Proposal of indoor evacuation system with smartphones

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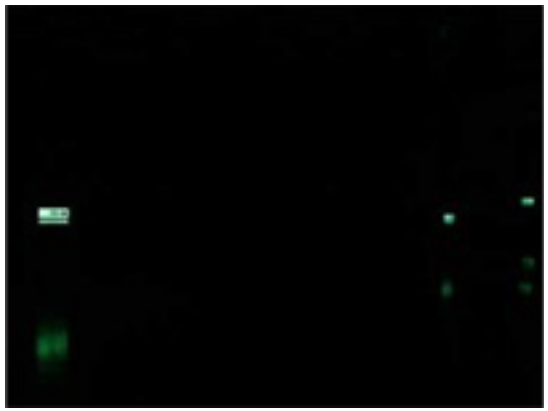
Introduction

When a disaster happens, people in a building have to escape to the outside.

Power failure may occur due to occurrence of a disaster and prevent people from escaping.

Power failure

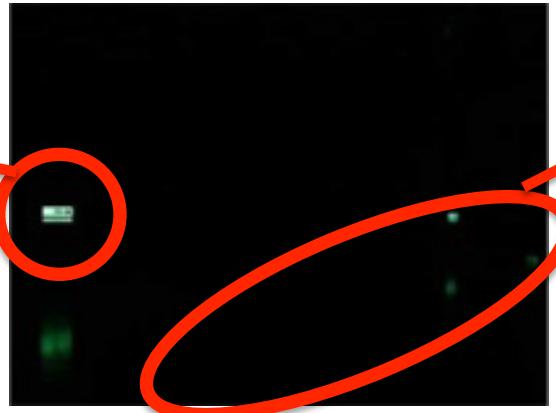


Problems caused by power failure

In a blackouted building,

1. The emergency exit signs are ***hard to see or understand***.
2. There is ***danger of falling and getting injured***.

