Curriculum Vitae

Sofia Pozsonyiova

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Education

Macalester College, St. Paul, MN — Bachelor of Arts May 2020
Major: Applied Mathematics and Statistics
Concentration: Data Science, Community and Global Health

Work Experience

Mayo Clinic — Rochester, MN
Computational Genomics, Statistical Program Analyst I — September 2020 - Current

- Member of the Division of Biomedical Statistics and Informatics specializing in Computational Genomics and aiding the Genetics of Addiction Lab on their on-going Alcohol Use Disorder Study

Arundel Metrics — St. Paul, MN
Undergraduate Health Data Intern — August 2019 - January 2020

- Assisted in compilation of America's Health Rankings 2019 Annual Report
- Analyzed, interpreted and visualized complex health, economic and social data to improve the health and well-being of individuals and communities

Mercer Consulting — Minneapolis, MN
Government Health Analyst Intern — June 2019 - August 2019

- Analyzed quality and access to Pennsylvania's Behavioral Health Services by evaluating state's fiscal and calendar year Medicaid budget
- Completed analyses and data validation of large state health care data sets using Excel spreadsheets and SQL database management software
- Executed an analysis on Philadelphia's Children's Crisis Services which led to a significant data adjustment
- Collaborated with colleagues in a team setting to support large scale client projects

Leaf Your Mark — Fort Lauderdale, FL
Co-Founder and Co-President — April 2015 - September 2017

- Founded a 501(c)(3) non-profit organization to educate children on the importance of environmental conservation through unique hands-on activities
- Organized six park clean-up events in partnership with the Town of Davie Parks and Recreation Department
- Led a team of educators, upheld partnerships, designed and maintained websites

Teaching Experience

Teacher Assistant
Spring 2020 Semester: Math 155 Introduction to Statistical Modeling (Two Sections)
Spring 2019 Semester: Math 253 Statistical Modeling and Machine Learning (Two Sections)
Fall 2019 Semester: Math 253 Statistical Modeling and Machine Learning (Two Sections)
Spring 2018 Semester: INTL 282 Introduction to International Public Health (One Section)

- Held regular office hours and private sessions to provide students with academic and software support
- Graded assignments, quizzes, and exams, and used the technology-based tracking and assessment platform of Moodle

Research Experience

South Dakota School of Mines & Technology Remote
Research Statistician August 2018 – April 2020

- Continuation of machine learning and data analysis projects conducted at Frost Science Museum
- Implemented machine learning algorithms to detect and classify various ore samples from local mines
- Created statistical packages in R to improve LIBS spectra classification and visualization

Frost Science Museum Miami, FL
***Statistician & Data Analyst,* Carcinogen Program** November 2018 - May 2019

- Led the statistical and data analysis for the Inventors in Residence Carcinogen Research Team
- Designed new methods to efficiently classify complex emission spectra data using statistical modeling
- Assisted high school students at Ransom Everglades in analyzing and classifying their LIBS Spectra data
- Publication in Progress: "Bridging the Gap: Integrating Statistical Modeling and Machine Learning Methods to Better Classify and Visualize LIBS Spectra Data"

The Institute for Nano Biology and Structural Biology Nove Hrady, Czech Republic
Research Assistant June 2018 - August 2018

- Used computational modeling and in lab gene expression to gain a better understanding of the structural and functional consequences of the PAPSS2(b) DNA mutation
- Responsible for running PCR and completing DNA extractions while upholding lab cleanliness and standards
- Research improved the molecular understanding of diseases caused by deficiency in intracellular sulfate
- Completed FEBS Advanced Course in Ligand-binding and practice
- Granted Taylor Hill Public Health Fellowship for summer research

Frost Science Museum Miami, FL
Research Intern June 2017 - December 2017

- Undergraduate research assistant for the Inventors in Residence Carcinogen Research Laboratory
- Assisted in the development of portable LIBS laser systems to aid in near-real-time detection of environmental carcinogens with the goal of improving human health through limiting exposure
- Research also included a multivariate analysis of complex samples using atomic and molecular emission spectra

Publications

Academic:

In Preparation

- **1. Pozsonyiova S.**, Diwakar P.K, Fernandez M., Orme E. "Classification of Ore Samples through the Application of Machine Learning Models to LIBS Spectra Data"
- Gross J., Orme E., Carter A., Silverstein. R., Ochatt C., **4. Pozsonyiova S.**, Felipe L., Diwakar P. "Machine Learning for Metal Identification in Water Samples using Laser-Induced Breakdown Spectroscopy (LIBS)"
- Fernandex M., Orme E., Wagner S., **4. Pozsonyiova S.,** Manzano N., Caplow T., Diwakar P.,"Analysis of the Effects of Various Gas Additions to Emission Spectra Using Laser-Induced Breakdown Spectroscopy"

Peer-Reviewed Publications

- Prasoon D., Bheemasetti T., Pozsonyiova S., Fernandez M., Orme E. , Pradhan R., Diaz D., Hahn D., Lee S. " Application of Advanced Machine Learning Classification Techniques to Analyze Complex LIBS Spectra"
- **1. Pozsonyiova S.**, Diwakar P.K, Fernandez M., Orme E. "Bridging the Gap: Integrating Statistical Modeling and Machine Learning Methods to Better Classify and Visualize LIBS Spectra Data"

Other:

- America's Health Rankings 2019 Annual Report: A Call to Action for Individuals and Their Communities. *United Health Foundation*.

