

# Andrew Bartnik

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## SUMMARY OF QUALIFICATIONS

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- Strong foundation in ML concepts and algorithms (boosting, random forests, deep learning, SVMs).
- Proficient in application of ML algorithms using Python and R libraries (scikit-learn, pytorch, tidymodels).
- Experienced in exploratory data analysis and preparation, visualization, feature engineering techniques.
- Experienced in building and maintaining data pipelines, evaluating and optimizing model performance.
- Comfortable working in a collaborative team environment, strong teamwork and communication skills.

## EDUCATION

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**Master of Environmental Data Science**, 4.0 GPA (June 2023)

**Bren School of the Environment & Management – University of California, Santa Barbara (UCSB)**

Highlighted Coursework: Geospatial Analysis & Remote Sensing, Machine Learning in Environmental Science, Modeling Environmental Systems, Databases (SQL), Statistics for Environmental Data Science

**Triple Bachelor**, 3.9 GPA – University of Arkansas, Fayetteville (May 2020)

**Bachelor of Science and Arts in Environmental Science**

**Bachelor of Arts in Chemistry** | Minor in Physics

**Bachelor of Arts in Biology** | Minor in Mathematics

Awards: Dean's list (6 semesters), Chancellor's list (4 semesters)

Employment: Research Associate, Kumar Lab (1/20–8/20); Research Associate, Paul Lab (8/17–8/18)

## MACHINE LEARNING PROJECTS

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**Machine Learning Master's Capstone Project** | Role: Machine Learning Engineer (12/22–06/23)

Measuring Agricultural Adaptation to Climate Change in Zambia Using Satellite Imagery & Machine Learning

- Used MOSAICS API, random convolutional features in Pytorch to featurize large-scale satellite imagery of Zambia, extensively cleaned and preprocessed ground-truth data provided by Zambian government.
- Performed bootstrapping, cross-validated ridge regression to predict 28 agricultural variables using scikit-learn. Achieved high model performances on many variables, incorporated spatial block sampling.
- Generalized MOSAICS data pipeline for featurizing Sentinel 2 satellite imagery, data preprocessing, and approach to modeling variables of interest for researchers interested in MOSAICS technique.
- Communicated results to client using visualizations and public [presentations](#).

**Machine Learning Master's Course Project** (2/23–3/23)

Predicting Dissolved Inorganic Carbon (DIC) from Ocean Chemistry using Various Regression Models

- Predicted Dissolved Inorganic Carbon (DIC) concentrations at a high accuracy using temperature, salinity, pH, and other chemical parameters using data collected by CalCOFI.
- Used Gradient Boosting, Random Forests, Decision Trees, KNN, Linear Regression, and SVM to find model with the best predictive power, built all models in both Python and R.

## DATA SCIENCE AND RESEARCH EXPERIENCE

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**Visiting Research Scholar – Blue Marble Space Institute of Science**, Seattle, WA (Remote) (9/21–Present)

- Lead team on the processing of data and production of dozens of publication-ready figures using R, assist in manuscript write-up.
- Utilize EQ6 (geochemical modeling software package) to model fluid mixing thermodynamics under 8 possible conditions hypothesized to exist on Saturn's moon, Enceladus.
- Perform subsequent thermodynamic calculations on synthesis of 18 amino acids necessary for life.
- Coordinate weekly meetings with an international team of 5 researchers based worldwide.

## ADDITIONAL SKILLS AND PUBLICATIONS

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**Technical**: R, Python, SQL, Google Earth Engine, Microsoft Planetary Computer

**Publications**: Thermodynamics of Amino Acid Synthesis in Enceladus' Hydrothermal and Seawater Systems. (In progress); Homogeneous nucleation of nitrogen bubbles is unlikely in the lakes on Titan. (Under review)

**Certifications**: IBM Data Science, Google Cloud Engineer (In Progress)