



AI-Based Dementia Control

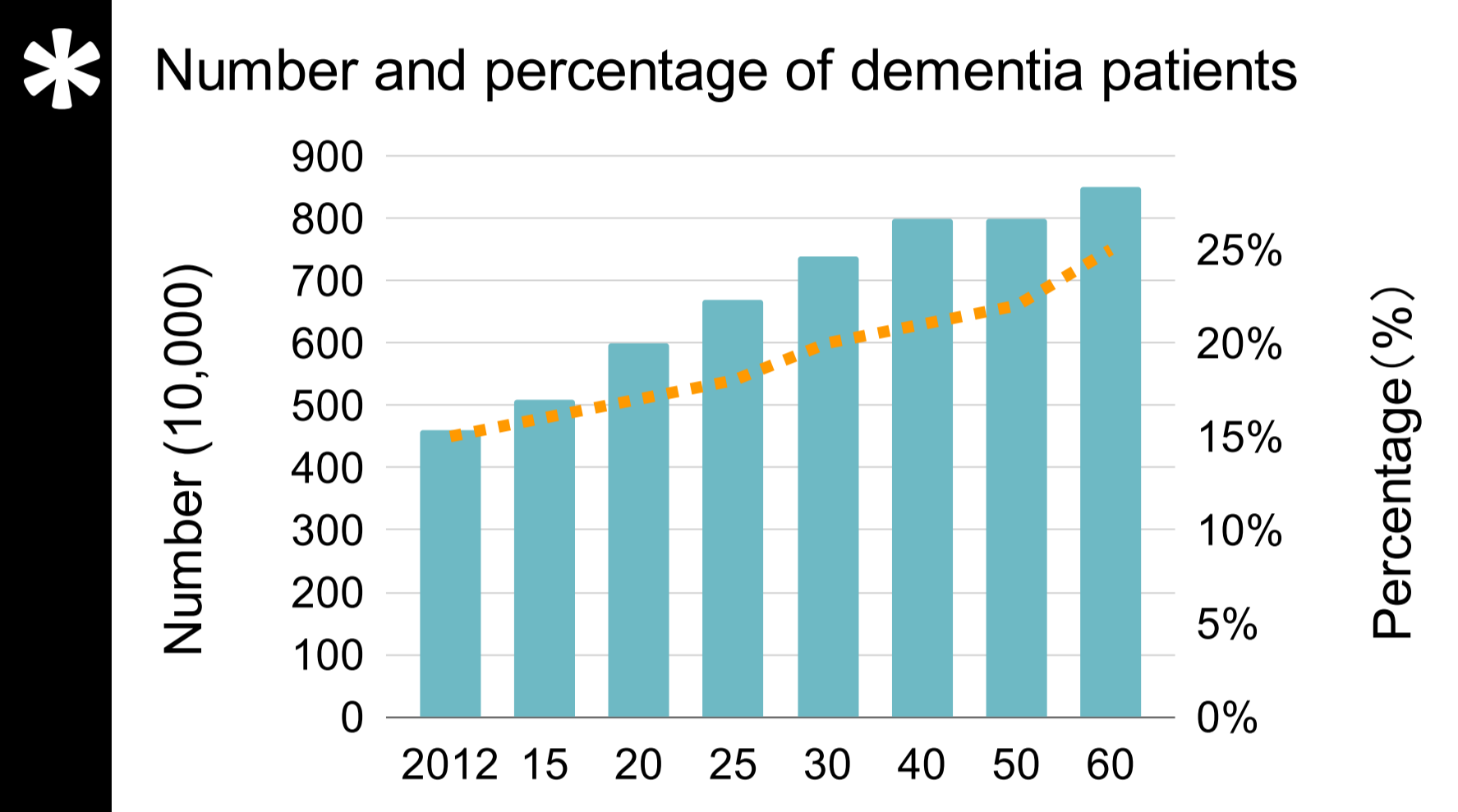
Let's Create "Talking Girl"!

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1. Background

Recently, Japan has seen an increase in the number of aging and dementia patients*, and the resulting shortage of caregivers has become a social problem. Therefore, in view of the rapid development of AI, which is being used in a variety of situations due to its multi-functionality, the practical use of applications that can act as a talking partner, and the fact that the most effective way to delay the progression of dementia is to increase social interaction and activate the brain, we used AI that can act as a talking partner and created the chatbot application, "Talking Girl", for the purpose of improving the problems mentioned above.



2. Processes

We used Watson Assistant™ from IBM as the basis for creating the application. We also learned how to use it through visits to Miyazaki University. In addition, we conducted a survey for Frontier Course students and teachers in order to consider what conversations dementia patients need and enrich the conversation patterns by ourselves.

