Kiman Park, Ph.D.

Data Scientist

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Summary

A highly analytical scientist with a multidisciplinary background and an ability to solve problems across a wide range of topics. I am currently enrolled in a boot camp to transition from a condensed matter physicist to a data scientist, pursuing my passion. I have an analytical mindset to provide data-driven insights. I am also proficient in project management, supervising projects to be completed successfully. Furthermore, I am skilled in oral and writing to communicate effectively. With this, I can lead a group of people to complete the duty effectively. I want to discuss the company and look for interviews for a data scientist position.

Data Science and Software Engineering Projects

Natural Language Processing – Generative AI engineering
- Developed functions to extract a key sentence from an article and an ability to compare two articles and extract sentences similar and dissimilar to the other articles using the pre-trained DISTILBERT model.

Computer vision – Pneumonia detection with X-ray images
- Employed and fine-tuned VGG19, ResNet50V2, and MobileNetV2 models to detect x-ray images of pneumonia (94% accuracy).

Point-Charge model
- Created a user-friendly program to calculate quantum optical properties for researchers.

Polarization matrix dashboard
- Deployed an online Plotly dashboard for visualization of polarization matrix for researchers.

Neutron Beamline control-interface
- Implemented a control system with automatic data processing and analysis.

Ski resort
- Determining the ticketing price for the ski resort by exploring variables and comparing similar markets.

Chatbot
- Using the recurrent neural network (RNN) in TensorFlow, the automatic response is given in the chat for business needs.

Origin of names
- Applied recurrent neural network (RNN) in PyTorch, the country origin of names is predicted.

Stock predictions
- Utilized Long-Short Term Memory (LSTM) network in TensorFlow, the stock price is predicted for a number of days ahead.

Handwritten digits
- Employed convolutional neural network (CNN) in PyTorch, handwritten digits are recognized.

Clothes classification
- Deployed convolutional neural network (CNN) in PyTorch, random pieces of clothing are classified.

CO_2 emissions, Cancer, Weather, Customer churn, House prices, Crimes, and etc.
- the prediction of important rates and factors is practiced by using regression, K-NN, K-means, decision trees, and SVM.

Face recognition
- Face recognition system is placed using external or internal webcams as well as pictures.

Relevant Experience

Springboard **December 2023 – Present**
Data Scientist Trainee, *advanced machine learning track*

Mastering skills in Python, SQL, data analysis, data visualization, hypothesis testing, and machine learning.

- Completing 2 in-depth capstone projects

Oak Ridge National Laboratory, Oak Ridge, TN **June 2023 – December 2023**
Postdoctoral Research Associate

Employed advanced simulations to model magnetic structures for facilitating comprehensive insights into spherical neutron polarimetry experiments. Lead software development for the control interfaces, dashboard, and data processing. Utilized simulation software to develop and engineer mechanical and electronic equipment. Executed neutron scattering experiments on intricate oxide materials for elucidating magnetic properties.

- Executed neuron-related data collection, data collection, data cleaning/transformation (ETL), data analysis, and data storage.
- Led the development/optimization of spherical neutron polarimetry, contributing to enhanced experimental capabilities.
- Developed software to create a user-friendly interface for controlling spherical neutron polarization and an accompanying analysis dashboard, simplifying the management and interpretation of critical neutron polarization data.
- Steered the creation of a user-friendly website featuring a customizable dashboard for the visualization of polarization matrices, streamlining data analysis and interpretation.

- Generated a comprehensive simulation model to evaluate the magnetic and thermal characteristics of intricate mechanical and electronic components, providing valuable insights into their performance and behavior.

University of Tennessee, Knoxville, TN **May 2018 – May 2023**
Graduate Research Assistant

Expanded knowledge of fundamental chemical principles and theories, enabling a deep understanding of complex chemical systems. Utilized academic opportunities to deepen understanding of subject matter while exhibiting commitment to knowledge acquisition/application. Conducted robust research activities, involving experimental design, data collection, and analysis.

- Performed data-related tasks such as spectroscopic data collection, data cleaning/transformation (ETL), data analysis, and data storage.
- Utilized advanced instrumentation and analytical techniques to investigate light-matter interactions and phenomena in solid-state systems, contributing to the development of innovative solutions.
- Developed software for the control interface for mechanical and electrical systems, which can be scripted to automate experimental and analysis processes.
- Designed and implemented Python-based software for efficient data processing and analysis with fitting algorithms and visualization dashboards.
- Orchestrated the development of sophisticated software dedicated to Monte Carlo simulations, enhancing the precision and efficiency of complex computational modeling.

University of Tennessee, Knoxville, TN **August 2015– May 2018**
Undergraduate Research Assistant

Utilized the laser ablation synthesis in solution (LASiS) technique to generate new nanoparticles for battery applications, machining tools, and novel properties. Orchestrated chemical and structural characterization techniques to identify the novel properties and structures. Collaborated with multiple laboratories to facilitate the needs of customers.

- Applied novel LASiS techniques to synthesize efficient and durable battery materials.
- Created a new synthesis method of LASiS, employing magnetic field in the cell to enhance the plasma plume pressure and temperature.
- Employed transmission electron microscopy to investigate the chemical and structural properties of nanoparticles.
- Deployed Inductively-Coupled Plasma Optical Emission Spectroscopy (ICP-OES) to analyze chemical composition of the nanoparticles.
- Conducted X-ray diffraction experiments to analyze and verify the structure of nanoparticles.
- Assisted the synthesis and separation of photosynthesis 1 system embedded in ZIF-8 nanoparticles.

Education

Data Science Certification, IBM | Aug 2023
Ph.D. in Physical Chemistry | University of Tennessee, Knoxville, TN | 2018-2023
Bachelor of Science in Chemistry | University of Tennessee, Knoxville, TN | 2014-2018

Technical Proficiencies

Python | **SQL** | **ArcGIS** | **Latex** (Overleaf) | **OPUS** | **Microsoft Office** (Excel, PowerPoint, Word, etc.) | **Power BI** | **Tableau** | **OriginPro** | **Diamonds** | **VESTA** | **Inkscape** | **FITYK** | **FullProf** | **Mag2Pol** | **MongoDB** | **Hadoop** | **PySpark** | **Databrick** | **Linux** (Ubuntu) | **Shell scripting** |

Publication & Conferences

6 publications: 3 first-author publications | 3 contributing-author publications | 3 papers under process
5 conferences: 1 in SURC | 4 APS March meeting

Who am I (Personality)?

Analytical, Ambitious, Determined, Collaborative, Proactive, Adaptable