Hard to see emergency signs

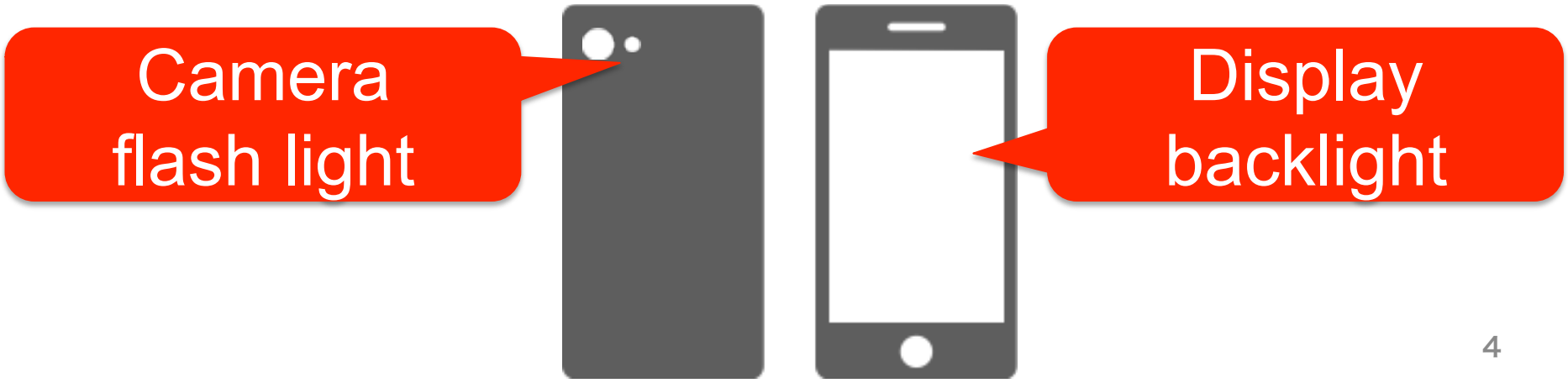


Darkened passages with danger of falling

Proposed system

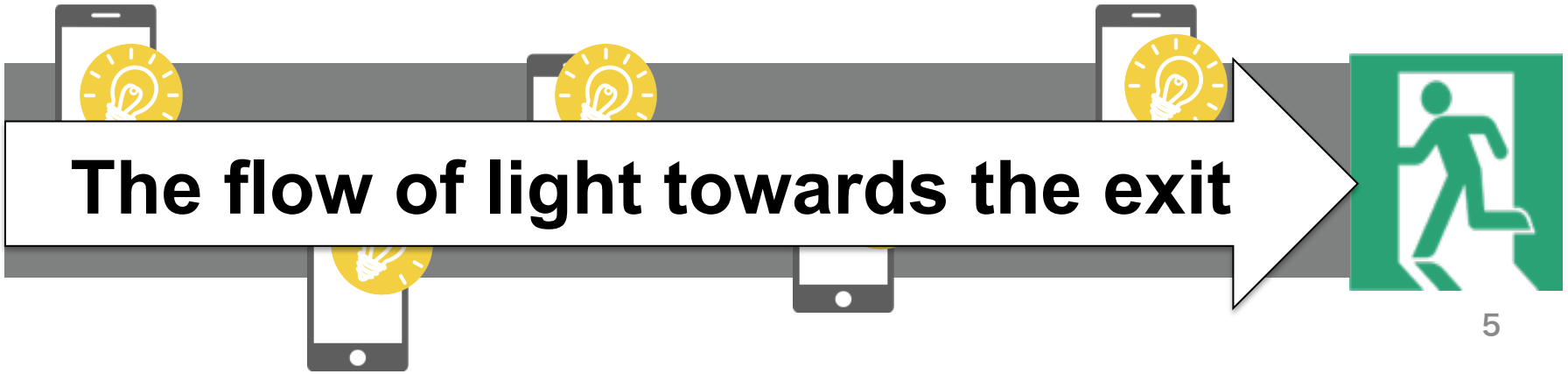
Our system ***indicates evacuation routes and illuminates the passages at the same time***.

Our system utilizes ***smartphones with built-in lights*** owned by the people.



Our system's behavior

- Our system ***turns lights on*** to illuminate passages.
- Our system ***makes each light blinks according to the positions of the smartphones***.
  - People can see ***the flow of light*** ***along the evacuation route.***



Previous work

3D and 2D CG animations are generated by the computer simulations of our system.

Our group made participants watch the animations and surveyed their impressions.

- **80%** of participants responded that our system works well.
  - Passages are illuminated well.
  - The evacuation route is clearly indicated.

Future work

In order to implement our system, ***a positioning method*** is needed.

We adopt the ***Received Signal Strength Indicator (RSSI) - based positioning method.***

However, typical methods cannot be utilized for some smartphone models.

For this reason, we now tackle ***the development of a new method*** for smartphones.

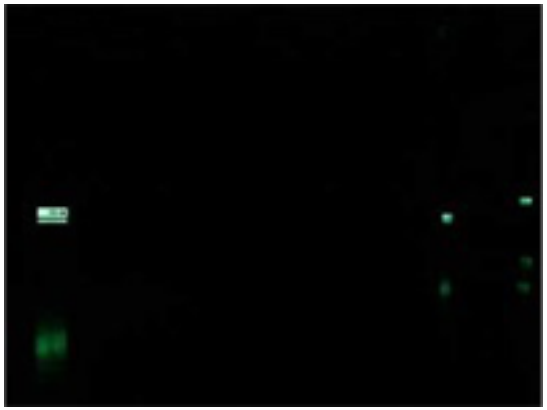
Agenda

- Introduction
- Our proposal
- Previous & Future works

Our suggestion

Some studies proposed systems that provide information that is easier to understand.

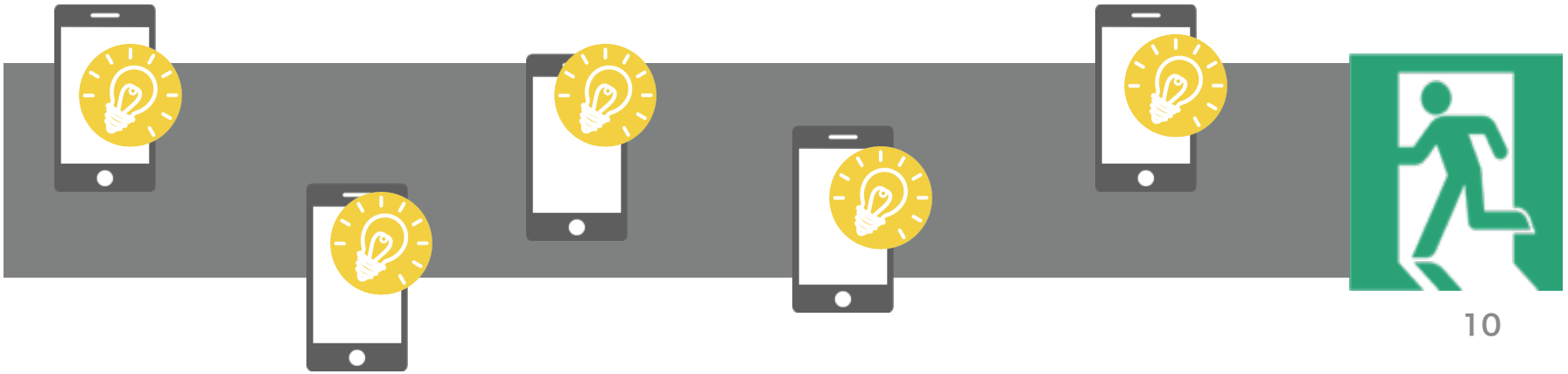
We believe that ***illuminating passages is needed to help people escaping***.



