title

New Development And Clinical Evaluation Of A Patient Face Recognition System (PFRS) In The Radiology Department

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introduction

- ✓ Patient misidentification can cause result in serious incidents in medical operations.
- ✓ In fact,12 incidents have occurred in our radiology department in the last five years.
- ✓ Facial image recognition systems have been used in many fields to assist with proper identification.

purpose

The purpose of this study is to develop a Patient Face Recognition System (PFRS) based on facial recognition technology, and to apply it to the authentication flow during CT imaging examinations for clinical evaluation.

methods

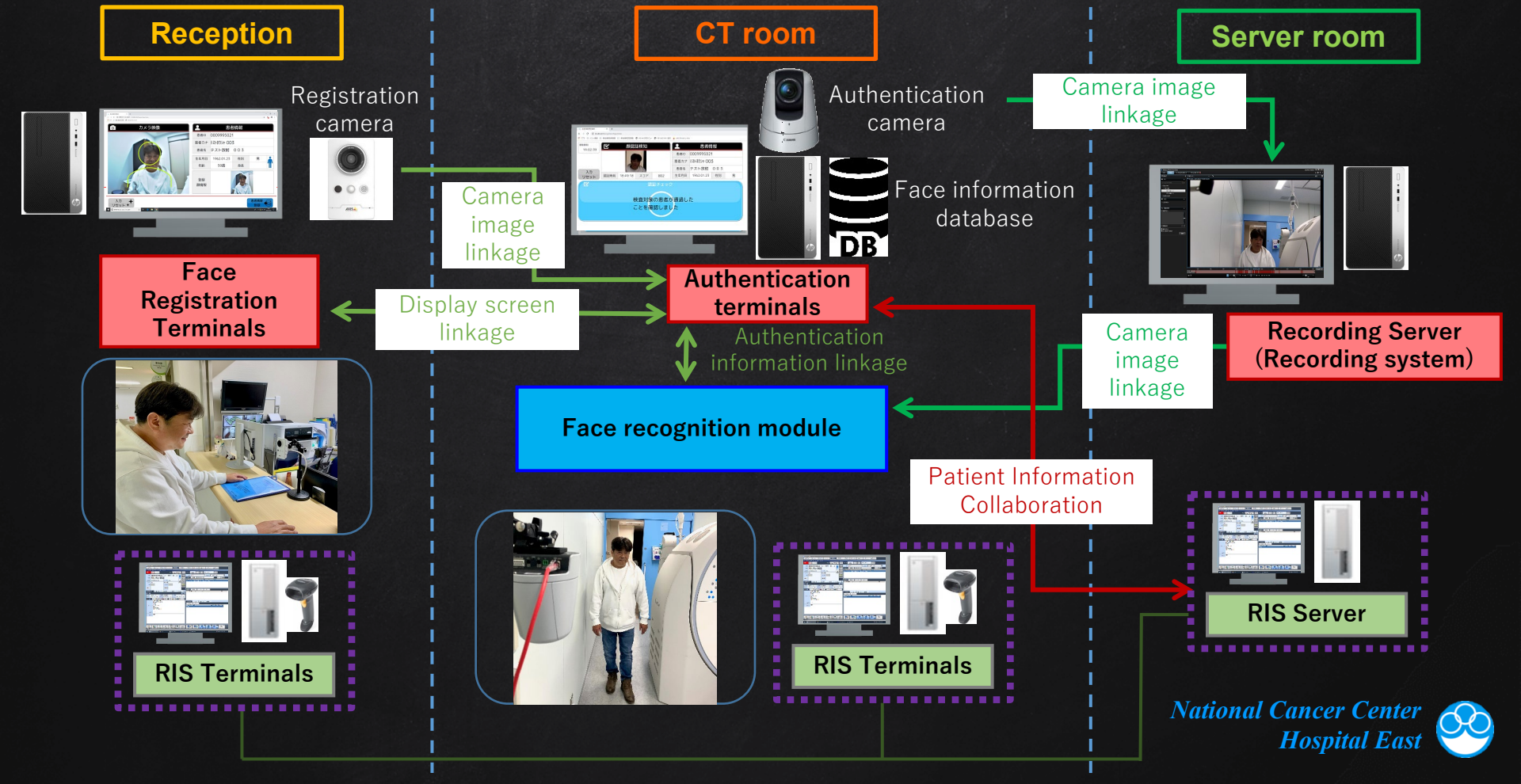
The PFRS (P-FAS01, Canon Medtec Supply Inc., Kawasaki, Japan) consists of a camera for registering face images paired with authentication application software. The system is linked to the radiology information systems (RIS) and with a surveillance camera in the CT scan room.

