Explanation about the Yorozugawa Bridge Database

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Title of the data: Yorozugawa Bridge Database
Data creator: Youqi Zhang
Date of data creation: Nov, 2017
Explanation of the data: Acceleration data from 15 sensors on the Yorozugawa Bridge Specimen in the free-damped vibration experiment referred in a paper*. Each CSV file has 15 columns corresponding to each accelerometer.

* Zhang Y, Miyamori Y, Mikami S, Saito T. Vibration-based structural state identification by a 1-dimensional convolutional neural network. Comput Aided Civ Inf. Volume 34, Issue 9, pages 822-839, 2019. https://doi.org/10.1111/mice.12447

Detailed explanation:

The database is a free-damped vibration database acquired from the Yorozugawa Bridge generated by Youqi Zhang in 2017. The vibration tests were performed at the test field of Kitami Institute of Technology, Japan in 2017. The basic information of the bridge is as shown in Fig. 1.

- Steel girder bridge
- Length: 6.45 m,
- Width: 1.994 m
- Height: 0.775 m

Fig. 1. Basic information of the bridge

The database includes 6 different structural states, which are States 0-5. State 0 is the original state, and other states are with an additional element attached. The locations of impact and additional element are shown in Fig. 2. The detail of the additional element is shown in Fig. 3.

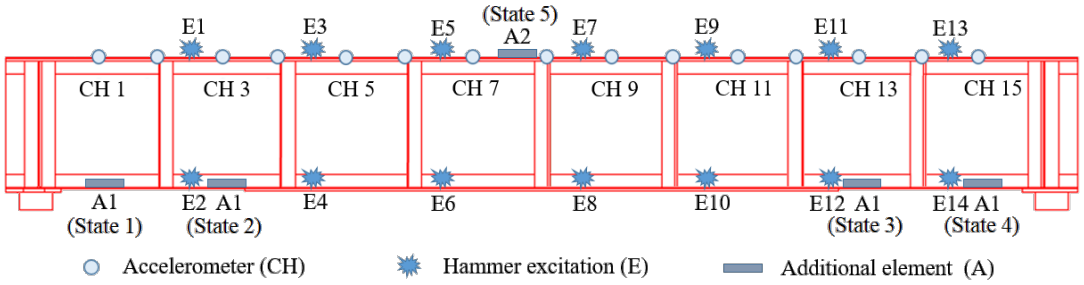

Fig. 2. locations of impact and additional element are shown in Fig. 2

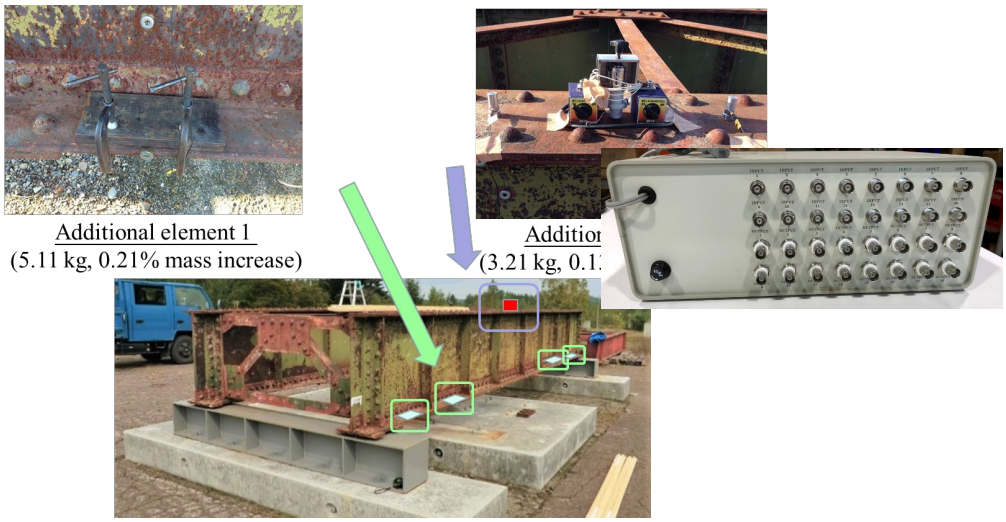

Fig. 3. Details of the additional elements

The sensor system consists of Onosokki NP-3130 accelerometers (Fig. 4a), Onosokki SR2200 dual-channel sensor amplifiers (Fig. 4b), a signal conditioner (Fig. 4c), and LabVIEW operation software.

(a) (b) (c)

Fig. 4. Senser system

Some key information of the test and data is as follows:

- Excitation: hammer impact
- Sampling frequency: 10k Hz
- Data length: 0.6s
- Data shape: 6000 * 15 channels

Data organization:

The name of each file is related to the number of hammer impact. Some error data (cause by hammer impact overload, double impact, etc.) are not included in the database. Only normal free damped vibration data can pass the selection rule of the database.