Ablordeppey Prosper, Mr.

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Education

2021 – 2022 **M.Sc. Applied Mathematics (Data Science)** University of Aveiro, (UA, Portugal)
Thesis title: *Simultaneous Factorial Reduction and Clustering Models for Three-Mode Datasets: A Comparative Study*.

2020 – 2021 **M.Sc. Mathematical Engineering** University of L'Aquila, (AQ, Italy)

2015 – 2019 **B.Sc. Actuarial Science** University of Energy and Natural Resources, (UENR, Ghana)
Thesis title: *Willingness To Pay With Social Interactions: A Case Study of Ghana's NHIS*.

Research Publications

Software Packages

1. **Ablordeppey**, **P.** (n.d.[a]). *Simuclustfactor - pypi*. Python package version 0.0.3. Python Software Foundation. Retrieved October 25, 2022, from https://pypi.org/project/simuclustfactor/
2. **Ablordeppey**, **P.** (n.d.[b]). *Simuclustfactor: Simultaneous clustering and factorial decomposition of three-way datasets*. R package version 0.0.3. The Comprehensive R Archive Network. Retrieved October 25, 2022, from https://cran.r-project.org/web/packages/simuclustfactor/index.html

Package Repositories

1. **Ablordeppey**, **P.** (2022a). Simuclustfactor-python. Retrieved October 25, 2022, from https://github.com/prablordeppey/simuclustfactor-python
2. **Ablordeppey**, **P.** (2022b). Simuclustfactor-r. Retrieved October 25, 2022, from https://github.com/prablordeppey/simuclustfactor-r

Conference Proceedings

1. **Ablordeppey**, **P.**, Freitas, A., Maurizio, V., & Zaccaria, G. (2022). *Simultaneous factorial reduction and clustering for three-mode datasets: A comparison* (17th ed.). International Federation of Classification Societies (IFCS), Classification and Data Science in the Digital Age.

Employment History

2019 – 2020 **National Service, Teaching & Research Assistant** (UENR, Ghana)
Teaching assistant of Introductory Probability, Stochastic Processes and Topology
Activities include grading and organizing tutorials to facilitate students' understanding of course contents.
Provide research advice and support to final-year students working on their thesis using tools like Mendeley, Excel, SPSS, Python, and R programming languages.

2018 **Attachment, Business Consultant**
Small and Medium scale business consultant for startups and existing businesses.
Provide advisory on business analysis, proposal review and auditing services.

Employment History (continued)

2014 – 2015 **Pupils' Tutor** New Fountain International School, Ghana
Mathematics and Science tutor for upper primary 6 for 2 terms.
Class tutor for primary 3 in the third term.

Skills

Languages Strong reading, writing and speaking competencies in English, Asante Twi and Ewe.

Coding Python, R, C#, Visual Basic, PHP, SQL, XML, LaTeX, …

Databases MySQL, PostgreSQL, HSQL, SQLite.

Web Dev HTML, CSS, Typescript, JavaScript, Web2Py, Django, Apache Web Server.

Misc. Academic research, teaching, training, github, LaTeX typesetting and publishing.

Miscellaneous Experience

Volunteering

2019 – · · · **Python Software Foundation Lead** (PSF). Sunyani, Ghana.
Delegating leads for projects not limited to introductory computer programming (Python3), desktop apps development (Tkinter), fundamental statistical data analytics (NumPy, Pandas & Scikit Learn) and web development (Django and Web2Py) using Python. Inspecting and guiding members as they complete assigned projects.

2018 – 2019 **Electoral Commissioner** MaSSA-UENR
The association recorded unbiased, free and fair electoral results during my tenure as the commissioner.

Certification

July 2022 **International Federation of Classification Societies** (IFCS). Porto, Portugal

June 2022 **Machine Learning in Science** (CEAUL). Online, Portugal

April 2022 **Artificial Intelligence and Business Strategy: Case Studies** (LinkedIn).

Mar. 2022 **Power BI Essential Training** (LinkedIn).

Python for Data Visualization (LinkedIn).

Feb. 2022 **Neural Networks and Deep Learning** (Coursera).

First Steps in Linear Algebra for Machine Learning (Coursera).

Dissertation Summaries

Masters

Simultaneous Factorial Reduction and Clustering Models for Three-Mode Datasets (2022).
We implement 5 models named TWCFTA, TWFCTA, T3Clus, 3FKMeans and CT3Clus in Python and R-based packages called simuclustfactor to aid the analysis of three-mode datasets. The two iterative techniques, T3Clus and 3Fkmeans, aimed at a simultaneous clustering of objects and a factorial dimensionality reduction of variables and occasions on three-mode datasets, were proposed by Vichi et. al in 2007 as a replacement for the traditional tandem models TWCFTA and TWFCTA, respectively. A convex combination of these two simultaneous procedures called CT3Clus and based on a hyperparameter α ($0 \leq \alpha \leq 1$, with 3FKMeans for $\alpha = 0$ and T3Clus for $\alpha = 1$) was additionally proposed in Vichi et. al. In each iteration, T3Clus (3Fkmeans) is based on a sequential application of the Tucker2 algorithm and the K-means algorithm (vice versa). In contrast, in a tandem analysis, only one sequential application of clustering and factorial methodologies is performed. In this work, applications on synthetic and real datasets were considered to show the features of these simultaneous models when compared with the tandem models. It turned out that the simultaneous models produced well-separated clusters with higher cohesion within clusters and could better recover object-cluster, variable/occasion-factor associations than the tandem models. Furthermore, regarding how well-separated clusters are with high cohesion within the clusters, we realize the best results when we start with factorial analysis, prioritizing the minimization of the within-cluster deviation of the component scores (i.e. WSS of our dataset in the reduced space).

Bachelors

Willingness To Pay With Social Interactions: A Case Study of Ghana's NHIS (2019).
A case study for improving National Health Insurance Scheme (NHIS) coverage in Sunyani municipality. The Contingent Valuation Method (CVM), an elicitation technique for non-market goods, was employed to determine individuals' Willingness To Pay (WTP) for the extension of national health insurance coverage. The Binary Logit Regression analysis helped to identify factors influencing the decision of whether or not individuals are willing to pay for an improved NHIS. Additionally, we added social interaction to the model to measure how other individuals' views influence an individual's decision. The research results revealed that more than half of NHIS holders who purchase additional drugs upon visiting a health facility were willing to pay for an extension in the NHIS coverage. Rehabilitation conditions (vision, hearing and dental issues), cancer and heart-related surgeries were costly. They were the primary medical conditions for which respondents usually purchased additional drugs and were willing to pay an additional premium for their inclusion in the NHIS cover. On average, respondents were willing to pay not more than GH₵30.00 annually to cover those conditions. We advised Policymakers or planners to consider income, gender and level of education when making NHIS coverage improvement decisions since these variables were most significant in the model.

References

Prof. Adelaide Freitas
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Senior Lecturer: Dept. of Mathematics & Statistics
University of Energy and Natural Resources,
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