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## An engineering approach for humans

Miwa Nakanishi

Have you seen the movie "Sully"? It is based on a true story of US Airways flight 1549, which in 2009 encountered a bird strike shortly after taking off from an airport in New York, causing both engines to shut down. By making decisions without delay and with his highly skillful flying, the captain landed the aircraft in the Hudson River. All passengers and crew members on board survived.

Because it's a real story, a little more of the movie will be revealed. Members of the National Transportation Safety Board (NTSB), who conducted the investigation of the incident, point out that instead of making

the dangerous decision of landing the aircraft in the river, the captain and first officer should have returned to the airport they took off from in accordance with guidelines or alternatively, landed at another airport nearby, showing data from computer simulations that it was physically possible to do so. However, Tom Hanks, who plays the role of Captain Sullenberger clearly states that "you still have not taken into account the human factor."

Every day, people live their lives in the real world, intricately taking into consideration many factors including information obtained through their 5 senses, past experiences, self-evaluations, beliefs, and values, and make decisions for the next moment they face. This of course takes time, and the probabilities of the decisions being good or bad will be different from those computed upon review.

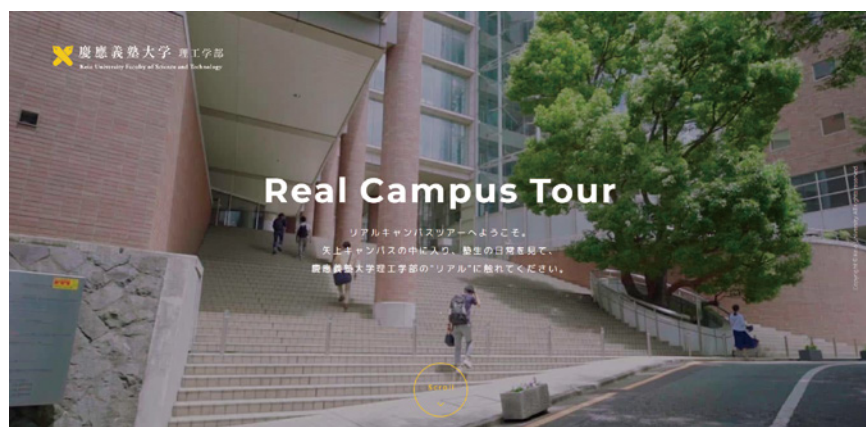
With scientific and technological developments, the measurement technology

of individual signals and methods to predict and evaluate an unknown using measurements taken as parameters have been advancing considerably. Looking back, however, the world may be valued only through factors that can be measured at the time. Above all, it may be that what humans are actually thinking and doing cannot really be expressed using existing measures. And neither can decisions made by pilots during emergencies or the trivial choices we make in our daily lives.

What kind of measure can we use to capture human factors, and how can these be applied to human society that functions in this way today? It is because of the very fact that the use of automated systems and AI have become more prevalent nowadays, that I believe the new mission of examining actual humans from an engineering perspective is further expanding.

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### Editor's postscript

Members of Nakanishi Laboratory eat lunch together every day at the school cafeteria. While taking pictures at the laboratory, all members were happily talking to each other, and it was felt that everyone, including the teacher, gets along well. It was very interesting to hear Associate Professor Nakanishi's story, who herself places great importance on visiting sites and communicating with people, and her story was listened to attentively. (Izumi Hagiwara)

**Cover of current issue:** In front of a flight simulator indispensable for carrying out research for "managing safety in aviation," one of the themes of this issue.

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