3. What is Watson Assistant™

Watson Assistant™ is a platform for developing conversation applications such as chatbots, using machine learning techniques and natural language recognition technologies.



4. About the survey

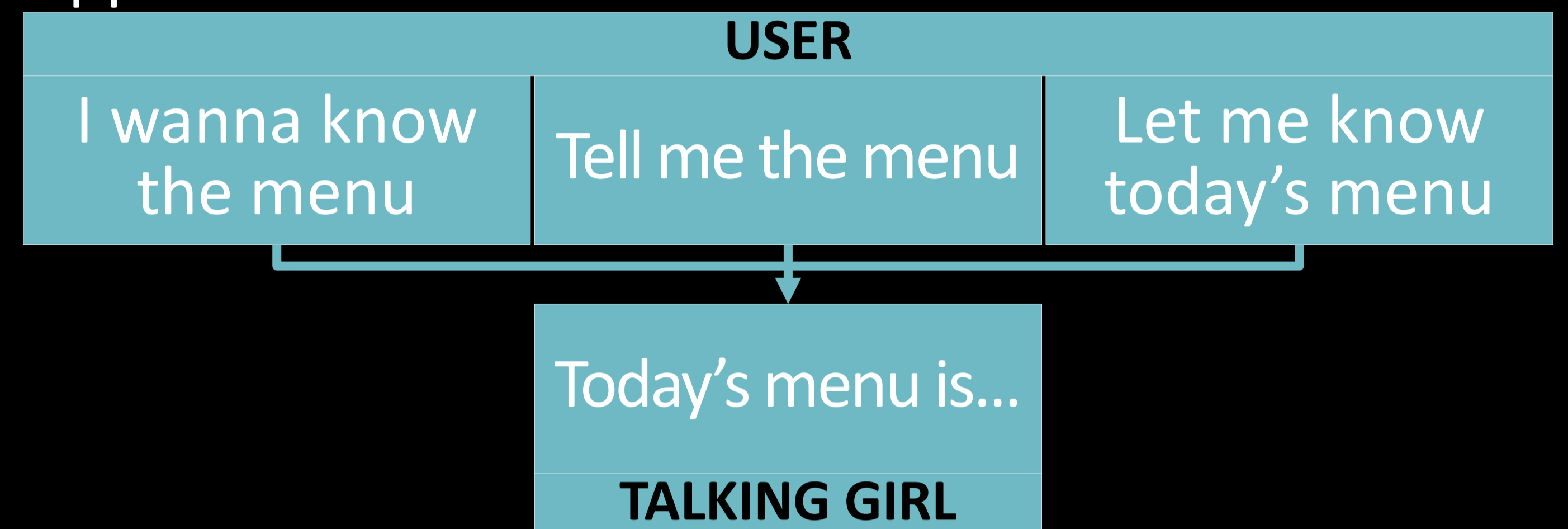
As a result of the survey mentioned in Chapter 2, the following result was obtained. (i) Talking about themselves, (ii) Not having a negative attitude, (iii) Talking about near future. We decided to actually implement (i) and (iii) particularly because they are things that can be done by an AI like Talking Girl.

5. Development Environment

Windows 10/11, Windows Subsystem for Linux, IBM Watson Assistant, IBM Watson Text-to-Speech

6-1. About Talking Girl overall

Talking Girl's features include natural language recognition using Watson Assistant™ and is entirely dedicated to talking with the elderly and dementia patients. Also, it can be integrated with LINE™ so that can be used by a large number of people through a well-known social networking application.



Watson can understand a variety of contexts. The figure above is an example, where the same single intent is taken from different contexts.

6-2. Integration with LINE™

By obtaining a unique Channel Access Token from LINE Messaging API, it is possible to send and receive webhooks to and from Node-RED using Bearer Token. Also, Watson Assistant can also send and receive webhooks to and from Node-RED using its API Key. By linking both LINE and Watson Assistant with Node-RED, messages can be sent and received between LINE and Watson Assistant.



7. Future Prospects

Allowing conversations by voice → The elderly are thought to be not used to using computers.

Conducting practical tests in nursing homes for about a week → To verify if the application is effective actually.

Creating actual application, integration with other services → To improve User Experiences.

Enriching the conversation patterns → To broaden the scope of the conversations.

8. References

https://www.geekly.co.jp/column/cat-technology/1903_076(Recent Examples of AI Applications)
<https://www.ninchisho-forum.com/>(Dementia Forum.com—Basic Knowledge of Dementia)
 Research on The Future Estimation of The Elderly Population with Dementia in Japan(In Japanese)(By Toshiharu Ninomiya et al, 2014)
<https://www.buildinsider.net/enterprise/wsl/01>(Build Insider—What is Windows Subsystem for Linux?)