System performance was evaluated with 153 patients (mean age 64 years, male/female ratio 1:0.68) who agreed to participate in this study.

When the patient enters the CT scan room, the face image is compared with the surveillance camera image, and the face information is judged to be matched (successful authentication) based on an authentication score from the facial feature extraction software.

The authentication success rate was calculated based on the authentication score. In addition, regression analysis was performed on the correlation between basic patient information(Age and BMI) and the authentication score.

NETWORK IMAGE



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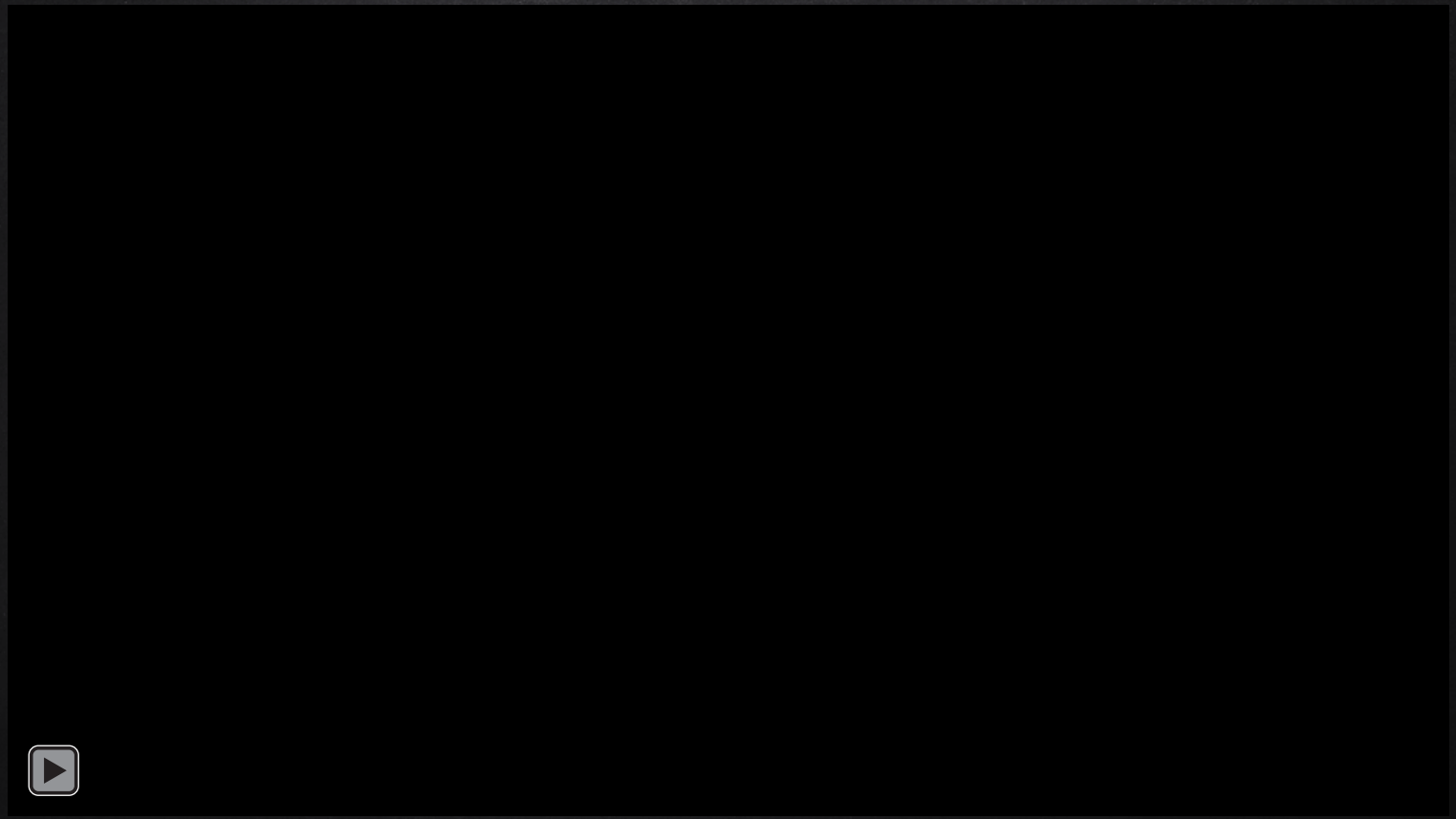
WORKING FLOW MOVIE



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results

The facial recognition system was implemented smoothly for all target patients.

