

# Siriluk Abelson

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## SUMMARY

Data Scientist and Research Scientist with a PhD in Computational Chemistry and a strong foundation in data analysis, machine learning, and statistical modeling. Proficient in Python, SQL, and Power BI, with expertise in designing complex data models and working with large datasets. Adept at developing automated data cleansing tools and delivering strategic insights through advanced analytics and data visualization. Collaborative team player with excellent communication and problem-solving skills.

## EXPERIENCE

**University of Minnesota**, Department of Chemistry, Minneapolis, MN

Feb 2024 – Present

### Research Scientist

- Developed 17 representative energetic databases using genetic algorithms, achieving an 8% error deviation from larger datasets, and providing efficient benchmarks for electronic structure methods and density functionals.
- Conducted data analysis and modeling to support research initiatives, identifying trends and patterns that informed strategic decisions.

**DuPont**, DuPont Silicon Valley Technology Center, Sunnyvale, CA

Jan 2023 – Jan 2024

### Senior Data Scientist

- Implemented a formulation design model using advance linear regression, ensemble methods and optimization algorithms, enhancing electronic performance by 15% and reducing research time by 50%, impacting \$9.8M in revenue.
- Executed data analysis using SQL and Python, applying Bayesian optimization to reduce search time by over 80%, achieving vendor independence within 1 month and enhancing business performance in the healthcare materials sector.
- Integrated generative adversarial networks (GANs) to enhance formulation design, improving predictive accuracy by 10% and reducing development cycles.

**University of Minnesota**, Department of Chemistry, Minneapolis, MN

Sep 2017 – Dec 2022

### Graduate Research Scientist

- Optimized computational model using active learning on a dataset of 20+ databases, achieving second-ranked accuracy in material property predictions among leading quantum methods.
- Led collaborative research analyzing chemical databases and evaluating optimal model chemistry for catalytic mechanism calculations, producing the field's most cited paper in the domain for 2020–2021.
- Enhanced a Python program for vibrational frequency calculations, ensuring compatibility with Gaussian Software, streamlining workflows, and earning widespread adoption and citations in research papers.

## SKILLS

- Programming Languages:** Python, SQL, Bash
- Data Manipulation and Visualization:** Power Query, Pandas, NumPy, Matplotlib, Seaborn, Power BI, ETL, Excel
- Statistical and Machine Learning:** Hypothesis Testing, A/B testing, Linear Regression, Logistic Regression, Clustering (K-Means), Principal Component Analysis (PCA), Scikit-Learn, XGBoost, Random Forest, Decision Trees, CNN, LLM, TensorFlow, PyTorch, MLflow, Docker, LangChain, Hugging Face, Streamlit
- Tools & Cloud Platforms:** Visual Studio Code, Jupiter Notebook, GitHub, Git, AWS, Google Colab

## PROJECTS

<https://github.com/Sirilukkan>

- AWS SageMaker Deployment:** Deployed XGBoost classification models for visa approval prediction and hotel reservation cancellations, managing project and model pipelines efficiently with AWS CodePipeline.
- Malaria Detection:** Implemented and fine-tuned 10 CNN-based deep learning models for malaria detection from red blood cell images, achieving a 98.6% accuracy rate using image data augmentation techniques.
- Advanced Sale and Finance Analytics:** Designed complex data models using Power Pivot and DAX for sales and finance data analysis, enabling strategic decision-making and business performance optimization. Incorporated Power BI for data visualization and reporting.

## CERTIFICATIONS

- Data Science on Cloud with AWS**, Great Learning, 2023
- Applied Data Science: Leveraging AI for Effective Decision-Making**, MIT Professional Education, 2022

## EDUCATION

**Ph.D. in Chemistry**, University of Minnesota, Minneapolis, MN

2017 – 2022

**M.S. in Chemistry**, Mahidol University, Bangkok, Thailand

2014 – 2017

**B.S. in Chemistry**, Mahidol University, Bangkok, Thailand

2011 – 2014