

# Alex B Buettner

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## EDUCATION

### Master of Science, Chemical Engineering

UNIVERSITY OF NEVADA, RENO

AUG 2016 – DEC 2018

Clinical Dataset Analysis and Patient Outcome Prediction via Machine Learning

### Bachelor of Science, Chemical Engineering

UNIVERSITY OF NEVADA, RENO

AUG 2012 – MAY 2016

Process and Energy Emphasis. **Minor:** Mathematics

## EXPERIENCE

### BIG DATA AND MACHINE LEARNING

#### Senior Systems Programmer

BBVA APR 2020 – PRESENT

Senior big data engineer working with large team to implement global-scale products in a fast, efficient manner. Use of common big data solutions, including Hadoop file system, Spark, and managed cluster backends, with development in Scala and Python. Use of job scheduling tools for automation and batch processing. Brought major product to market for commercial bankers and support staff to better connect with their clients and improve efficiency. Role as team leader and manager, with compact groups of developers under my direct supervision. Weekly reporting to line of business and upper management to ensure project timelines are met.

#### Consultant Big Data Engineer

Everis/BBVA JAN 2019 – APR 2020

Data engineering consultant with an emphasis in data ingestion and backend management. Development of internal HDFS big data platform to centralize bank data and create new products and services for bank patrons and employees. Critical data delivery for a new bank product, Digital Work Place (DWP). The DWP application includes client management, pipeline development, and management of loan processes. Role included use of modern solutions and technologies such as Python, Scala, Spark, AWS, and Jupyter. Maintained role as a data team lead for the DWP project, which includes responsibilities such as team management, sprint planning, and workflow optimization.

#### Analysis, Characterization, And Prediction on Large Datasets

University of Nevada, Reno MAY 2017 – DEC 2018

Use of various machine learning methods for predictive analysis of large datasets, with an emphasis on dependency extraction. Performed data embedding and clustering on high-dimensional data for visualization and classification. Handled data using neural networks and conventional machine learning techniques.

#### Development of Clinical Process Models from Historical Data

University of Nevada, Reno MAY 2017 – DEC 2018

Use of semi-supervised machine learning methods for rapid extraction of process dependencies and relationships. Developing and testing of a self-consistent machine learning framework for optimization of large scale processes.

### SCIENTIFIC COMPUTING

#### Metal Hexaboride Structure and Energetics Modeling

University of Nevada, Reno MAY 2014 – MAY 2017

Developed and assisted with the generation of inter-atomic pair potentials from density functional theory (DFT) and molecular dynamics (MD) simulations.

#### Structural Modeling of Reverse-Micelle Microreactors

University of Nevada, Reno MAY 2014 – MAY 2015

Performed MD study of the stability and morphology of AOT/water/iso-octane reverse micelles. Applications included the use of molecular dynamics codes for prediction and optimization of AOT/water/iso-octane reverse micelles in solution. Utilized common pair potentials for biological systems.

## SOFTWARE SKILLS

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- MACHINE LEARNING** *Three years of experience using machine learning frameworks such as sklearn, TensorFlow, H2O, and Keras for high-throughput data analysis. Development of various machine learning methods in both supervised and unsupervised learning environments, including hidden Markov models, mixture models, feed-forward neural networks, generative adversarial networks, convolutional neural networks, and time-series predictive networks (LSTM). Further experience working with data cleansing, statistical analysis, feature selection, pre-processing, encoding, clustering, and decomposition methods.*
- BIG DATA** *Two years of experience working with Spark and other Apache products in big data settings. Deep understanding of Spark DataFrames and associated tools, as well as schema development and data partitioning. Experience designing, configuring, and maintaining HDFS filesystems and HPC backend components. Experience working with metadata stores,*
- PYTHON** *Seven years of advanced studies using the Python language in various computing settings, including machine learning, big data engineering, application development, process support, and statistical modeling. Experienced in advanced numerical methods, multiprocessing, and object-oriented programming. Very comfortable with standard code editors such as Jupyter and PyCharm. Projects of note include process automation scripts for use in big data applications, machine learning pipelines with web APIs in production environments, design and configuration of customized small-scale agent-based modeling framework for use in research applications, and GUI development for specialized applications.*
- SCALA** *Two years of Scala development experience as applicable to big data and data engineering projects. Implementation of custom objects, configurations, and applications for custom ingestion of batch data to feed front-end applications.*
- AWS** *One year of AWS experience designing cloud-based solutions. Some experience with CloudFormation and other infrastructure-as-code methodologies, as well as general AWS configuration and best-practices. Familiar with common web and application stacks and their implementation on AWS.*
- LINUX/BASH** *Over 10 years of experience in setup and management of numerous Linux-based operating systems, including RHEL/CentOS, Ubuntu, and Debian. Five years of experience writing automated wrapper scripts for various optimization and simulation codes, with an emphasis in error handling and continuous processing. Two years of experience in direct configuration of HPC compute clusters. Use of BASH language for pre and post-processing of datasets and generating input scripts. Utilization of Awk and Sed utilities for advanced manipulation of text files and data files.*

## CERTIFICATIONS

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- 2021 **AWS Certified Cloud Practitioner Certification CLF-C01**  
*In Progress - Expected January*

## PUBLICATIONS AND PROJECTS

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- 2020 **AI and Machine Learning Enabled Personalized Learning Framework**  
*Personal Project, Current Work*
- 2018 **Real-Time Clinical Process Optimization via Machine Learning and Big Data Analysis**  
*Masters Thesis*
- 2015 **Interatomic pair potentials from DFT and molecular dynamics for Ca, Ba, and Sr hexaborides**  
K.M. Schmidt, A.B. Buettner, O.A. Graeve and V.R. Vasquez, *J Mater Chem C*, 2015, **3**, 8649–8658.  
*DOI:10.1039/C5TC01398D*