

# ELDIN ŠAHBAZ

Syracuse, New York, USA

+1 (607) 597-9607 ♦ sahbaz.eldin@gmail.com

eldin.home.blog ♦ linkedin.com/in/eldinsahbaz ♦ github.com/eldinsahbaz

## SUMMARY

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Accomplished data scientist with four years of progressive professional experience in a multinational company. Proven ability to plan and lead projects, design experiments, analyze time series and signals, conduct algorithmic research and development in machine learning and artificial intelligence, and communicate insights to stakeholders. Successfully enhanced mass spectrometry signal quality and automated a critical step in mass spectrometry manufacturing — reducing signal error by 21% and projecting annual cost savings in excess of \$500k, respectively.

## EDUCATION

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<b>Syracuse University</b> Non-Matriculated Graduate ♦ Mathematics	<i>May 2021</i>
<b>Syracuse University</b> Master of Science ♦ Computer Science	<i>May 2018</i>
<b>Syracuse University</b> Bachelor of Science ♦ Computer Science	<i>May 2017</i> Summa Cum Laude

## PROFESSIONAL EXPERIENCE

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<b>Research &amp; Development Engineer</b> <i>INFICON</i>	June 2018 - Present <i>Syracuse, New York</i>
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- Reported on data science initiatives directly to the Senior Director of Engineering for Intelligent Sensor Solutions.
- Applied expertise to modeling complex chemical processes via gas chromatography and mass spectrometry data.
- Completed 11 studies and projects — leading and scoping data science initiatives in cross-functional environments.
- Conducted global presentations and counseled R&D teams — facilitating literature searches and technical reviews.
- Collaborated with stakeholders to elucidate research objectives and directions from high-level problem statements.
- Interfaced with scientists and engineers to develop and integrate algorithmic research into existing technologies.
- Supported product development efforts — conducting basic research and establishing performance benchmarks.
- Audited systems via simulation studies and A/B tests — covering 58% of chemical detectors and gas analyzers.
- Improved mass spectrometry sensor performance and signal quality with a 21% reduction in estimation error.
- Developed a computational sensor calibration algorithm — projecting annual cost savings in excess of \$500k.

<b>Research Experience for Undergraduates (REU)</b> <i>Syracuse University ♦ Data Lab</i>	June 2017 - August 2017 <i>Syracuse, New York</i>
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- Conducted research under the supervision of Dr. Reza Zafarani (Electrical Engineering and Computer Science).
- Formulated a repeated measures experiment — querying structured and unstructured social media content.
- Modeled the expected number of views for social media content via an ensemble of boosting classifiers.

<b>Software Engineer</b> <i>Self-Employed</i>	June 2015 - September 2015 <i>Syracuse, New York</i>
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- Operated as an independent sub-contractor on development projects.
- 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

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<b>Research Experience for Undergraduates (REU)</b> <i>Syracuse University ♦ Data Lab</i>	June 2017 - August 2017 <i>Syracuse, New York</i>
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- Conducted research under the supervision of Dr. Reza Zafarani (Electrical Engineering and Computer Science).
- Formulated a repeated measures experiment — querying structured and unstructured social media content.
- Modeled expected content attention — minimizing dimensionality while maximizing the cross-validation score.

**Undergraduate Research Assistant**  
*Syracuse University* ◇ *The Hosein Research Group*

August 2014 - May 2015  
*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 quantify solar cell energy efficiency and inform of optimal optical coatings.

## RESEARCH

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### **Mass Spectrometry DSP Algorithm** *INFICON*

- Surveyed and documented legacy mathematical DSP models — establishing baseline performance benchmarks.
- Composed a randomized controlled experiment to A/B test DSP model developments against legacy systems.
- Deduced and vetted theories regarding casual relationships among variables — deriving statistical ML models.
- Improved mass spectrometry sensor performance and signal quality yielding a 21% reduction in estimation error.
- Presented signal processing research and results at the company-wide INFICON Data Analytics Summit.

### **Cryptocurrency Analysis** *Syracuse University*

*Time Series Modeling and Analysis (MAS 777)*

- Designed a study with team members to elucidate interrelationships among core cryptocurrencies on the market.
- Identified cryptocurrency pairs of interest via non-parametric correlation analysis and linear regression.
- Surveyed variables of interest — testing for unit roots and cointegration; visualizing 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** *Syracuse University*

*Natural Language Processing (CIS 668)*

- Lead a cross-functional team of five in investigating extractive and abstractive text summarization techniques.
- Implemented the abstractive text summarization technique using a deep recurrent neural network (RNN).
- Presented extractive and abstractive text summarization with team members at the iSchool poster session.

### **Capstone Project** *Syracuse University*

*Software Specification and Design (CIS 453)/Software Implementation (CIS 454)*

- Lead and managed a team of five from SRS formulation to application development.
- Supported development, conducted weekly meetings, performed code reviews, and presented progress reports.
- Awarded best computer science capstone at the Engineering and Computer Science (ECS) open house.

## PRESENTATIONS

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### **Data Science for the Modular Mass Spectrometer** *INFICON Data Analytics Summit*

November 2020

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

November 2020

### **Approaches to Automatic Text Summarization** *Syracuse University iSchool Poster Session*

April 2018

### **Characterizing Popularity Growth of YouTube Videos** *EECS Summer REU Seminar*

August 2017

### **Capstone Project** *Engineering & Computer Science Open House*

April 2017

## HONORS & AWARDS

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### **Tuition Assistance Award** *INFICON*

February 2021

**Graduate Merit Scholarship**  
*Syracuse University*

August 2017 - May 2018

**Summa Cum Laude**  
*Syracuse University*

May 2017

**The Warren Semon Prize**  
*Syracuse University*

May 2017

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

September 2014

**Dean's List**  
*Syracuse University*

August 2014 - May 2017

**The Founder's Scholarship**  
*Syracuse University*

August 2014 - May 2017

## PROFESSIONAL DEVELOPMENT

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**Linux Kernel Internals and Development (LFD420)**  
*The Linux Foundation*

December 2019

**Machine Learning Workshop**  
*INFICON*

June 2019

**Embedded Linux Platform Development with Yocto Project (LFD460)**  
*The Linux Foundation*

June 2018

## SKILLS & COMPETENCIES

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**Programming Languages** Python, MATLAB, 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