# ELDIN SAHBAZ

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## SUMMARY

Accomplished data scientist with three years of progressive professional experience in a multinational company. Proven ability to plan and lead research efforts, design experiments, analyze time series and signals, conduct algorithmic research and development in artificial intelligence and machine learning, and communicate insights to stakeholders. Applied expertise in modeling complex chemical processes via physics and electrical sensor data. Among other accomplishments, successfully improved mass spectrometry signal quality — reducing error by 21%.

## EDUCATION

**Syracuse University** *February 2021 - May 2021*
Postgraduate ◇ Mathematics

**Syracuse University** *August 2017 - May 2018*
Master of Science ◇ Computer Science

**Syracuse University** *August 2014 - May 2017*
Bachelor of Science ◇ Computer Science Summa Cum Laude

## PROFESSIONAL EXPERIENCE

**Engineer** **Research & Development** June 2018 - Present
*INFICON* *Syracuse, New York*

· Delivered updates and status reports to the Senior Director of Development for Intelligent Sensor Solutions (ISS).
· Applied data science expertise to mass spectrometry sensors and systems as a part of INFICON's ISS R&D group.
· Collaborated with stakeholders to elucidate tangible research objectives from high-level problem statements.
· Lead and planned data science initiatives in a cross-functional environment — completing 10 studies and projects.
· Counseled internal R&D teams, e.g., facilitated literature searches, discussed approaches, and partook in reviews.
· Mined, analyzed, visualized, and communicated data to stakeholders — creating and enhancing internal processes.
· Conceptualized and instituted AI technologies and data infrastructure for mass spectrometry sensor enhancement.
· Coordinated with physical scientists to integrate domain expertise into the experiments and predictive models.
· Interfaced with software engineers to facilitate migrating algorithmic research and findings to existing technologies.
· Audited sensor performance via simulation studies — covering 58% of chemical detection and gas analysis sensors.
· Improved mass spectrometry sensor performance and signal quality with a 21% reduction in estimation error.
· Presented signal processing research and results at the company-wide INFICON Data Analytics Summit.

**Software Developer** June 2015 – September 2015
*Mere Perfect Solutions* *Syracuse, New York*

· Lead content management system development for a local and state government.
· Restructured, enhanced, and developed content management system processes for a Forbes Global 2000 company.

## ACADEMIC APPOINTMENTS

**Summer REU** June 2017 - August 2017
*Syracuse University ◇ Data Lab* *Syracuse, New York*

· Conducted research under the supervision of Dr. Reza Zafarani (Electrical Engineering and Computer Science).
· Formulated a repeated measures experimental design to collect and track YouTube content over time.
· Queried structured and unstructured data — videos, audio, text, and channel statistics — from YouTube.
· Formatted data as a structured feature set and discretized content views, i.e., an ordinal dependent variable.
· Maximized the cross-validation score of ensembled boosting classifiers, with respect to feature dimensionality.

**Undergraduate Research Assistant** August 2014 - May 2015
*Syracuse University ◇ The Hosein Research Group* *Syracuse, New York*

- Conducted research under the supervision of Dr. Ian Hosein (Biomedical and Chemical Engineering).
- Awarded the Dean's Leadership Grant in support of ambitious undergraduate research endeavors.
- Utilized wave propagation models to simulate light trajectories and quantify energy loss across solar cell surfaces.
- Produced graphs informing of the appropriate optical coatings for reducing solar cell inefficiency.

## PROJECTS

**Cryptocurrency Analysis** *Time Series Modeling and Analysis (MAS 777)*
*Syracuse University*

- Designed a study with team members to elucidate interrelationships among core cryptocurrencies.
- Identified variables of interest via non-parametric correlation analysis and linear regression.
- Tested for unit roots and cointegrated time series; visualized ACF, PACF, and CCF plots.
- Assessed ARIMAX and VECM model fits via AIC estimates, BIC estimates, and residual analysis.
- Interpreted the statistical models, documented relevant findings, and presented this study's results.

