Melissa G Ngamini

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Data Scientist

Github
LinkedIn
Portfolio

SUMMARY

Data scientist skilled in implementing machine learning to solve business problems. Experienced with Python, SQL, sci-kit learn, seaborn, matplotlib, and experimental design.

SKILLS

ADVANCED
- Python and SQL
- Pandas
- Visualization with seaborn and matplotlib
- Regression and Classification

PROFICIENT
- Supervised and Unsupervised Learning
- Clustering algorithms
- Natural Language Processing (NLP)
- Tensorflow and Keras

EXPERT
- Research
- Teaching
- Written and Verbal communication
- Matlab.

EDUCATION

THINKFUL (ATLANTA, GA)
DATA SCIENCE PROGRAM   (DECEMBER 2018)
- Completed intensive data science program with a focus on Python, mathematical tool-sets, statistical analysis, and big data techniques including machine learning.
- Learned industry best practices and standards by collaborating several hours every week with a senior data scientist.

NORTH CAROLINA STATE UNIVERSITY (RALEIGH, NC)
PH.D, APPLIED MATHEMATICS   (AUGUST 2015)
- Qualifying exams passed: Matrix theory, Numerical analysis, Linear Algebra
- Dissertation Topic: Nonlinear Filtering Problems for systems governed by PDEs
- Advisor: Dr. Kazufumi Ito

MORGAN STATE UNIVERSITY (BALTIMORE, MD)
BACHELOR OF SCIENCE, MATHEMATICS   (MAY 2009)
- Dissertation Topic: Classification of Frieze and Wallpaper Groups
- Advisor: Dr. Marshall Cohen

DATA SCIENCE PROJECTS

PREDICTING AN ARTICLE TOPIC FROM ITS CONTENT
DECEMBER 2018
- Model could help with figuring out an article's topic without having to read it. It could also be helpful in figuring out the types of words to use in different types of articles.
- Looked at Data that mostly contained news articles relating to the 2016 US Elections.
- Used a tf-idf vectorizer on the articles titles and contents and latent semantic analysis, clustered the articles into different topics.
- Predicted an article topic based on its content. This was achieved using Stochastic Gradient Descent.

NAME HIP HOP ARTIST USING SONG LYRICS
AUGUST 2018
- Model could help with figuring out name of song artist with using just the lyrics.
- Looked at the data that contained song lyrics.
- Used a tf-idf vectorizer on the song lyrics, I was able to create features to use in my models. Had to remove a lot of names and certain words to reduce the correlation between my features.
- Predicted artist name given song lyrics. The stated goal was achieved using Stochastic Gradient Descent.

PREDICTING AVAILABLE LISTINGS IN SEATTLE AIRBNB
JUNE 2018
- Model could be used by Airbnb hosts to determine the periods of high demands, the right pricings and the in demand amenities.
- Looked at the Airbnb Data for the city of Seattle in 2014.

- Used Random Forest Classifier and SelectKBest to identify important features in the data for prediction on the availability of Airbnb Listings.
- After using Random Forest, Logistic Regression, the best result were obtained using Gradient Boosting.

TEACHING AND LEADERSHIP EXPERIENCE

ASSISTANT PROFESSOR, DEPARTMENT OF MATHEMATICS, MOREHOUSE COLLEGE
2016 – CURRENT
- Worked with a student on their Senior Seminar project:
  - "Classification with Support Vector Machine" Spring 2018.
  - "Classification with Random Forests" Spring 2019.
- Spring 2019: Mentored a group of 3 Freshmen on a Mathematical Research Experience
- (Applied Statistics/Data Science).
- Organized, planned and executed lectures for class sizes of 15 to 35 undergraduate students, and prepared syllabus and all course materials.
- Crafted projects in order to measure students' understanding of course objectives. Mentored students when further instructions needed.
- Used technology including MyMathlab and WebAssign to assign homework.

