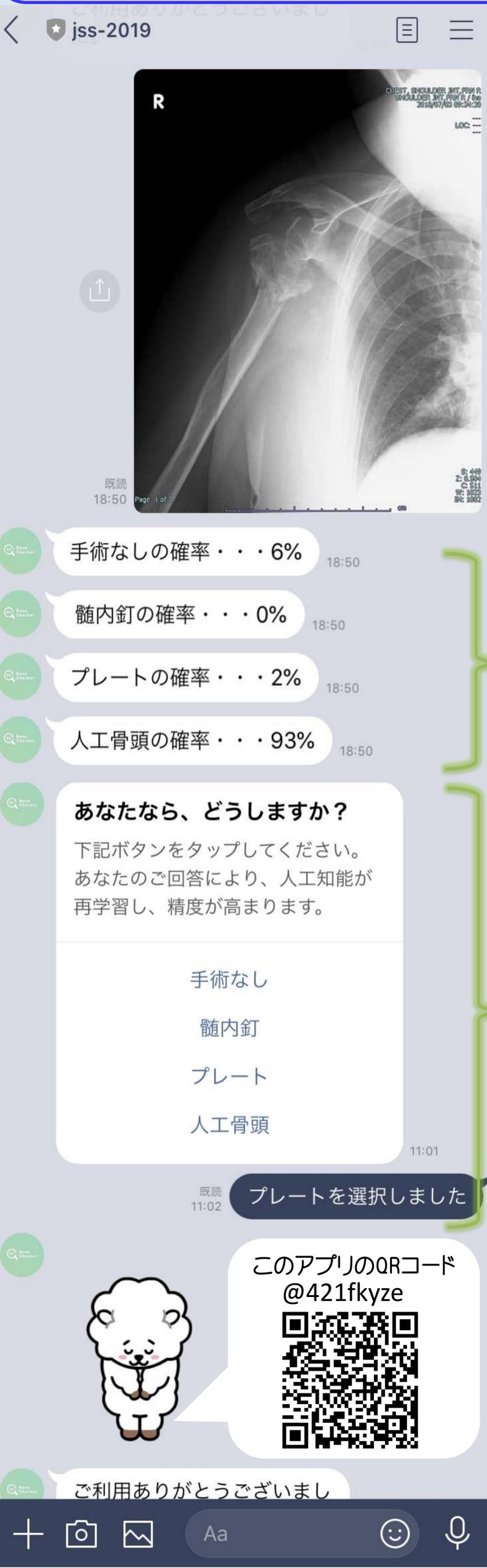


# Development of diagnostic support system for proximal humeral fracture using **Artificial Intelligence**



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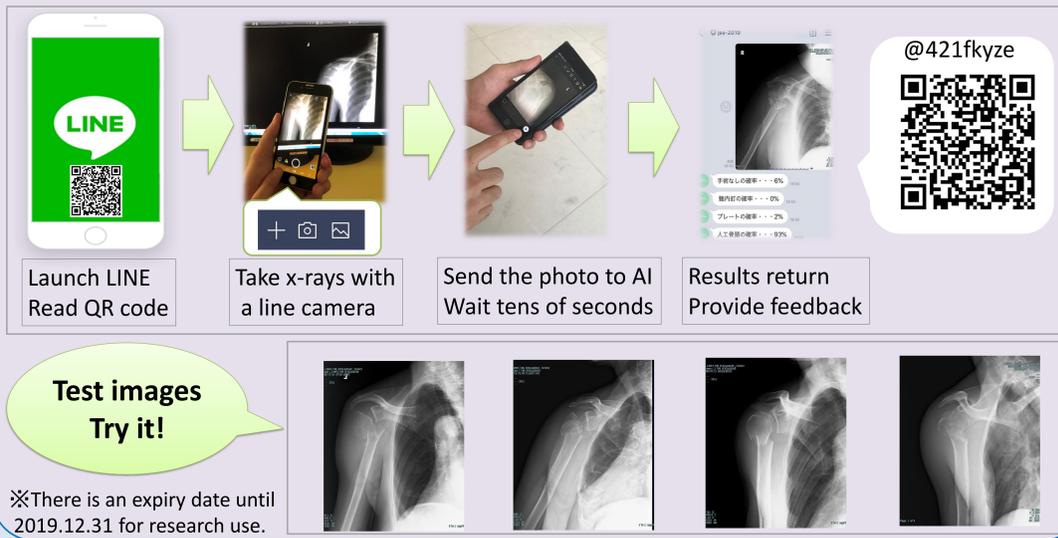
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## 1. Please Try using AI, & Feel "How easy !"

Recently, the development of artificial intelligence(Deep learning) has been remarkable, and the accuracy of image recognition has been remarkably improved. The purpose of this study is to develop artificial intelligence to support X-ray diagnosis of proximal humeral fractures.

Using the Convolutional Neural Network, a model was created to suggest recommended surgical procedures based on prognostic information in the database. Thus, when an image is transmitted from a smartphone, the determination result is displayed on the browser within tens of seconds.



## 2. Recommendation of treatment by AI

Radiographs, surgical procedures, and prognostic information were extracted from the electronic medical record. 1099 radiographs were trained by artificial intelligence in the following four categories , "No surgery" , "Intramedullary nail fixation" , "Plate fixation" "Humeral head replacement".

When a new image is transmitted, the artificial intelligence reads the characteristics of the image and indicates the probability of selecting each surgical procedures with 94% accuracy. Artificial intelligence used "Labellio®" Convolutional Neural Network provided by Kyocera.

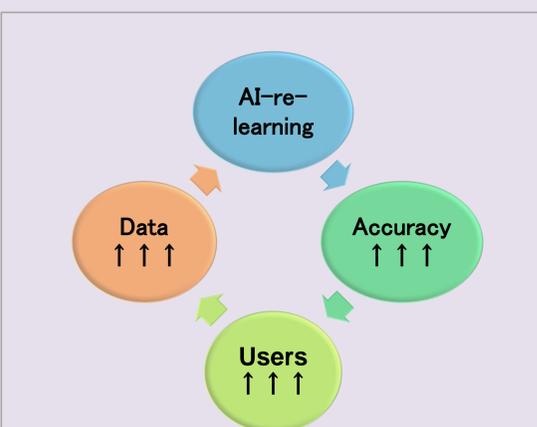
## 3. AI re-learns the feedback data



We made artificial intelligence learn Radiographs 50,000 times, but it took only one day to learn. In addition, this system adds a function that saves the image and the selected information in the server database each time a new image diagnosis is performed. Since **the stored images and information are used again for learning** of artificial intelligence, the accuracy of artificial intelligence is improved autonomously and steadily.

## 4. Future prospects

### Evolution never stops!



Artificial intelligence grows and improves accuracy by re-learning new data. If accuracy increases, more users will use the application, and more data will be sent and stored. Artificial intelligence re-learns the data again.

**The evolution never stop.**

In addition, the series of technologies presented this time can be applied to various other diseases and is highly versatile.

