCH (Data Clearing House) for the Transfer and reconciliation of TAPIN, TAPOUT files and RAP dispute
- Trouble shooting of TAPIN and Switch files rating errors occurred during the rating process

**Mar 2013 -** Uganda Telecom, Kampala, Uganda  
**Sep 2013** *Business Analyst and Retention Manager*

- Play key role in developing UTL retention strategy
- Reduce monthly churn rate, enhance customer life cycle value
- Implement Micro-Segmentation for UTL customers for identification of revenue streams and maintain and increase customer life cycle value
- Identify and monitor Telecom industry trends (New Sales, Churn, Reactivations, Market Share) and provide comprehensive business intelligence for new products
- Manage development and delivery of KPI aligned reports, dashboards and ad-hoc analysis for commercial team
- Formulate channel strategies, and along with designing performance scorecards (based on proven models)
- Develop forecasting models for Churn, Sales and Revenue projections
- Develop customer relationship strategies; test new concepts (“Above the Lin Line”)
- Segment/Profile customers for loyalty, retention, upsell, cross sell and revenue enhancement
- Manage Micro Segmentation campaigns, pre and post and Return on Investment Analysis
- Design and develop ‘information models’ which are user-centered interfaces allowing rapid access to contextual information
- Integrate information points (data analytics, market research and market intelligence) to produce insights on customer and market behaviour

**Sep 2012 -** Uganda Telecom, Kampala, Uganda

**Feb 2013** *Business Intelligence Developer*

- Designing, implementation, debugging and monitoring BI solutions
- Creating and deploying business reports using Microsoft Business Intelligence Suite (SSRS)
- Writing relational and multidimensional database queries for different Database Management Systems (MSSQL, MySQL(Infobright), PostgreSQL and Oracle)
- Perform analysis and integration services using Microsoft Business Intelligence Suite (SSAS and SSIS)
- Market Basket Analysis (Association mining) to identify common item sets and rules for cross/up-selling
- Classification and Regression basing on customer profile and call records for personalized customer product development
- Clustering for market micro-segmentation using k-means and hierarchical clustering techniques
- Forecasting, Sequence and Deviation Analysis

**Jan 2011 -** Uganda Telecom, Kampala, Uganda

**Sep 2012** *Interconnect Billing and Roaming Data Analyst*

- Processing, reconciling and reprocessing huge volumes of CDRs with the switch/network element statistics and performing advanced CDR analysis
- Modifying and implementing the Business rules and initiating change requests for mediation
- Establishing, implementing and reporting on the interconnect and roaming revenue assurance controls
- Monitoring and processing rejected CDRs and (re)submitting them to the Billing system for (re)rating
- Ensuring timely completion of Transferred Account Data Interchange Group (TADIG) tests after IREG tests
- Monitoring of NRTRDE(Near Real Time Roaming Data Exchange) for fraud detection and TAP/RAP processing for billing purposes and revenue assurance
- Analyzing problems and incidents related to the billing system, SMS-C, and MSCs and other connected network elements in line with roaming and interconnect on a daily basis

**Jan 2010 -** Orange Uganda Limited now Africell, Kampala, Uganda

**Jan 2011** *Roaming and Interconnect Analyst*

- Ensuring that all roaming Customer Details Records (CDRs) are sent to MACH (Clearing house) on a daily basis
- Monitoring of TAP and NRTRDE (Near Real Time Roaming Data Exchange) process for billing and fraud detection
- Provision of daily and monthly interconnect reconciliation and High Usage Reports (HUR) report
- Administration and configuration of Interconnect Billing and Management system and performing Transferred Account Data Interchange Group (TADIG) tests after IREG tests

**2009 - 2013**      Makerere University, Kampala, Uganda  
*Part-time Lecturer*

I conducted lectures, set, supervised and marked exam for the following courses to Computer Science students (Bachelors and Diploma) in Makerere University Department of Computer Science.

Courses taught: (Numerical Analysis, Further Linear Programming and Network Analysis, Discrete Mathematics, Computer Literacy, Programming Methodology, Fundamentals of Mathematics, Computer Architecture).

## Accomplished Projects

- I have managed to automate all Roaming, Interconnect and Loyalty Campaign related processes and reporting within a period of one month after joining Tenotree Corporation
- I was part of the team involved in the implementation of UTL Prepaid Commission Model, Churn, Prediction Model and Micro Segmentation of UTL's Subscriber base
- Implemented a real time raw CDR collector for prepaid UTL customers which resulted into timely, accurate reporting and support for running various promotions (awakening and activation bonus promotions)
- Implemented a software solution using Perl to generate notification Tap files for UTL inbound roamers. This saved the company 40000 Euro that was required for regeneration of over 100,000 notification by the Clearing house
- Implemented a software solution using Perl to correct billing information for RAPs (Rejected Tap files for UTL inbound roamers)
- Implemented a raw CDR decoder using Perl for MSC (mobile switch)
- Managed to resolve major Tap file exchange challenges between UTL and Data Clearing House (DCH). This helped the company to recover from huge revenue losses that were caused by files aging before reaching the DCH. This was achieved by implementing a number of controls and quality checks like successful ftp delivery reports
- I was involved in the design, analysis and implementation (using python) of UTL bonus airtime model which came in handy during a number of acquisition campaigns
- Implemented the good number algorithm in python for classification of UTL free number pool
- I implemented a Near Real Time Roaming Data Exchange (NRTRDE) solution for roaming fraud detection using python which save UTL over 100,000USD that was to be charged by the vendor to implement the same solution. Solution is still being used by UTL

## Research Groups (Membership)

- **Artificial Intelligence in the Developing World (AI-Dev)**
- **TADIG (Transferred Account Data Interchange Group)**
- **NRTRDE(Near Real Time Roaming Data Exchange)**
- **Mobile Roaming**
- **Interconnect/ Inter Carrier/CABS Billing**