

## News Release

### **NRI Develops Model Predicting the Advertising Effect of Television Commercials with High Precision**

- Using artificial intelligence to analyze approximately 30,000 samples of single source data -

**TOKYO, February 5, 2018** - Nomura Research Institute (NRI), a leading provider of consulting service and system solutions, today announced that it has developed a model for predicting the effect of television commercials with high precision (“Prediction Model”) by using artificial intelligence (AI) to analyze single source data<sup>\*1</sup> collected through the Insight Signal<sup>\*2</sup> service provided by NRI.

The main features of the Prediction Model are as follows.

- Prediction of the effect of television commercials before being broadcast

The Prediction Model can predict “how much advertising effect can be expected” for a television commercial that has been produced but not yet released. Specifically, it quantitatively predicts whether a commercial will be properly recognized if it is broadcast, and how much consumers’ intent to purchase or use a product will increase due to the commercial using the Commercial Awareness Score<sup>\*3</sup> and the Purchase/Use Intent Score<sup>\*4</sup> respectively.

Furthermore, it is possible to simulate how much the advertising effect will be improved by changing aspects such as colors, the time the talent is on screen, the time the product is on screen, background music and the number of cuts.

- High precision based on approximately 30,000 samples of single source data

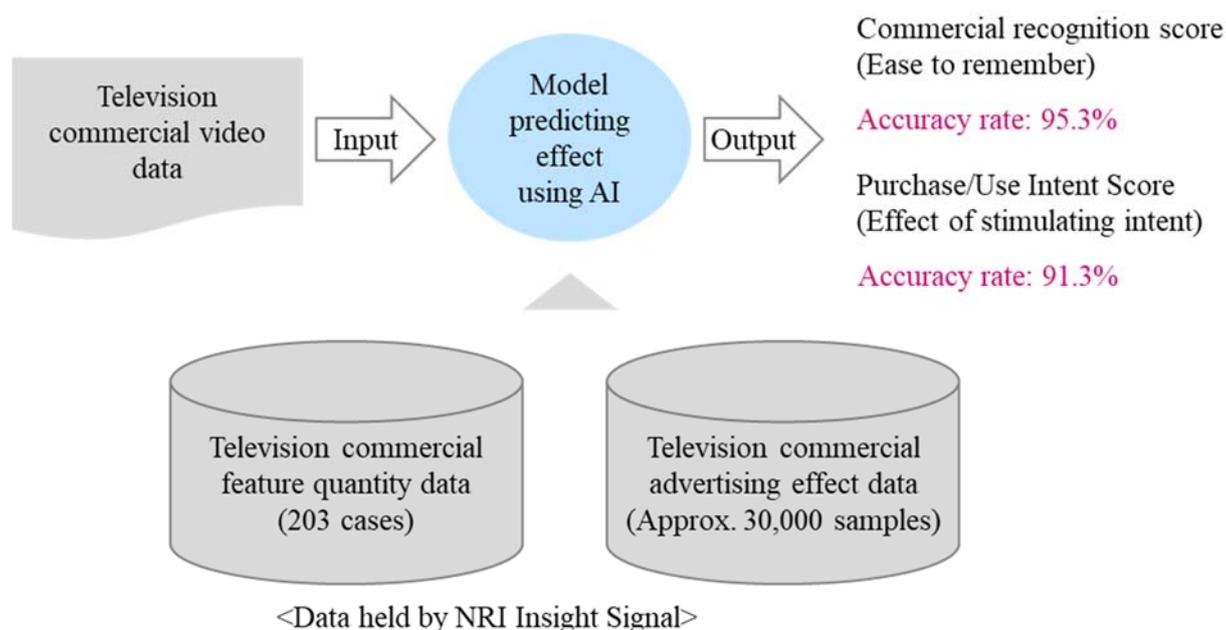
When the Prediction Model was used to predict the advertising effect of television commercials, it was possible to predict the accuracy rate<sup>\*5</sup> of the Commercial Awareness Score with 95.3% precision and the Purchase/Use Intent Score with 91.3% precision.

This associated the advertising effect data of 30,000 samples handled in Insight Signal in the past obtained from consumers with data extracting the feature quantity from 203 commercials using a technique which combines multiple methods such as image analysis and audio analysis, and clarified the relationship between the two using AI which performed machine learning of these data sets. Furthermore, to avoid over-fitting<sup>\*6</sup> in

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machine learning, cross validation<sup>\*7</sup> is also performed to verify that the Prediction Model has the precision able to predict the advertising effect.

Figure: Overview of the television commercial effect prediction model



A service enabling marketing personnel at user companies to use AI to predict the effect of television commercials scheduled to be broadcast with high precision and from a variety of perspectives in advance is scheduled to begin being provided in Insight Signal during FY2018.

NRI will continue to accumulate the results of measuring the effect of television commercials, and increase the precision of analysis and prediction.

**\*1 Single source data:**

Data collected from the same subject on the state of contact with the media and consumption/purchasing behavior during a certain period. It has the advantage of being able to analyze recognition due to advertising and the impact on purchasing in individual units.

**\*2 Insight Signal:**

The advertising effect measurement program provided by NRI. It is a service for analyzing and evaluating promotion measures such as advertisements and PR based on NRI's proprietary data, and offers support from media selection and production of creative elements to setting KPIs and creating PDCA cycles.

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**\*3 Commercial Awareness Score:**

An indicator showing how easy television commercials are to remember, creating a score based on the “10 Freq Awareness ratio” (percentage of responses that consumers “know” an advertisement when they have come in contact with a television commercial ten times).

**\*4 Purchase/Use Intent Score:**

A score for the effect of consumers wanting to purchase or use a product, etc. introduced in an advertisement when they come in contact with the advertisement. It is measured using the “difference-in-differences” method where the pure effect of an advertisement alone on the intent to purchase, etc. is measured by taking the transition/change (difference) in the intent to purchase by consumers who came in contact with the advertisement (contact group) before and after contact, and deducting the change (difference) during the same period for consumers who did not come in contact with the advertisement (control group) from this (calculating the difference in differences).

**\*5 Accuracy rate:**

The percentage of “AI prediction results” that match “actual measurement results” in the data used in machine learning. The accuracy rate is calculated by making the actual measurement results into indicators classified into “equal to or above average” and “below average”, and comparing them to prediction results for the “10 Freq recognition rate” and the “effect on purchase/use intent based on the difference in differences”, respectively.

**\*6 Over-fitting:**

This refers to a phenomenon in machine learning where predictions are specialized to prepared data set rather than being predictions for general cases.

**\*7 Cross validation:**

A method of verifying whether prediction precision is ensured even for data that is not learned by intentionally separating part of the learning data to ensure the learning results are not specialized for only the data used in machine learning.

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