Illuminating passages

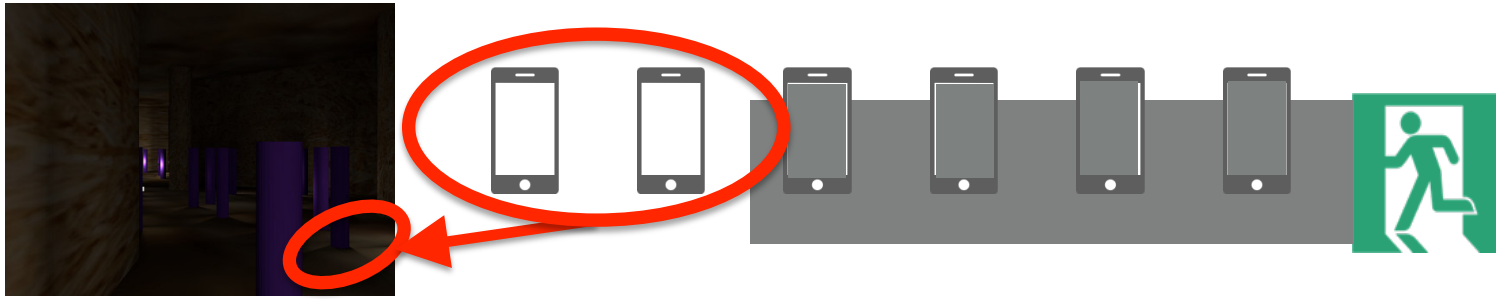
Our system's behavior

- ***Our system turns lights on to illuminate passages.***
- Our system makes each light blinks according to the positions of the smartphone.
  - People can see the flow of light along the evacuation route.

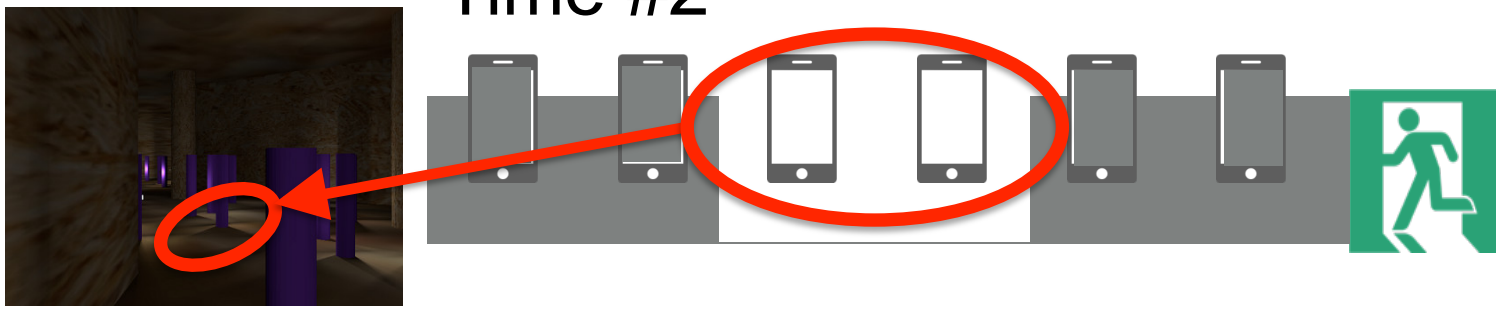


Our system's behavior

Time #1



Time #2



Time #3