Melissa G Ngamini

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Data Scientist

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 maplotlib
- Regression and Classification

PROFICIENT
- Supervised and Unsupervised Learning
- Clustering algorithms
- Natural Language Processing (NLP)
- Tensor flow 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
- Looked at Data that mostly contained news articles relating to the 2016 US Elections.
- Using 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
- Looked at the data that contained song lyrics.
- Using 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. This was achieved the stated goal using Stochastic Gradient Descent.

PREDICTING AVAILABLE LISTINGS IN SEATTLE AIRBNB
JUNE 2018
- Looked at Data that mostly contained news articles relating to the 2016 US Elections.
- Using a vectorizer on the articles titles and contents and latent semantic analysis, I was able to clusters the articles into different topics.
- Predicted an article topic based on its content. This was achieved using Stochastic Gradient Descent.

TEACHING AND LEADERSHIP EXPERIENCE	**ASSISTANT PROFESSOR,** DEPARTMENT OF MATHEMATICS, MOREHOUSE COLLEGE 2016 – CURRENT

ASSISTANT PROFESSOR, DEPARTMENT OF MATHEMATICS, MOREHOUSE COLLEGE
2016 – CURRENT
- Worked with a student on their Senior Seminar project: "Classification with Support Vector Machine".
- Organized, planned and executed lectures for class sizes of 15 to 35 undergraduate students.
- Preparing the syllabus and course materials.
- Wrote exams and exams keys.
- Held regular office hours for students.
- Used technology including MyMathlab to assign homework.

INSTRUCTOR, DEPARTMENT OF MATHEMATICS, NCSU
2013 – 2015
- Organized, planned and executed lectures for class sizes of 15 to 150 undergraduate students.
- Preparing the syllabus and course materials.
- Wrote exams and exams keys.
- Held regular office hours for students.
- Used technology including WebAssign and Maple to assign homework.
- Directed Recitation leaders on their duties.

GRADUATE TEACHING ASSISTANT

RECITATION LEADER, DEPARTMENT OF MATHEMATICS, NCSU
FALL 2009 – SPRING 2013
- 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.
- Used technology including WebAssign, Moodle, Maple, and Blackboard/Elluminate.

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 FRIEZE AND WALLPAPER PATTERN 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.

TEACHING ACTIVITIES

MATHEMATICS COURSES TAUGHT, DEPARTMENT OF MATHEMATICS, MOREHOUSE COLLEGE
- Basic Statistics: Fall 2018, Spring 2019
- Business Calculus: Fall 2016
- Calculus II: Spring 2017, Spring 2018, Summer 2018
- College Algebra 1: Fall 2016, Spring 2019
- Finite Mathematics: Fall 2016, Spring 2017, Summer 2018, Fall 2018
- Pre-Calculus: Spring 2017, Fall 2017, Spring 2017, Spring 2018, Summer 2018, Fall 2018
- Ordinary Differential Equations: Fall 2017, Fall 2018

MATHEMATICS COURSES TAUGHT, DEPARTMENT OF MATHEMATICS, NCSU
- Mathematics Of Finance: Summer 2014, Summer 2015
- Calculus for life and management sciences, Fall 2014
- Intermediate Algebra, Summer 2013
- Recitation Leader Calculus II: Fall 2013, Spring 2015
- Recitation Leader Introduction to Finite Mathematics with Applications: Spring 2014
- Teaching Assistant for Applied Differential Equations I: Spring 2011, Spring 2012, Spring 2013
- Teaching Assistant for Calculus III: Fall 2012
- Teaching Assistant for Pre-Calculus I: Fall 2011

MATHEMATICS TUTOR NCSU
FALL 2010 - SPRING 2015
Tutored students on a walk-in basis in NCSU's Mathematics Tutorial Center.

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.