# Using AI to screen, search, and structure environmental, social, and governance data

*Investors face at least two challenges when making environmental, social, and governance (ESG) decisions. One is the discrepancy in definitions, scoring methodologies, and assessments. The second one is the dearth of timely and accurate data.* **Terence Tse, Marissa Lum, Danny Goh** *and* **Mark Esposito** *write that AI carries the promise to provide an immediate solution to mitigate the data problem.*

In an earlier article, we explored how artificial intelligence (AI) can help reach environmental, social and governance (ESG) goals. Here we intend to look deeper into the AI technologies and how they extract and handle data to make investors better informed. Such technologies are increasingly, if not urgently, needed as ESG issues are fundamentally changing the investment landscape.

**Inadequate information**

Yet, there are at least two informational challenges that investors face. The first, as we mentioned in our previous article, is that there are discrepancies among rating and index producers – even when scoring the exact same companies. A recent study has found that in a dataset of five ESG rating agencies, correlations between scores on 823 companies were on average only 0.61. The reasons for the inconsistency lie in the differences in definitions, scoring methodologies and assessments used. Investors often don't have the time to go through, compare and reconcile the differences of views and ratings from different suppliers.

The second is the dearth of timely and accurate information to make informed decisions. Here is an example: does Tesla qualify as an ESG company given that electric cars are purportedly good for the environment? If the answer is yes, what about the fact that the batteries used in Tesla cars depend on nickel, the extraction of which comes at an environmental and health cost? How about the fact that Tesla's recent purchase of $1.5 billion worth of bitcoins, the processing of which is extremely energy-demanding if not downright wasting?

AI carries the promise to provide an immediate solution to mitigate the latter problem. As machines are much more capable than humans to gather and handle qualitative information at scale, cheaply and rapidly, the supply of such information will in turn improve the completeness and timeliness of data, and hence the overall quality of ESG data available to investors.

**Search, screen and structure**

Typically, AI technologies follow three steps to produce the data: search, screen and structure.

*Search.* The process starts by using AI to search for and extract company data from a range of sources including news coverages, messages and mentioning in social media as well as company disclosures and external reports. To do so manually would be a time-consuming, labour-intensive and costly effort. Even if this is bearable, manual approach to search and import data in real-time fashion on an ongoing basis would be impossible. Indeed, as the universe of ESG data continues to expand, AI represents the only feasible means to collect data.

*Screen.* After data collection comes screening and entering extracted data on the database. Traditionally, this entails humans to first "eye-ball" the information and then manually key in the data, a process that is demanding in both time and efforts. Today's technologies make it possible for us to skip this process to a great extent. Based on some pre-defined logic and using HTML analysis, machines can parse and convert a huge volume of such unstructured data into structured data that is readily usable – error-free and swiftly.

*Structure.* The next phase is about discovering and gleaning valuable insights from the structured data set. This involves developing various natural language processing techniques such as those related to classifications and taxonomies. It also makes use of analyses that capture sentimental, contextual and semantic factors embedded in the collected data.

**One giant step forward to making ESG work**

The market is keen to invest in ESG-compliant companies for several reasons. Some investors are genuinely interested in changing the world. Others are keen to minimise harm with their investments. Finally, there are those who are far more concerned with protecting their portfolios. But without the right information, it will be difficult for them to invest in ESG properly.

Take the example of Wirecard, the disgraced German payment processor and financial services provider. While the company only filed for bankruptcy in June 2020, news of its questionable business practices broke out as early as 2015. Indeed, until its collapse, there had been a series of (journalistic) investigations in the company, unearthing ever more evidence of wrongdoings. Yet throughout all this time, Wirecard received median-grade ratings from a number of ESG ratings agencies. We believe that AI-driven technologies can shed some light on the current ESG ratings black box. With real-time data, it will be much easier for investors to identify and track events, which will enable them to act and respond without delay. As such, we will be able to get ever closer to achieving ESG goals.

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*Notes:*

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