✓ 144 patients successfully

✓ authentication success rate:94.1%

The mean and standard deviation of the authentication scores of the successful cases were 628 and 131.

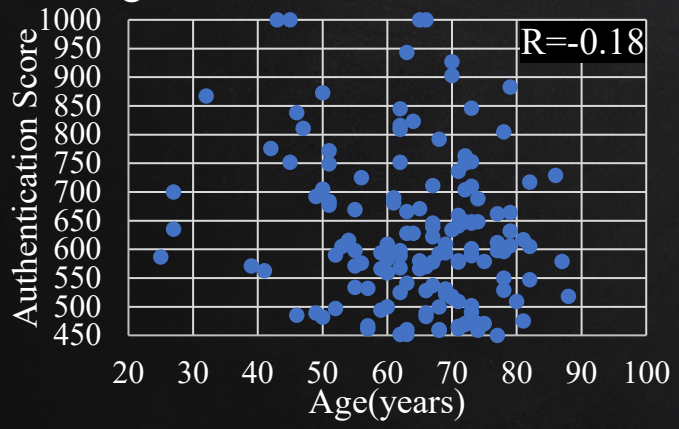
✓ 9 unsuccessful authentications

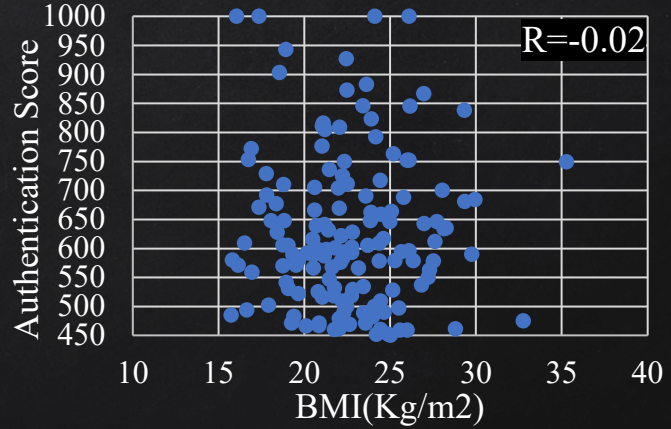
✓ 3 cases in which the authentication score did not reach 450 (authentication scores: 420, 437, and 447)

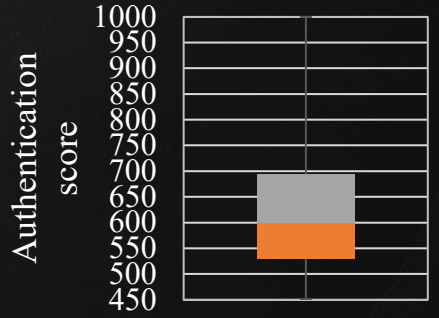
✓ 6 cases were not scored

No correlation was found between basic patient information and authentication scores.

✓ Age: R=-0.18, BMI: R=-0.02







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results

Patient authentication in preparation for imaging examinations is a fundamental tasks.

There are several reasons why misidentifications may occur which can lead to inadvertent errors, including the use of hats, masks and sunglasses, and other causes.

Patient authentication is based on double-checking, and cases of unsuccessful authentication provide an incentive to alert the operator staff.

We think that the authentication rate will increase by upgrading the version and supporting masks.

conclusions

- ✓A new patient authentication system that determines facial information from the extraction of unique facial features has been developed.
- ✓The PFRS was applied to a typical CT scan and provided smooth operation and high authentication accuracy.
- ✓The PFRS functions as a double-check for patient authentication and ensures medical safety.

THANK YOU FOR YOUR ATTENTION!

Any questions?

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