AIDF CRI Intern JD

The Asian Institute of Digital Finance (AIDF) is a university-level institute in NUS, jointly founded by the Monetary Authority of Singapore (MAS), the National Research Foundation (NRF) and NUS. AIDF aspires to be a thought leader, a Fintech knowledge hub, and an experimental site for developing digital financial technologies as well as for nurturing current and future Fintech researchers and practitioners in Asia. The Credit Research Initiative (CRI) is a non-profit undertaking under the AIDF. Pioneering the "public good" credit risk measures, the initiative is committed to advancing big data analytics and providing directly useful credit intelligence to academic and professional communities.

Moreover, AIDF-CRI is dedicated to staying updated with the latest trends and technologies. We are consistently focused on enhancing model performance and improving our credit solutions for our clients. Particularly, this involves the implementation and experimentation with advanced machine learning and AI techniques.

We offer internships to highly motivated students, both undergraduate and postgraduate from various academic backgrounds, who are passionate about embracing new technologies and desire to acquire advanced knowledge and skills in the field of credit risk. Due to the steep learning curve, the AIDF Internship Program requires a commitment of **6 - 12 months** (part-time during school terms and full-time during school holidays for local-school students; full-time for overseas students) so that the participants will have an extensive experience with the roles and tasks in AIDF.

Career Benefits
- Gain a detailed understanding of a cutting-edge quantitative credit risk model.
- Enhance programming skills while gaining valuable experience in credit risk research and product validation within a dynamic team.
- Further your knowledge in quantitative modeling and financial analysis.
- Gain experience in emerging technologies (e.g. cloud/grid computing, GPU computing, FPGA, AI models).
- Benefit from a world-class research environment at the forefront of credit risk, with a motivated research team and a well-established network.
- Opportunity to work in a dynamic and innovative research environment.

1. Product Management (System Development) Intern

The intern will be responsible for developing Python packages and integrated systems to implement cutting-edge scientific statistical models and client delivery. The intern will have the opportunity to apply their system design and development knowledge in a real-world project environment.

Responsibilities
- Collaborate with senior analysts to understand project requirements and objectives, engaging in the design and architecture discussions for new system components.
- Daily monitoring of operating processes, maintaining and simplifying Production System.
- Analyze and interpret the credit risk measures, improve the developed scientific computation of credit risk measures such as DTD, PD and AS.
- Develop and maintain Python packages and scripts to automate and enhance the whole process of CRI data products.
- Collaborate with the validation component to design and implement effective validation strategies for new and existing products.
- Participate in the development of integrated projects that facilitate efficient client delivery and tracking processes.
- Write clean, efficient, maintainable, and well-documented code following best practices and company guidelines.
- Conduct code reviews and participate in debugging and troubleshooting activities.
- Assist in the development of documentation for the developed Python packages and validation procedures.
- Continuously learn and stay updated on emerging technologies and industry trends.

Requirements
- Currently pursuing a degree in Computer Science, Software Engineering, Finance, Quantitative Finance, Mathematics, Data Science or a related field.
- Knowledge and experience with SQL and MATLAB.
- Proficient in Python programming with a good understanding of Python libraries and frameworks.
- Knowledge of system design concepts, including database design, APIs, and distributed systems.
- Familiarity with software development life cycle and version control systems (e.g., Git).
- Basic knowledge of product validation processes and quality assurance principles.

- Strong problem-solving and analytical skills.
- Ability to work independently and collaboratively in a team environment.
- Excellent communication and interpersonal skills.

Bonus Skills
- Competence in analyzing data and using statistical methods to extract insights.
- Experience in working with large data sets.
- Knowledge in Julia and Bloomberg Terminal is a plus.
- Ability to think creatively and propose innovative solutions to complex problems.
- Prior experience in the credit scoring industry or in financial services, with an understanding of the regulatory and business environment.

