

**FRONTEO、APAC CIOOutlook Magazine にて、
ヘルスケアテクノロジー企業上位 10 社に選出
独自開発の自然言語処理 AI エンジン「Concept Encoder」を用いた
先進的取り組みが高く評価される**

株式会社 FRONTEO（本社：東京都港区、代表取締役社長：守本正宏）は、アジア太平洋地域向けの IT ビジネス誌「APAC CIOOutlook Magazine」より、「Top 10 Healthcare Technology Companies in APAC 2020 (2020 年 APAC におけるヘルスケアテクノロジー企業トップ 10)」に選出されたことを発表します。

「APAC CIOOutlook Magazine」は、米国シリコンバレーに本部を置き、アジア太平洋地域のCIO、CTOを始めとするCxOやITシニアマネージメント層に広く購読されている企業向け IT ビジネス誌です。

この度の選出に当たり、FRONTEO ライフサイエンスAI事業本部 ライフサイエンスAI分掌CTO 兼 研究開発部 部長の豊柴 博義が、同誌のインタビューに応え、医療・製薬分野においてAIを活用する上でのEBM（Evidence based Medicine、根拠に基づく医療）の重要性の高まり、EBMを実現するFRONTEOの独自開発AIエンジン「Concept Encoder(コンセプト・エンコーダー)」の特徴、Concept Encoderを活用した、創薬探索支援、認知症診断支援、転倒転落予測といった先進的な取り組みを紹介しました。

APAC CIOOutlook Magazineの編集長、Annie Johnson(アニー・ジョンソン)は、以下のよう
に述べています。

「FRONTEOが、我々の『2020年APACヘルスケアテクノロジー企業トップ10』リストに選出されたことを喜ばしく思います。今回の選出により、FRONTEOのAI技術と先進的な取り組みは、市場でより高く評価され、大いに注目を集めることになるでしょう。」

最近では、医療・製薬分野でのAI活用の取り組みが拡大し、医療現場での実用化に向けた動きがますます活発になっています。画像やセンサーの数値解析と並んで、会話や論文、問診記録などの自然言語（テキスト情報）をAIで解析する取り組みも、ますます注目されています。

FRONTEOは、2014年よりライフサイエンス分野でのAIによる自然言語解析の開発を進めるとともに、AIエキスパートによるコンサルテーション、データ分析サービスを提供することで、製薬企業や医療関連ビジネスにおいてさまざまな成果をあげています。

※インタビュー記事（英語）はこちらから（閲覧には登録が必要です）

<https://www.apacciooutlook.com/magazines/March2020/Healthcare/#page-26>



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Top 10 Healthcare Technology Solution Providers – 2020

Technology has brought about a profound and welcome change to the healthcare sector. Patients now have access to cutting-edge treatments, innovative diagnostic tools, and a multitude of minimally-invasive procedures that result in less pain and quicker healing. The availability of intuitive mobile apps and remote consultations, for example, has led to enhanced patient care and a superior healthcare experience. Tech-savvy leaders are now leveraging next-gen technologies like the Internet of things (IoT), artificial intelligence (AI), and augmented reality/virtual reality to provide high-end solutions to patients. Whether it is to find new links between genetic codes or to drive surgery-assisting robots, AI is reimagining modern healthcare through machines that can predict, comprehend, learn, and act. At the same time, IoT facilitates immediate albeit important tasks to improve patient outcomes, and also takes the burden off health practitioners. Tasks such as remote patient monitoring, treatment progress observation and the housing of vaccines are all capabilities of medical devices with integrated IoT. Alongside, the application of digital sensors, telemedicine, virtual rehabilitation, intelligent fabric, and biometrics has become ubiquitous in the industry.

Amidst these developments in the healthcare landscape, to help firms strengthen their technology capabilities and simultaneously enable growth in the industry, APAC CIO Outlook has compiled a list of the leading healthcare technology solution providers. These companies have extensive business knowledge and exhibit competence in delivering cutting-edge solutions that meet the needs of the customer. We hope this edition of APAC CIO Outlook assists you in fostering productive partnerships and enhancing growth through the integration of robust software solutions.

We present to you APAC CIO Outlook's "Top 10 Healthcare Technology Solution Providers – 2020."

Company:
FRONTEO

Description:
Offers data analysis capabilities to help the healthcare industry best utilize and manage its more fundamental requirements: evidence-based medicine

Key Person:
Hiroyoshi Toyoshiba,
Research Director and Chief
Technology Officer of Life
Science AI Business Division

Website:
[fronteo.com](https://www.fronteo.com/)

FRONTEO
TOP 10 HEALTHCARE TECHNOLOGY SOLUTION PROVIDERS - 2020

The annual listing of 10 companies that are at the forefront of providing healthcare solutions and supporting the global industry

FRONTEO

AI to Help Leverage Evidence-Based Medicine Better

Following their proclivity toward adopting and utilizing the latest, cutting-edge technologies for the betterment of patient care delivery, healthcare professionals today have begun incorporating a slew of new digital practices in their daily workflows. Among the many innovative forms of medical technology utilized throughout healthcare facilities, like EHR systems and wearables, evidence-based medicine (EBM) is becoming one of the most useful tools in driving the best clinical outcomes across the industry. EBM integrates a physician's or health system's experience and their patient's values with the best available research information, which consequently increases the resourcefulness of high-quality clinical research for medical decision making. With the help of EBM practices, healthcare organizations across the globe can streamline and bolster patient care delivery efficiently and cost-effectively. However, EBM is heavily dependent on data, and data scientists understand the technology better than the physicians in a health system. Translating the necessary information can become tedious, and the chances of miscommunicating important details about a patient's condition may increase. To help physicians and large hospitals avoid such situations and deliver the best possible care, FRONTEO, a comprehensive healthcare technology and business enterprise, offers AI-based solutions that strive to drive the most out of modern medicine.

