SIRILUK K. ABELSON

DATA SCIENTIST | RESEARCH SCIENTIST

Hillsboro, OR 97124 612.991.0982
siriluk.kanchanakungwankul@gmail.com www.linkedin.com/in/siriluk-kanchanakungwankul

Innovative Data Scientist and Research Scientist with 3+ years of experience in advanced machine learning, statistical modeling, and computational simulations. Proven track record in driving R&D innovations and supporting strategic decisions through scalable ML Models and Optimization Algorithms. Proficient in Python-based analytics, cloud-based model deployment, and effective communication with non-technical teams. Authored 8+ publications in high-impact journals and significantly enhanced electronic device performance, particularly in semiconductor formulation design.

SKILLS

- **Machine Learning and Deep Learning**
- **Feature Selection and Engineering**
- **Data Analytic and Visualization**
- **Cloud Based Machine Learning Deployment**
- **Data Preprocessing and Statistical Analysis**
- **Team collaboration and Leadership**

Technical Skills:

- **Languages and Tools:** Python, SQL, Bash Script, Linux Command, AWS, Git, GitHub, Gitlab, Tableau, Power Query MySQL, HPC, Excel, Visual Studio Code, Gaussian, VASP, CP2K, Q-Chem
- **Libraries and Frameworks:** Scikit-Learn, TensorFlow, Pytorch, SciPy, Pandas, NumPy, Seaborn, Matplotlib, MLflow, Docker, LangChain, Hugging Face, Streamlit
- **Machine Learning Models:** Linear Regression, Logistic Regression, Decision Tree, Random Forest, Gradient Boosting, XGBoost, CNN, NLP, LLM, Generative AI

PROFESSIONAL EXPERIENCE

University of Minnesota, Department of Chemistry, Minneapolis, MN (Remote position)
Research Scientist/Specialist February 2024 - Present

- Developed a benchmark database for spin-splitting energy calculations of transition metal complexes, leveraging diverse density functionals and basis sets to establish a new standard for these challenging systems.
- Collaborated with researchers to optimize representative databases from large datasets using genetic algorithm, achieving 8% error deviation, establishing an efficient benchmark for testing and training electronic structure methods

DUPONT, DuPont Silicon Valley Technology Center, Sunnyvale, CA
Senior Data Scientist January 2023 - January 2024

- Directed end-to-end analytics projects across various business segments, impacting $50M+ revenue from data exploration, cleaning, preprocessing, machine learning model development and stakeholder presentation.
- Leveraged and fine-tuned advanced linear regression, decision tree-based models and optimization algorithms in Python, boosting electronic product performance by 15% and cutting customer research time by 50%.
- Conducted exploratory data analysis and implemented Bayesian Optimization in Python to identify new process conditions for in-house healthcare materials within 1 month, reducing vendor reliance.
- Created Python-based machine learning tool for chemists to streamline formulation design, significantly accelerating experimental chemical analysis.
- Leveraged NLP techniques using BERT to decode complex chemical datasets, providing critical insights that propelled the development of innovative formulations and established foundational work for the team.

UNIVERSITY OF MINNESOTA, Department of Chemistry, Minneapolis, MN
Graduate Research Scientist September 2017 – December 2022

Conducted computational chemistry research, developing advanced models with machine learning and data analysis to enhance computational chemical property prediction, tool development, and scientific discovery.

UNIVERSITY OF MINNESOTA (Continued)

- 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 the Python program FREQ for vibrational frequency calculations, upgrading its compatibility with the latest Gaussian Software, significantly streamlining computational chemistry workflows. Widely adopted by scientists and cited in numerous research papers.
- Authored 8+ peer-reviewed scientific publications, demonstrating expertise in scientific writing and research collaboration.

NATIONAL NANOTECHNOLOGY CENTER (NANOTEC), Bangkok, Thailand

Research Intern, National Simulation Laboratory March 2015 - March 2016

- Conducted data analysis using Material Studio Project and VASP to model dye adsorption on TiO2 surfaces, performing DFT calculations for properties and energy alignment to improve solar cell efficiency. Presented at the conference, winning the best poster award.

PROJECTS

- **Travel Plan Generator with LLM:** Developed and integrated Large Language from OpenAI's API using LangChain, and Streamlit to build a personalized travel plan generator.
- **ML Model Packaging with Python:** Utilized MLOps to deploy and package robust ML models, predicting customer feedback from food ordering data using demographic and behavioral insights.
- **AWS SageMaker Deployment**: Deploy classification models (XGBoost) for visa approval prediction based on employee attributes and reservation cancellations in an INN Hotel case study, managing project and model pipeline 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.
- **Marketing Campaign Analysis**: Conducted comprehensive statistical analysis and visualization on marketing campaign data, providing actionable insights that guided marketing strategy formulation for the CMO.
- **Hackathon, Shinkansen Bullet Train Satisfaction Forecasting:** Applied random forests, and artificial neural networks to forecast Shinkansen Bullet Train passengers' satisfaction achieving 94.5% accuracy.

CERTIFICATION

- **Generative AI for everybody**, DeepLearning.AI (Coursera), 2024
- **Data Science on Cloud with AWS**, Great Learning, 2023
- **Applied Data Science**: **Leveraging AI for Effective Decision-Making,** MIT Professional Education, 2022
- **Python Data Structure**, University of Michigan (Coursera), 2022

EDUCATION

- **PhD** in Computational Chemistry**,** University of Minnesota, Minneapolis, MN, 2017 - 2022
- **MS** in Chemistry**,** Mahidol University, Bangkok, Thailand, 2014 - 2017
- **BS** in Chemistry, Mahidol University, Bangkok, Thailand, 2011 - 2014

SELECTED PRESENTATION AND PUBLICATION

- "A Day in the Life of a Data Scientist", SEMICON WEST 2023, Moscone Center, San Francisco, CA
- M11pz: A Nonlocal Meta Functional with Zero Hartree-Fock Exchange and with Broad Accuracy for Chemical Energies and Structures*, J.Chem.Theory Comput*., **2023**, *19*, 9102
- Unexpected "Spontaneous" Evolution of Catalytic, MOF-Supported Single Cu(II) Cations to Catalytic, MOF-Supported Cu(0) Nanoparticles. *J. Am. Chem. Soc*., **2020**, *142,* 21169