

# BETUL MESCIOGLU

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## SUMMARY OF QUALIFICATIONS:

In-depth knowledge and expertise in engineering principles and data science methodologies, including statistical modeling, data visualization, and machine learning algorithms.

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## SIGNATURE STRENGTHS:

Data Science for Applications | Machine Learning Algorithms | Deep Learning | Artificial Intelligence | Data Visualization | Data Cleaning | Image Processing | Clustering & Classification | Web Scraping

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## LANGUAGES AND APPLICATIONS:

Python (libraries such as Numpy, Pandas, Scipy, Matplotlib, Seaborn, BeautifulSoup, Scikit-learn, Re), Tableau, Processing (Data Visualization Environment), SAS, SQL, Microsoft Office, Google Docs

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## EDUCATION:

### Master of Science in Data Science

Expected: October 2023

Lewis University, Romeoville, IL

GPA: 4.0/4.0

Coursework: Supervised Machine Learning, Unsupervised Machine Learning, Statistical Programming, Data Visualization, Artificial Intelligence, Digital Image Processing, Natural Language Processing, Data Mining, Capstone, Multivariate Analysis, LargeScale Data Storage System (currently enrolled)

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### Master of Science in Electrical Engineering

GPA: 3.5/4.0

University of Texas at Dallas, Dallas, TX

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### Bachelor of Science in Electrical Engineering

GPA: 3.7/4.0

University of Texas at Dallas, Dallas, TX

Honors: Dean's List

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## CONFERENCE PAPERS:

B. Mescioglu and O. Abuomar. "[\*Predicting Stock Price Volatility Amid Controversies: Harnessing News, Tweets, and Google Search Trends with CNN+LSTM\*](#)" IEEE 14th Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON) 2023. 12-14 October 2023, Columbia University, USA (Accepted).

- Explored the impact of incorporating news articles, tweets, and Google search trends in enhancing the accuracy of stock price predictions for companies entangled in controversies compared to those without such issues.
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## RESEARCH COLLABORATIONS:

### Image Processing Research Collaboration

September 2023 – Present

Argonne National Laboratory, Lemont, IL

- [Denoised images generated by the Advance Photon Source Synchrotron using TomoGAN and Convolutional Neural Networks](#)
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## RELEVANT EXPERIENCE:

### [Data Science Virtual Intern](#)

July 2022 – September 2022

Data Glacier, Inc., India

- [Investment Analysis](#): Conducted a comprehensive analysis of the profitability and customer profile of two competing cab companies, ultimately determining which company held a greater share of the market and yielded higher profits.
  - [Classified documents using supervised machine learning models](#): Achieved 89% accuracy in classifying 20,000 emails into correct newsgroups using a range of classification algorithms including Neural Networks. ([Report](#))
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## **SELECTED PROJECTS:**

### **Supervised Learning:**

[Image Classification Using Convolutional Neural Networks](#): House numbers obtained from Google maps images were classified into 10 categories (0-9) with 84% accuracy.

[Predicting Students' Dropout and Academic Success via Classification](#): Classified student data to predict who will graduate, drop out or stay enrolled using KNN, SVM, SGDClassifier and Random Forest.

### **Unsupervised Learning:**

[Customer Segmentation Using K-Means](#): Customers were categorized into four clusters using PCA and K-Means. Each cluster has a detailed customer profile, along with suggestions on how to effectively target them with advertisements.

[Dimensionality Reduction with PCA and LDA](#): PCA and LDA were implemented from scratch and applied on Iris dataset.

[Market Basket Analysis](#): Using Apriori algorithm, calculated support, confidence and lift of more than 99,000 transactions. Using these metrics, ten best association rules were found.

[K-Means Algorithm](#): K-Means algorithm was implemented from scratch.

[Fuzzy-C-Means Clustering](#): Fuzzy-C-Means algorithm was applied to several datasets.

### **Natural Language Processing:**

[Product Recommender](#): Using cosine similarity and word embeddings, two recommendation systems were developed for Amazon products, which relied on analysis of customer reviews and product descriptions.

### **Image Processing:**

Developed a comprehensive 13-part tutorial on image processing using the Scikit-image library in Python, covering essential concepts such as

- [Thresholding](#)
- [Histograms](#)
- [Connected Component Analysis](#)
- [Morphological Operations](#)
- [Contrast Enhancement](#)
- [Image Segmentation](#)
- [Contour Detection](#)
- [Edge & Corner Detection](#)
- [Image Restoration](#)

Image denoising:

- [Image Denoising Using TomoGans](#)
- [Image Denoising Using Convolutional Neural Networks](#)

[Image Segmentation](#)

[Edge Detection](#)

[Sampling and Quantization](#)

### **Data Visualization:**

[Data Visualization Using Processing Environment](#): Three interactive visualization projects were created using Python and Java in Processing Environment.

[Exploring the Reasons that Keep Children out of Primary School](#), [Health System Performance](#): Tableau projects.

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