"With the aid of our domain experts, we offer consultation and advanced AI-based data analysis services to help bridge the gap between data scientists and health systems. Our service is a complete package of consultations consisting of data, algorithms, outputs, and system integrations," expresses Hiroyoshi Toyoshiba, research director and CTO of FRONTEO's Life Science AI Business Division. The company applies state-of-the-art word and document embedding techniques via its AI engine—Concept Encoder—which allows users to search through databases more quickly with complete transparency and reproducibility. Concept Encoder embeds all sentences and key words used by a physician or administrator into a vector when a patient's

documents are uploaded. "The embedding process is based on the Distributional Hypothesis that states that a word is characterized by the company it keeps," adds Toyoshiba. Concept Encoder first defines and understands the meaning of each word or phrase by itself and its similarity to other meanings. FRONTEO leverages machine learning (ML) technologies and methodologies to embed vectors, which significantly increases the accuracy of this process through the AI engine.

The company also offers three distinctive services, where its AI-based Diagnosis Support gathers information from various conversations between patients and their respective physicians. For instance, a doctor can administer a mini-mental state exam (MMSE), and FRONTEO's ML capabilities provide healthcare professionals with the possibility of quickly detecting Mild Cognitive Impairment (MCI) and dementia. The company's Healthcare Operational Support service analyzes hospital incident reports, including data on patient conditions from electronic folders as well as the text data of free comments found in daily records of examination and treatment. This allows the AI to calculate, predict, and identify patients who have a high fall risk in a hospital. Lastly, as a Pharmaceutical Industry Support service, the company's AI aids drug discovery and enables the analysis of various test data with the aim of making pharmacovigilance work more efficient, while delivering high quality of data. This system is being further developed to predict causal or responsive genes when a disease name is provided as a query, generating a molecular map linking the gene's sets. "We also offer a solution that automatically classifies official documents from the government into groups that are most relevant," says Toyoshiba.

Moving forward, the company aims to penetrate healthcare markets beyond the borders of Japan. Owing to the country's advanced ageing society, FRONTEO is also going to focus its efforts toward developing dementia diagnosis support systems, based on neuro-linguistic programming (NLP) and have them approved as patented medical devices to help improve drug discovery across the globe. ■



Hiroyoshi Toyoshiba,
Research Director & Chief
Technology Officer of Life Science
AI Business Division

■ Concept Encoder について URL: <https://lifescience.fronteo.com/>

Concept Encoder (コンセプト・エンコーダー) は、FRONTEO がライフサイエンス分野に特化して開発した人工知能 (AI) です。自由記述のテキストデータを大量に含むメディカルデータを、エビデンス (根拠) に基づいて有効に解析・活用することを目的に 2018 年に開発しました。ヘルスケア従事者の共通認識である「エビデンスに基づいた医療 (EBM)」に欠かせない有意差検定などの統計的手法を自然言語解析に導入、実現しています。Concept Encoder はテキスト以外のデータとの共解析も可能であり、ライフサイエンス領域に蓄積されてきた遺伝子発現情報・バイタルや各種検査値などの「数値データ」との共解析の研究を進めています。特許登録番号：特許第 6346367 号

■ FRONTEO について URL: <https://www.fronteo.com/>

株式会社FRONTEOは、独自開発の人工知能エンジン「KIBIT® (キビット)」や「conceptencoder® (コンセプト・エンコーダー)」により、ビッグデータなどの情報解析を支援するデータ解析企業です。国際訴訟などに必要な電子データの証拠保全と調査・分析を行うeディスカバリ (電子証拠開示) や、デジタルフォレンジック調査を支援する企業として2003年8月に設立。自社開発のデータ解析プラットフォーム「Lit i View® (リット・アイ・ビュー)」、日・中・韓・英の複数言語に対応した「Predictive Coding® (プレディクティブ・コーディング)」技術などを駆使し、企業に訴訟対策支援を提供しています。このリーガル事業で培われ、発展した独自の人工知能関連技術は、専門家の経験や勘などの「暗黙知」を学び、人の思考の解析から、未来の行動の予測を実現します。ライフサイエンスやビジネスインテリジェンスなどの



領域に展開し、FinTechやRegTechに加え、「働き方改革」でも実績をあげています。2007年6月26日東証マザーズ上場。資本金2,559,206千円（2019年3月31日現在）。

〈本件に関するお問い合わせ先〉

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