

S-face

SFC makes the future through researches

**Providing accurate
information to
support patients and
disaster victims**

Shoko Miyagawa



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Aiming for further improvements in health by using information properly

Health informatics, my fields of research, is an academic discipline that considers how to use various types of information to improve health. Recently, there have been problems related to the circulation of groundless information on curated medical information websites. Broadly defined, such topics also come under the umbrella of health informatics. The mass circulation of false stories and information around the world can influence many people to make the wrong decisions about their health, and ultimately, have an adverse impact on society as a whole. While the circulation of unreliable information on the Internet and other sources is unavoidable, how do we distinguish it from accurate information? When people make decisions, an element of uncertainty is constantly present; however, it is important for us to pursue and identify the kind information that can be provided to reduce uncertainty and bring about satisfactory decision-making.

This is precisely what health informatics is about, and this is my field of specialization alongside with disaster informatics. Each field covers various themes, including the systems and tools necessary for supporting better decision-making. In recent years, I have been focusing on the production of healthcare supplies using 3D printers and other equipment, as well as research on information systems to facilitate the smooth execution of rescue activities during a disaster.

Digital fabrication that meets the diverse needs of home care

The current focus of my research activities is a project titled "Fab Nurse," which is a collaborative project with Professor Hiroya Tanaka from the Faculty of Environment and Information Studies. In this project, we harness digital fabrication technology to produce healthcare supplies. Although I myself am not a nurse, in my work teaching IT at the Faculty of Nursing and Medical Care, which has a nurse-training curriculum, as well as learning about medical treatment at the same time, I developed an interest in the field of home care. For example, in the hospital room, patients are in an environment with uniform quality, such as beds of the same size, and nurse call buttons by the bedside. However, if we were to turn our eyes to the site of home care, we would find that each individual is situated in a completely different environment, such as the layout of the house, the floor that the patient lives on, and whether he or she sleeps on a mattress on the floor or on a bed. To provide the best care in such environments that differ among individuals, it is necessary to take steps that respond to individual needs. My research work had been triggered by the idea that there may be great potential for the future of healthcare through support using IT. At about the same time, I encountered Professor Tanaka when he came to SFC (Keio University Shonan Fujisawa Campus) and commenced work on digital manufacturing. This turned out to be a significant event. Initially, I had watched his work from afar, but manufacturing technology improved gradually with the introduction of a 3D printer in the university that anyone could use freely. It was then that I realized that digital fabrication could be highly compatible with the individuality and diversity of home care, and we decided to embark on the collaborative project.



Model of head (including nasal and pharynx) produced with a 3D printer. Used for practicing inserting the tube for sputum suction.

Harnessing IT to improve the quality of life of patients and disaster victims

A long time has passed since Japan earned the title of an "advanced information society." However, that's an empty title if the information does not reach those who actually need it. Associate Professor Shoko Miyagawa is approaching the task of realizing better care in the medical field and at disaster areas by making use of IT.

Provide accurate information, and assist in better decision-making.

Build an information system to facilitate the smooth execution of rescue and relief activities in cooperation with aid and rescue workers during a disaster.

She also aims to provide support for nursing care through the application of digital fabrications, and to improve the QOL (quality of life) of patients and disaster victims through the use of IT.

Victim Status Assessment Check List



This is a health assessment form, in a mark sheet format, used at disaster sites after the Great East Japan Earthquake. By automating the data entry and tallying of results, the initiative succeeded in eliminating manual data entry work by nurses.

IT DART Information Technology Disaster Assistance Response Team



A map visualizing the status of support activities, produced by IT DART (Information Technology Disaster Assistance and Response TEAM), the disaster assistance organization that Associate Professor Miyagawa helps to manage.



Harnessing IT to share information from disaster areas

The concept of QOL, which we believe to be very important, is one that is also applied in the field of disaster informatics. In fact, my original field of research had been disaster informatics. My first brush with a disaster was during the Great Hanshin Earthquake that struck in 1995. At the time, Internet technology had not yet spread to the general public. Working alongside volunteers who were providing information for the benefit of the disaster areas, I considered the possibility of sharing information by connecting personal computer communications, which had been thriving at the time, to the Internet amidst a situation of serious information inadequacy at the disaster sites. This triggered the start of my research work in this field.

After experiencing various disaster sites, a significant turning point was the Great East Japan Earthquake that hit in 2011. During the numerous trips that I made to the disaster areas, I was confronted by the difficulties of capturing what was truly necessary and providing suitable assistance to those receiving care while they were living at temporary accommodations, evacuation shelters, or in their own homes. Furthermore, there were also cases of patients with chronic diseases who chose not to tell anyone that they had no medication, but just endured their suffering and allowed their health to decline gradually. Identifying such situations is one of the themes that is common to both health informatics and disaster informatics. With respect to disaster-related work, in addition to research, I am also involved in an organization that provides information support during disasters. During the Kanto Tohoku flood in 2015 and the Kumamoto Earthquake in 2016, we visited the actual disaster sites and engaged in information support activities.

Going forward, I am interested in the application of new technologies to society. Cutting-edge information technology has the potential to significantly transform existing healthcare systems. Other than digital fabrication, I would also like to explore how other forms of advanced information technology such as AI (artificial intelligence) and blockchains can be applied to healthcare.



Profile Shoko Miyagawa

Associate Professor, Faculty of Nursing and Medical Care, Keio University. Specializes in health informatics and disaster informatics. Research covers themes such as health-development communities through the application of IT, and the role of information support at the sites of the Great East Japan Earthquake.

Please visit S-face website for details!

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