**Neural Text Summarization** *Natural Language Processing (CIS 668)*
*Syracuse University*

- Lead a cross-functional team of five members in investigating extractive and abstractive text summarization.
- Identified appropriate open-source datasets, e.g., Amazon Fine Food Reviews, for text summarization.
- Implemented the abstractive text summarization technique using a deep recurrent neural network (RNN).
- Tokenized and lemmatized (WordNet) text, filtered stop words, and reversed input sequences (engineering trick).
- Composed a Bag-of-Words (BoW) mapping and removed samples containing excessively many unknown tokens.
- Fit a sequence-to-sequence (seq2seq) deep recurrent neural network with gated recurrent unit cells (GRUs); used categorical cross-entropy loss, RMSprop optimization, mini-batch training, and early stopping regularization.
- Presented extractive and abstractive text summarization with team members at the iSchool poster session.

**Capstone Project** *Software Specification and Design (CIS 453)/Software Implementation (CIS 454)*
*Syracuse University*

- Lead and managed a team of five members from scope specification to application development.
- Collaborated with team members to create a complete software requirements specification (SRS) document.
- Acquired necessary resources for independent Android and iOS sub-teams to focus on application development.
- Assisted in Android frontend and backend development — implementing live location tracking and navigation.
- Conducted weekly team meetings and code reviews to present developments at class progress reports.
- Presented live demonstrations at the Engineering and Computer Science (ECS) open house.
- Received first place for having the best idea and implementation.

**Clustering Face Images by Identity** *Image and Video Processing (CSE 400)*
*Syracuse University*

- Utilized the Haar feature-based cascade classifier to extract faces within a collection of images.
- Normalized extracted face images and converted these images to their corresponding Eigenface representations.
- Grouped the transformed face images into clusters, i.e., by identity, via Affinity Propagation cluster analysis.
- Maximized cluster homogeneity by automatically detecting and removing anomalous clusters and images.

## PRESENTATIONS

**Data Science for the Modular Mass Spectrometer** November 2020
*INFICON Data Analytics Summit*

**Get Started with Machine Learning and AI Today!** November 2020
*INFICON Data Analytics Summit*

**Approaches to Automatic Text Summarization** April 2018
*Syracuse University iSchool Poster Session*

**Characterizing Popularity Growth of YouTube Videos** August 2017
*EECS Summer REU Seminar*

**Capstone Project** April 2017
*ECS Open House ◇ Poster Session and Demonstrations*

## HONORS & AWARDS

**Graduate Merit Scholarship** August 2017 - May 2018
*Syracuse University*

**Summa Cum Laude** May 2017
*Syracuse University*

**The Warren Semon Prize** May 2017
*Syracuse University*

**Dean's Leadership Grant** September 2014
*Syracuse University*

**Dean's List** August 2014 - May 2017
*Syracuse University*

**The Founder's Scholarship** August 2014 - May 2017
*Syracuse University*

## PROFESSIONAL DEVELOPMENT

**Linux Kernel Internals and Development (LFD420)** December 2019
*INFICON ◇ The Linux Foundation*

**Machine Learning Workshop** June 2019
*INFICON*

**Embedded Linux Development with Yocto Project (LFD460)** June 2018
*INFICON ◇ The Linux Foundation*

## PROFESSIONAL MEMBERSHIPS

**IEEE Member** January 2015 - December 2015

## SKILLS & COMPETENCIES

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|---|---|
| **Programming Languages** | Python, MATLAB, R, SQL, C++ |
| **Software & Tools** | PyTorch, Scikit-learn, Statsmodels, Pandas, SciPy, NumPy, Matplotlib, Linux, Git |
| **Competency Areas** | AI, Deep Learning, Machine Learning, Statistical Learning, Linear & Nonlinear Modeling, Regression, Classification, Statistics, Probability, Time Series Analysis, Statistical Signal Processing, Data Analysis, Data Mining, Data Visualization |
| **Soft Skills** | Communication, Teamwork, Decision Making, Project Planning, Time Management |
| **Spoken Languages** | English, Bosnian, Croatian |