Presentations

Presentation(s):

2020 SciX International Conference, Palm Springs, CA

LIBS and Raman Spectroscopy Integration with Advanced Machine Learning Methods to Analyze Complex Samples, Diwakar P.K., Pozsonyiova S., Pradhan R., Kessinger S., Leckband C., Chen K., Kellar J., Diaz D., Han D.

Macalester College 2020 Senior Capstone Presentation, St. Paul, MN

A Spatial and Longitudinal Look at Parent Adolescent Relationships and E-Cigarette Usage in Minnesota, **1. Pozsonyiova S**., Rafferty Q., Adams F.

2019 SciX International Conference, Palm Springs, CA

Application of Advanced Machine Learning Classification Techniques to Analyze Complex LIBS Spectra, Diwakar P.K., Bheemasetti T., **Pozsonyiova S.** , Fernandez M., Orme E., Pradhan R., Diaz D., Hahn D., Lee S.

Poster(s):

2020 SciX International Conference, Remote

Investigating Complex LIBS Samples Through the Integration of Raman Spectroscopy and Advanced Machine Learning Methods; **Pozsonyiova S.**, Diwakar P.K

Use of Machine Learning to Further the Scope of LIBS, Miller N., **Pozsonyiova S.**, Diaz D., Lee S., Diwakar P.K.

Geological Fingerprinting of Columbite-Tantalie, Kessinger S., Diwakar P., **Pozsonyiova S.**, Leckband C., Kellar J., Kamtung C.

Macalester College's 2020 Public Health Fair, St. Paul, MN

Assisted Expression, Purification, and Stabilization of PAPSS: 3'-Phosphoadenosine 5'-Phosphosulfate-Synthase; **Pozsonyiova S**., Grinkevich P., Ettrich R

2019 SciX International Conference, Palm Springs, CA

Bridging the Gap: Integrating Statistical Modeling and Machine Learning Methods to Better Classify and Visualize LIBS Spectra Data; **1. Pozsonyiova S.**, Diwakar P.K, Fernandez M., Orme E.

Machine Learning for Metal Identification in Water Samples Using Laser-Induced Breakdown Spectroscopy; Gross J., Orme M., Fernandez M., Carter A,, Silverstein R., Ochatt C., **Pozsonyiova S.**, Felipe L., Diwakar P.K

Recognitions

2020 Society for Applied Spectroscopy Undergraduate Student Award August 2020

Society of Applied Spectroscopy

Recognition for successful application of statistics, machine learning, and visualization to complex LIBS data

FACSS Student Poster Award October 2019

Federation of Analytical Chemistry and Spectroscopy Society

2019 SciX International Conference: "Bridging the Gap: Integrating Statistical Modeling and Machine Learning Methods to Better Classify and Visualize LIBS Spectra Data"

SAS Student Travel Grant Award October 2019

Society of Applied Spectroscopy

2019 SciX International Conference: "Bridging the Gap: Integrating Statistical Modeling and Machine Learning Methods to Better Classify and Visualize LIBS Spectra Data"

Taylor Hill Public Health Full Fellowship June 2018 - August 2018

Academy of Sciences

Nove Hrady, Czech Republic: "Application of Computational Models and PAPSS Gene Expression to Understand the Structural and Functional Consequences of the PAPSS2(b) DNA Mutation"

Academic Dean's List 2018, 2019, 2020

Macalester, College

Skills

Technical

R (Research Proficiency), SAS (Research Proficiency), Shiny, Git, LaTex, HTML, Python3, SQL, Microsoft Office Packages

Language

English (Full Proficiency), Slovak (Full Proficiency), Czech (Working Proficiency)

On-Campus Leadership & Service

MacPACT, *President*, St. Paul, MN September 2019 - May 2020

- Oversaw organization, lead meetings and ensured proper functioning

MacPACT, *Event Chair*, St. Paul, MN September 2017 - September 2019

- Collaborated and led a team of students to ensure fundraising and attendance goals were met
- Head of planning and overseeing fundraising events to raise money for the Gillette Children's Specialty Hospital located in Saint Paul, Minnesota

First Generation to College Network, St. Paul, MN September 2018 - May 2020

- Assisted with the establishment of a solidified first-generation college program to help mentor, support, and empower first generation students throughout their college career

Varsity Swim Team, St. Paul, MN September 2016 - May 2017

Community Leadership & Service

Women in Machine Learning & Data Science, Minneapolis, MN July 2019 - May 2020

- Helping create opportunities for females to engage in technical and professional conversations in a positive and supportive environment

RLadies, Minneapolis, MN February 2019 – May 2020

- Assisting in the building of a collaborative global network of R software leaders and learners to facilitate individual and collective progress worldwide in the world of science and technology.

Minnesota Science and Business Association, Minneapolis, MN January 2017 - January 2018

- Representative for Macalester College