INSTRUCTOR, DEPARTMENT OF MATHEMATICS, NCSU
2013 – 2015
- Organized, planned and executed lectures for class sizes of 15 to 150 undergraduate students.
- Prepared syllabus and course materials and directed Recitation leaders on their duties.
- Wrote exams and exams keys and mentored students when further instructions needed.

GRADUATE TEACHING ASSISTANT

RECITATION LEADER, NCSU
AUGUST 2015
- Led two to four class problem sessions per week.
- Graded tests, held office hours, attended all lecture sessions and took attendance.
- Clarified and encouraged up 50 undergraduate students' understanding of the material taught in lecture sessions.

RESEARCH EXPERIENCE

NONLINEAR FILTERING PROBLEM FOR SYSTEM GOVERNED BY PDES, NCSU
AUGUST 2015
- Found algorithms to solve nonlinear filtering problems for systems governed by partial differential equations (PDEs).
- Used algorithm on the Lorenz system to estimate the parameters in its equation given measurements. These positive parameters denote the physical characteristics of airflow. A good estimation of those parameters using our algorithm is really important since the Lorenz system is a system that is sensitive to initial condition and the presence of period doubling cycles leads to chaos.
- Presented results at the EDGE For women Meeting at the Mathematical Association of America headquarters in July 2015.

PARAMETER AND STATE ESTIMATION FOR THE HEAT EQUATION, NCSU
SUMMER 2011
- Developed different ways to model and solve systems using mathematical concepts. For the heat equation which is a PDE that models in a metal rod with non-uniform temperature. It is important to have a good model for the heat (thermal energy) that is transferred from regions of higher temperature to regions of lower temperature.
- Decided which parameters we needed to take into consideration for the diffusion equation model. Data mining is used when there is a lot of data to determine the parameters that are needed for the model.
- Reported the result to the Mathematics Department at North Carolina State University.

MULTIVARIATE INTERPOLATION (REG), NCSU
SUMMER 2010
- Discovered algorithm and formula for integrating polynomial functions over semi-algebraic sets.
- Solved this problem and found 3 algorithms based methods to accomplish the task. The Lagrange Interpolation based, Vandermonde matrix based and the projection methods.
- Showed that with the Projection method helps to construct a set of vectors that are linearly independent regardless of the dimension of our space and the points selected in the space.

- Reported the result to the Mathematics Department at North Carolina State University.

CLASSIFICATION OF FREEZE AND WALLPAPER GROUPS, MSU
FALL 2008 – SPRING 2009
- Studied Frieze and Wallpaper patterns are decorative patterns that are found in nature, decorative art, textiles and architecture throughout history.
- Classified the Frieze and Wallpaper groups to find the isometries: translations, rotations, reflections and glide-reflections that preserve each pattern.
- Proved that up to equivalence, there are only seven Frieze and seventeen Wallpaper groups.
- Presented the result of research to the Mathematics Department at Morgan State University.

PROFESSIONAL DEVELOPMENT	

COURSEWORK
- R Programming and Data Scientist Toolbox (Online Course, John Hopkins University).
- Directing Undergraduate Research (Minicourse at Joint Math Meeting)
- Machine Learning (Online Course, Stanford University)

MEMBERSHIPS
- American Mathematical Society (AMS).
- Association for Women in Mathematics (AWM).
- Mathematical Association of America (MAA).
- Society for Industrial and Applied Mathematics (SIAM).

LANGUAGE PROFICIENCY

Native or bilingual proficiency: English, French
Elementary proficiency: Spanish and German

RELEVANT COURSEWORK

- Functional Analysis
- Complex Analysis
- Linear Algebra
- Lie Algebra

- Matrix Theory I & II
- Computer Algebra I & II
- Numerical Analysis I & II
- Mathematical Modeling I & II

- Ordinary Differential Equations I
- Stochastic Differential Equations
- Special Topics: Applied Algebra
- Special Topics: Vector Space Methods and Optimization.