2. ML/DL/AI Intern

AIDF-CRI is actively in search of candidates who exhibit a profound passion for acquiring knowledge about new machine learning and AI models and their applications in the credit industry, particularly in the context of predicting a firm's probability of default. Successful candidates will have the opportunity to immerse themselves in real-world business scenarios within the FinTech landscape and actively participate in model development using authentic backend data.

Responsibilities
- **Data Preprocessing**

Implement data preprocessing techniques to clean, normalize, and transform raw data into a suitable format for model training.
- **Code Review and Quality Assurance**

Regularly perform code reviews and quality assurance checks to maintain high standards of code efficiency, readability, and reliability.
- **Research and Development**

Engage in ongoing research to stay abreast of the latest advancements in machine learning and deep learning.

Explore new models, tools, and technologies that can be applied to credit scoring, with a focus on enhancing model capabilities and addressing industry-specific challenges.

●   **Model Optimization and Testing**

Apply innovative techniques and approaches to improve model accuracy, reduce overfitting, and enhance generalization.

Design and execute A/B testing frameworks and other evaluation methodologies to assess model effectiveness in real-world scenarios. Iterate on feedback to refine and enhance model outcomes.

●   **Documentation**

Document all aspects of the model development process, including data preprocessing steps, model architecture decisions, and performance evaluations.

Requirements

- Preferably major in the areas of computer science, artificial intelligence, data science, or similar discipline.
- Knowledge of machine learning techniques, such as ensemble methods, unsupervised learning, and neural network architectures.
- Strong proficiency in Python, including familiarity with data science libraries (e.g., pandas, NumPy, scikit-learn) and deep learning frameworks (e.g., TensorFlow, PyTorch).
- Experience in Large Language Models (LLMs) with finetuning or prompt engineering. RAG, langchain, or AI agent would be a bonus..
- Experience in working with database servers, such as MySQL and MongoDB.
- Ability to work independently to solve problems and develop solutions.
- Strong analytical and problem-solving skills, with the ability to troubleshoot and resolve issues effectively.
- Excellent communication and documentation skills, both written and verbal, to collaborate effectively with team members and stakeholders.

Bonus Skills

- Competence in analyzing data and using statistical methods to extract insights.
- Experience in working with large data sets.
- Experience in working with Google Cloud Platform (GCP), Python Airflow and Apache Nifi.

- Ability to think creatively and propose innovative solutions to complex problems.
- Prior experience in the credit scoring industry or in financial services, with an understanding of the regulatory and business environment.
- Solid understanding of machine learning and deep learning principles, algorithms, and their application in credit scoring or similar financial contexts.
- API development experience and knowledge of load balancer.

3. Data Engineer Intern

We are seeking a skilled Data Engineer to join our team. The ideal candidate will have substantial experience in data engineering and ETL processes, with strong backend development skills and robust database knowledge. You will be working with technologies such as MySQL, Nifi, SQL Server, SSIS, and Google Cloud.

Responsibilities

- Design, develop, and maintain data pipelines and ETL processes.
- Work on backend development to support data integration and management.
- Manage and optimize databases, ensuring high performance and reliability.
- Collaborate with data scientists and analysts to ensure data accessibility and usability.
- Implement data governance and security practices to protect sensitive information.
- Troubleshoot and resolve database and ETL-related issues.

Requirements

- Bachelor's or Master's degree in Computer Science, Information Technology, or a related field.
- Proven work experience in data engineering and ETL processes.
- Strong proficiency in backend development.
- In-depth knowledge of database management using MySQL and SQL Server.
- Experience with ETL tools such as Apache Nifi and SQL Server Integration Services (SSIS).
- Familiarity with Google Cloud Platform and its data-related services.
- Excellent problem-solving skills and attention to detail.
- Strong communication and collaboration skills.

Bonus Skills

- Experience in financial technology or related industries.
- Knowledge of data governance and security best practices.
- Familiarity with other cloud platforms and big data technologies.