NCGM and Accenture Collaboration on Developing an Evidence-Based AI Model for Lifestyle Disease Risk Prediction

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In this presentation, we will introduce examples of data analysis related to epidemiology that we have conducted using AI. In particular, we will discuss the details and result of AI-based lifestyle-related disease risk prediction model developed in collaboration with NCGM.

Lifestyle-related diseases are conditions caused by daily habits such as lack of exercise, poor diet, alcohol consumption, smoking, and stress.

Once developed, they often require long-term treatment and recovery.

Among working-age people, these diseases can reduce productivity in companies and have significant impacts on the economy and society. It is therefore important for individuals to use health check-up results to focus on prevention.

In recent years, smartphones have made it easier to collect and store personal health data. As a result, many methods (models) have been developed to quantify the risk of lifestyle-related diseases and support prevention.

However, machine learning (AI-based) approaches often have complex prediction rules. This makes it difficult to explain exactly which health checkup items are influencing disease risk and how.

For general users who do not have advanced medical knowledge or data analysis experience, interpreting these results correctly and turning them into appropriate lifestyle changes can be difficult.

To address this, Accenture's Data & AI Group, in collaboration with the National Center for Global Health and Medicine, developed a model designed to provide clear and easy-to-understand risk predictions. Using health check-up results, the model predicts the probability of developing diabetes, hypertension, and dyslipidemia within next five years.

This model has been implemented in a smartphone app, where users can access both the predictions and their explanations to better understand the results.

Additionally, a neural network–based model was analyzed using SHAP values to improve interpretability, and the findings were published in an international journal in the United States.

In this seminar, the first part will explain how Accenture developed and applied a lifestyle disease prediction model. In the second part, we will share research on deep neural networks based on published studies about lifestyle disease risk prediction.

Biography

Yoshinori Sasagawa
2011-Graduated from Kobe University Graduate School, majoring in Physics
2011-Joined a medical device manufacturer in Japan as a Researcher
2020-Present – Working at Accenture Japan Ltd