MARCEL V NGUEMAHA

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- 6+ years of experience developing statistical and machine learning models with application in business and healthcare
- 8+ years of experience in research and algorithm development using programming languages such as Python and C++
- 8+ years of teaching experience at various level from high school to college
- 1 year experience in migrating on premise data science workflow to the cloud

EMPLOYMENT

Data Scientist-Analytics Advisor, *CVS Health-Caremark* **2019 - Present**

Project: PBM - Drug Utilization Forecasting (**After only 7 months, transformed a full-time job into a half-time job**)

- Provide senior business leaders with technical guidance to make data-driven business decisions
- Developed a fast pricing optimization algorithm from scratch to help business manage more than 400 client contracts
- Developed automation pipelines for more efficient data wrangling, reducing processing time by two business days
- Lead a team of 3 data scientists responsible for converting the company's PBM software from R to Python
- Create user-friendly python visualizations to communicate insights to senior business leaders.
- Applied a combination of DataRobot and Time Series models for drug utilization forecasting
- Created optimized SQL scripts for database uploads with 30 times speed up compared to previous code

Project: Migrating Data Science to Cloud (**Optimized workflow from running 10 clients/month to running 100 clients/month**)

- Lead the migration of the company's pricing optimization algorithm to Google Cloud
- Refactored codes and created Docker containers to enable massive parallel processing with Google Kubernetes Engine
- Collaborated with Data Engineers to migrate data from Teradata to Google BigQuery
- Created training material and trained more than 15 data scientists on running algorithms on the Google Cloud Platform

Project: The Data Science Buddy Program (**mentored 3 new data scientists, reduced onboarding period by 2 weeks**)

Requirements to be selected as a mentor (Buddy for new hires):

- Must have demonstrated high performance
- Be a positive role-model as determined by managers
- Friendly, patient, good communicator and has familiarity with the new colleague's job responsibilities

Postdoctoral Research Associate, *University of Illinois Chicago* **2018-2019**

Project: Statistical and Machine Learning Approach to Protein Folding (**Resulted in 3 first-author publications**)

- Developed a fast Monte Carlo search algorithm to predict protein state
- Explored the application of Recurrent Neural Network in predicting native folded state of proteins
- Mentored 2 under-graduates and 1 graduate students

Insight Health Data Science Fellow, *Insight, Boston* **2018-2019**

Project: Build a Web Application to Forecast Drug Shortages (drugs4Life.org)

- Built a custom web crawler using Python to extract drug shortage data from government websites
- Employed various machine learning models to forecast shortage probability with 70% accuracy
- Built a web application using Dash to visualize predictions

SOFTWARE AND PROGRAMMING

- **Programming** – Python - C++ - SQL – R - Bash script – Awk – SAS - Stata
- **Database and Big Data** – Teradata - SQL Server – Hadoop – Hive - Impala - PySpark
- **Statistics and Machine Learning** – Regression – Classification – Random Forest - Time series - Data visualization
- **Tools and Platform** – Git – Linux - Cloud Computing – Pandas – Jupyter - scikit learn – Django – Dash
- **Data Visualization and Presentation** – Matplotlib – Plotly – searborn – Excel – PowerPoint - Tableau

EDUCATION

Certified SAS Programming and Data Analyst (SAS Institute and Florida State University) **Apr 2017 – May 2018**
Completed 6 full semester courses in Advanced Statistics, Machine Learning, Regression and SAS programming

PhD Physics - Florida State University **Aug 2013 – Dec 2018**
Research Focus: The study of complex protein interaction networks using statistical methods and computer simulations

M.Sc Physics - Miami University, OH **Aug 2011 – Jul 2013**
Project: Measuring the refractive index of turbid media using light scattering and total internal reflection

M.Sc Physics - University of Buea, Cameroon **Sep 2008 – May 2011**
B.Sc Physics and Computer Science - University of Buea, Cameroon **Sep 2004 – Dec 2007**

AWARDS AND ACADEMIC HONORS

- **Graduate Student Leadership Award**, Florida State University
  Awarded once every year and recognizes outstanding graduate student leaders who are making a positive difference in their scholarly/creative work, campus, and wider communities
- **Third Place Career Portfolio competition**, Florida State University
  Yearly competition with more than 2000 graduate student participants
- **Excellent Student Orientation Leader Award**, Miami University
  Recognizes students who have played an integral role in shaping a positive orientation experience for new international students and preparing them to achieve success at Miami University.

INDEPENDENT DATA SCIENCE PROJECTS

- **Global Disease Burden (online)**
  Developed a web application using Python, Django and Plotly – Sources disease distribution data from the WHO website to create an interactive user friendly chart of disease burden for a user-specified country
- **Interactive Online Machine Learning Tutorial** (under development **online**)
  Building an interactive online tutorial to help students interested in data science learn about various ML models. Topics will include Time Series (ARIMA), Supervised and Unsupervised models, Deep Learning

TEACHING EXPERIENCE

- **Graduate Teaching Assistant, Florida State University** **Aug 2013 – Jun 2017**
  Independently taught 2 courses in introduction to Biophysics for non-major, organized recitations and designed course evaluation rubrics
- **Graduate Teaching Assistant, Miami University** **Aug 2011 – May 2013**
  Taught Physic laboratory courses, graded papers and organized recitations
- **Primary School Teacher – Saker Baptist College Cameroon** **Sep 2007- May 2011**
  Taught Physics, Mathematics and Computer to students ranging from 11-17 years old. Needed to adapt teaching strategy and communication method as appropriate to age group

EXTRA-CURRICULAR ACTIVITIES

- **Volunteer, STEMS4Girls – Tallahassee, FL** **Dec 2020 - present**
  STEM outreach after-school program for young girls.
- **Community Mentor, Coursera**
  Completed more than 15 courses covering topics in Machine Learning, Python programming, Cloud Engineering and SQL

SELECTED RESEARCH PUBLICATIONS

- **V. Nguemaha et al, *Scietific Report 2018* -** Liquid-Liquid Phase Separation of Patchy Particles Illuminates Diverse Effects of Regulatory Components on Protein Droplet Formation
- **V. Nguemaha et al. *Front. Mol. Biosci 2019*** Transfer free energies of test proteins Into crowded protein solutions have simple dependence on crowder concentration