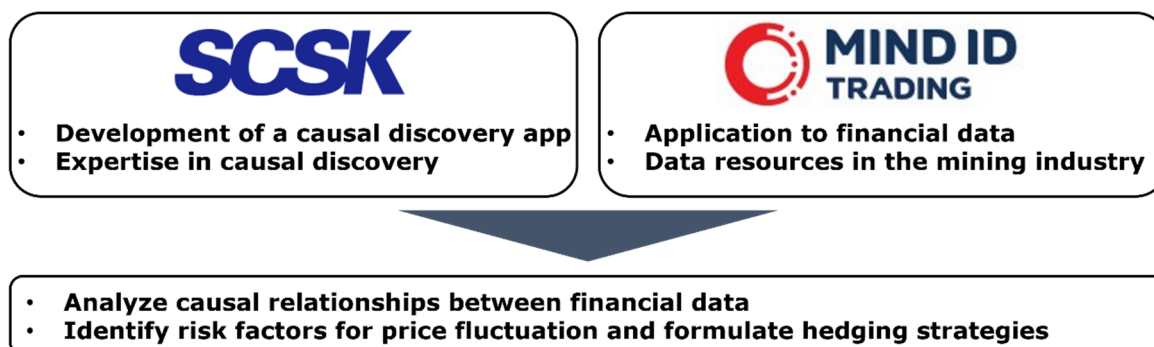# Information

SCSK Launches Joint Proof-of-Concept Experiment with MIND ID Trading
〜 Using Causal Discovery Algorithms and Quantum-Inspired Technology for Data Analysis in Finance 〜

SCSK Corporation (Head Office: Koto-ku, Tokyo; Representative Director, President: Takaaki Touma; hereinafter SCSK) has signed an agreement on November 1st with MIND ID Trading Pte. Ltd. (Headquarters: Singapore; hereinafter MIND ID Trading) to conduct a joint proof-of-concept (PoC) experiment to apply causal discovery algorithms[1] to financial data. MIND ID Trading, the trading division of Indonesia's mining industry holding group, possesses profound insights and invaluable data resources within the mining sector. By integrating these data resources with SCSK's causal discovery application, which is combined with quantum-inspired technology[2], we aim to evaluate how causal discovery algorithms can contribute to the formulation of risk management and trading strategies, thereby promoting the establishment of a stable supply chain.

SCSK
- Development of a causal discovery app
- Expertise in causal discovery

MIND ID TRADING
- Application to financial data
- Data resources in the mining industry

- Analyze causal relationships between financial data
- Identify risk factors for price fluctuation and formulate hedging strategies

1. Background and Purpose of the Joint PoC Experiment
In recent years, the electric vehicle (EV) market has seen remarkable growth, with increasing demand for ferronickel. This alloy, which contains nickel, is a vital component in manufacturing EV batteries and stainless steel. Consequently, mining companies are tasked with managing the risk associated with fluctuating metal commodity prices triggered by this increased demand. They must also forecast market trends to ensure a stable supply of raw materials.

Causal discovery algorithms hold significant potential in accurately understanding complex market trends. While conventional statistical methods can identify correlations between data, these methods frequently encounter difficulties in specifying their causal relationships. Causal discovery algorithms, however, automatically generate causal graphs that unveil potential causal

---

[1] Causal discovery is a statistical method that estimates causal relationships among variables from given data using mathematical assumptions (without any prior knowledge) and infers a causal graph.

[2] We use our quantum-inspired kernel in estimating a measure of independence for obtaining causal relationships and generating a causal graph. Our quantum kernel matrix entry can be efficiently simulated on a classical computer without using a quantum computer.

relationships within data, making it possible to understand the causes and impacts of price fluctuations. In mining-related financial markets, such as commodity trading markets and derivative markets, it can be possible to identify risk factors more accurately and contemplate effective countermeasures against price fluctuations.

In this joint PoC experiment, we aim to unravel the complex relationships between various financial data and metal commodity prices, using cutting-edge causal discovery algorithms. SCSK has developed a causal discovery application combined with quantum-inspired technology, which will be utilized in the joint PoC experiment.

2. Activities Through the Joint PoC Experiment
We will apply causal discovery algorithms to financial data (such as exchange rates, interest rates, stock indices, and metal commodity prices) to analyze risk factors affecting metal commodity prices and causal relationships within financial data.

- During the duration of this joint PoC experiment, SCSK will offer a trial of its proprietary causal discovery application.
- MIND ID Trading will assess the usefulness and utility of the causal discovery algorithm in spot and futures trading, leveraging the causal discovery application.
- This joint PoC experiment will be conducted from November 2023 to March 2024.

3. Future Plan
Based on the results of the joint PoC experiment, SCSK will refine and optimize the causal discovery algorithms and application, contemplating the potential commercialization of the app. SCSK will also explore the possibility of deploying this technology across various industries and fields. One such potential application could be in the analysis of causal relationships within the healthcare field.

About SCSK Corporation
SCSK provides a full lineup of services to support any area of IT solution required for businesses from consulting to system integration, verification services, IT infrastructure implementation, IT management, IT hardware and software sales, and BPO (business process outsourcing).
URL: https://www.scsk.jp/index_en.html

About MIND ID Trading
MIND ID Trading Pte. Ltd. is a 100% subsidiary of PT Mineral Industri Indonesia (MIND ID), a state-owned holding group for the mining industry based in Jakarta, Indonesia. MIND ID Trading, based in Singapore, plays an essential role as a trading division. Through its global network, the company supplies aluminum, ferronickel, tin, coal, and other commodities to the world.

For inquiries regarding this news release:
Technology Strategic Planning Dept., Technology Strategy Div., Core Business Innovation Group, SCSK Corporation
E-mail：tsd-info@scsk.jp

Note: All products, company and service names listed are trademarks or registered trademarks of their respective companies.