

Musabbir A. Saeed, PhD

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Technical Skills

Programming Languages: Python, SQL, HTML, Bash

Data Science: Pandas, NumPy, Scikit-Learn, Data Visualization (Matplotlib, Seaborn, Plotly and Bokeh), Network graph, Big Data, PySpark, Tensorflow, Keras, Git and Github

Machine Learning: Regression, Classification, Artificial Neural Network, Naive Bayes, K-Nearest Neighbors, Support Vector Machines (SVM), Time-series Analysis, Natural Language Processing (NLP), Image Classification,

Professional Experience

CUSTOMERX.I

Voluntary Position

December 2020 – Present

- Created a database of different types of institutions by gathering data through **web-scraping**, **cleaning**, and **wangling** using different Python libraries like **Requests**, **BeautifulSoup**, **Pandas**. **Data visualization** has been done using **Plotly**.

THE DATA INCUBATOR

Data science scholar

June 2020 – September 2020

- Created a database through web scrapping using Python libraries to gather, clean, organize, and analyze messy real-world data.
- Built a social graph of social connections of the population and used that to determine influential people within the group.
- Wrote complex **SQL** queries to extract information from a NYC database of restaurant inspections.
- Develop a machine learning model using **Python** and **Scikit Learn** combining existing estimators and transformers via **pipelines** and **feature unions** and was able to develop **custom estimators** and **transformers** for prediction.
- Completed two mini projects to address **natural language processing** and **time series problems** using **Scikit-learn** libraries.
- Compared to the functioning of, and trade-offs in, more advanced models, like **support vector machines**, **random forests**, and **gradient boosting trees**, and had chosen, trained, and tuned my models appropriately for the domain.
- Used **PySpark** to **parse**, **clean**, and **process** a **10 GB** data set of XML files of a Q&A website. Trained a **word2vec** model and a **classification** model on tags associated with questions **working** with **RDDs**, **DataFrames**, and **Spark ML**.
- Built and trained a series of neural networks using **Tensorflow 2.0** and **Keras** to perform image classification, including a multi-layer perceptron, a **convolutional neural network**, and a network using **transfer learning** from a pre-trained model.

Capstone Project

Food Nutrition Analysis; <http://musabbir.herokuapp.com>

Created a web-app that helps to know daily food nutrition consumption in the form of tables and graphs. The user can search for multiple food items using their **natural language**. Used a nutrition API that processes natural language and provides data in real-time after request. The obtained JSON data are processed and presented in a tabular form as well as an interactive visualization through the Python Bokeh library. The user can monitor the number of Calories, macro-nutrients, micro-nutrients, consumption in each food item, and in total.

MARYMOUNT UNIVERSITY,

Adjunct faculty

May 2016 – Present

- Lecture organic chemistry undergraduate courses and facilitate associated labs.
- Develop undergraduate chemistry curriculum and implementation of evidence-based teaching practices.
- Support coordination and integration of lecture material into the laboratory curriculum.
- Provide students with timely information maintaining regularly scheduled office hours in order to advise and assist students.

UNIVERSITY OF MARYLAND COLLEGE PARK,

Postdoctoral Research Associate

June 2014 – June 2015

- Designed, computationally studied (DFT, molecular docking, molecular dynamics) small drug-like small molecules.
- Conducted multi-step organic synthesis of drug-like molecules, examining the structural activity of anti-cancer drugs.
- Performed retrosynthetic analysis, method development, and lead optimization.

UNIVERSITY OF HOUSTON

Postdoctoral Research Assistant

May 2012 – April 2014

- Led a project of designing, synthesizing, spectroscopic investigation, and computation calculation of highly conjugated structural molecules.
- Served as a fellow in the Eby Nell McElrath Postdoctoral Fellowship.

Education

PhD in Chemistry, Jackson State University, December 2012

MS in Applied Chemistry and Chemical Technology, University of Dhaka, June 2008

BS in Applied Chemistry and Chemical Technology, University of Dhaka, June 2006

Coursera Courses

Introduction to Genomic Technologies

Genomic Data Science with Galaxy

Python for Genomic Data Science

Introduction to Data Science in Python

Python for Data Science

Machine Learning with Python

Databases and SQL for Data Science

Introduction to Deep Learning & Neural Networks with Keras

SELECTED PUBLICATIONS (TOTAL 22, CITATIONS 516, H-INDEX 13)

1. Wang, C.; Carter-Cooper, B.; Du, Y.; Zhou, J.; Saeed, M. A.; Liu, J.; Guo, M.; Roembke, B.; Mikek, C.; Lewis, E. A.; Lapidus R. G.; Sintim H. O. "Alkyne-substituted diminazene as G-quadruplex binders with anticancer activities" *Eur. J. Med. Chem.* 2016, 118, 266–275
2. Haque, S. A.; Saeed, M. A.; Jahan, A.; Wang, J.; Leszczynski, J.; Hossain, M. A. "Experimental and Theoretical Aspects of Anion Complexes with a Thiophene-Based Cryptand." *Comments Inorg. Chem.* 2016, 36:6, 305-326
3. Saeed, M. A.; Le, Ha T. M.; Miljanić, O. S. "Benzobisoxazole Cruciforms as Fluorescent Sensors" *Acc. Chem. Res.* 2014 47 (7), 2074–2083.
4. Hossain, M. A.; Saeed, M. A.; Pramanik, A.; Wong, B. M.; Haque, S. A. Powell, D. R. "A Self-assembled Fluoride-Water CyclicCluster of $[F(H_2O)]_4^{4-}$ in a Molecular Box" *J. Am. Chem. Soc.* 2012, 134, 11892–11895.
5. Saeed, M. A.; Pramanik, A.; Wong, B. M.; Haque, S. A.; Powell, D. R.; Chand, D. K.; Hossain, M. A. "Self-assembly of ordered water tetramers in an encapsulated $[Br(H_2O)_{12}]^-$ complex" *Chem. Commun.* 2012, 48, 8631–8633. (back cover page)
6. Saeed, M. A.; Pramanik, A.; Hossain, M. A. "Phosphate binding with a thiophene-based azamacrocyclic in water" *Inorg. Chem. Commun.* 2012, 21, 32–34.
7. Saeed, M. A.; Wong, B. M.; Fronczek, F. R.; Venkatraman, R.; Hossain, M. A. "Formation of an Amine-Water Cyclic Pentamer: A New Type of Water Cluster in a Polyazacryptand" *Cryst. Growth Des.* 2010, 10, 1486–1488. (Highlighted in ACS homepage and Top downloaded articles for six months)
8. Saeed, M. A.; Fronczek, F. R.; Huang, M.-J.; Hossain, M. A. "Unusual bridging of three nitrates with two bridgehead protons in an octaprotonated azacryptand" *Chem. Commun.* 2010, 46, 404–406.
9. Mendy, J. S.; Saeed, M. A.; Fronczek, F. R.; Powell, D. R.; Hossain, M. A. "Anion recognition and sensing by a new macrocyclic dinuclear copper(II) complex: A selective receptor for iodide" *Inorg. Chem.* 2010, 49, 7223–7225.
10. Saeed, M. A.; Fronczek, F. R.; Hossain, M. A. "Encapsulated chloride coordinating with two in-in protons of bridgehead amines in an octaprotonated azacryptand" *Chem. Commun.* 2009, 6409–6411.