

Introduction

Construction Engineering and Emerging Technologies

2011. 9.1.

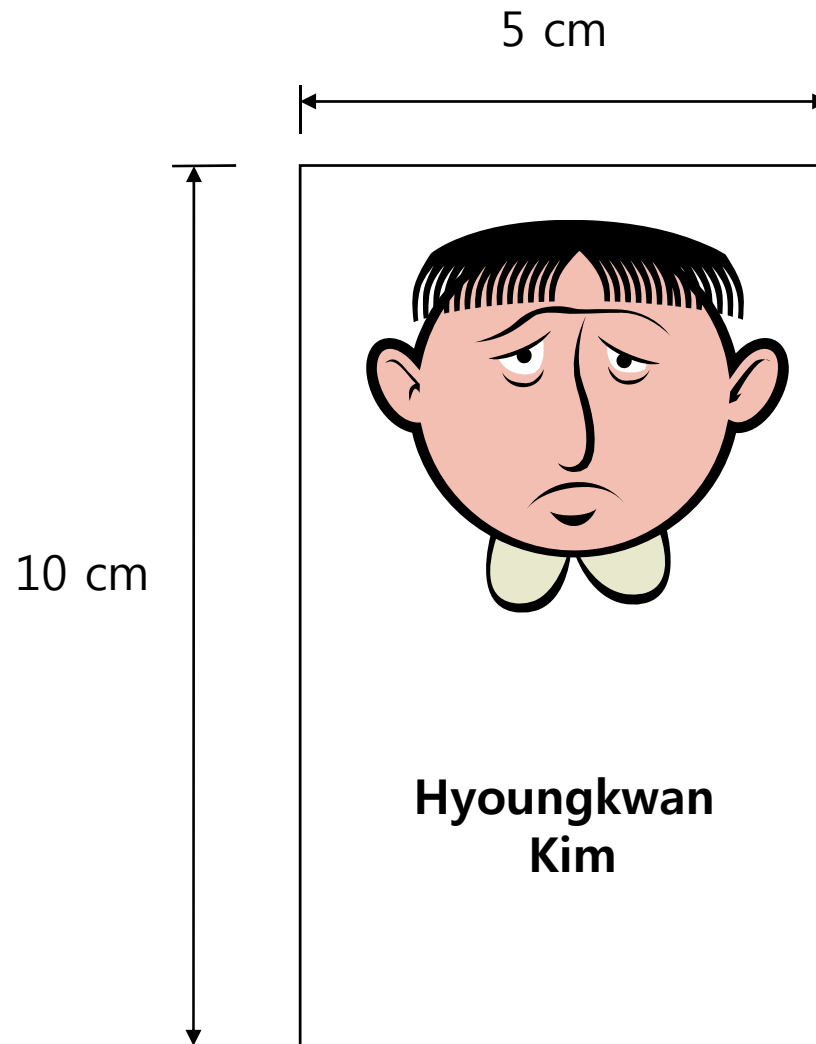
Hyoungkwan Kim, PhD, PEng

Department of Civil and Environmental Engineering

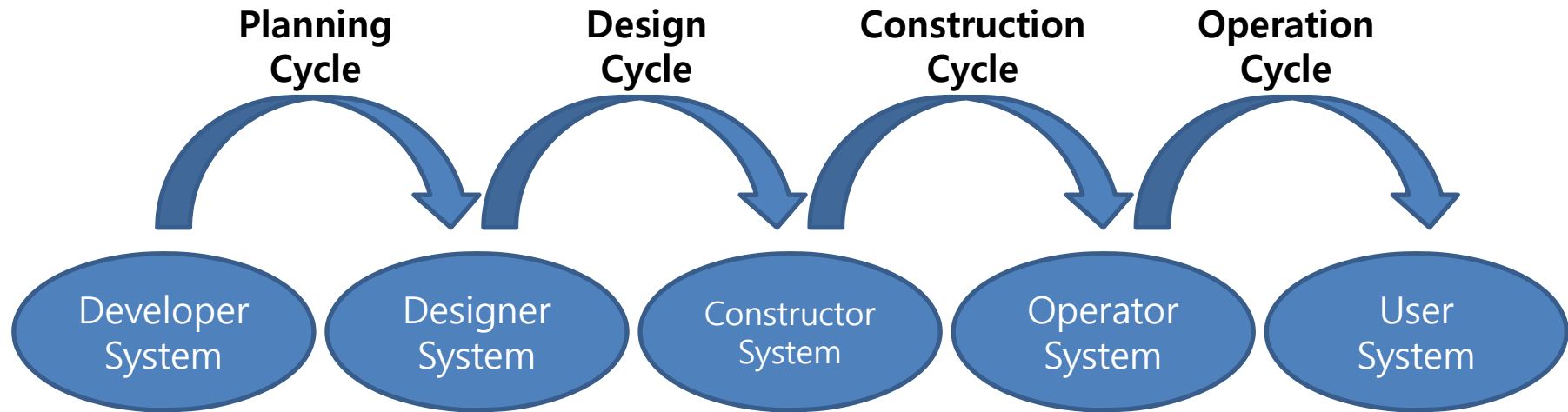
Assignment #0:

Portrait Card:

due on Sep. 7



Construction supply chain



Emerging Technologies

- Robotics
- Sensing technology
- Building information modeling (BIM)
- Augmented reality (AR)
- Communication technology
- Database technology
- Artificial intelligence
- ...

Robotics

- Automated road maintenance machine
- Contour crafting
- Wearable robot
- Automated Building Construction
- ...

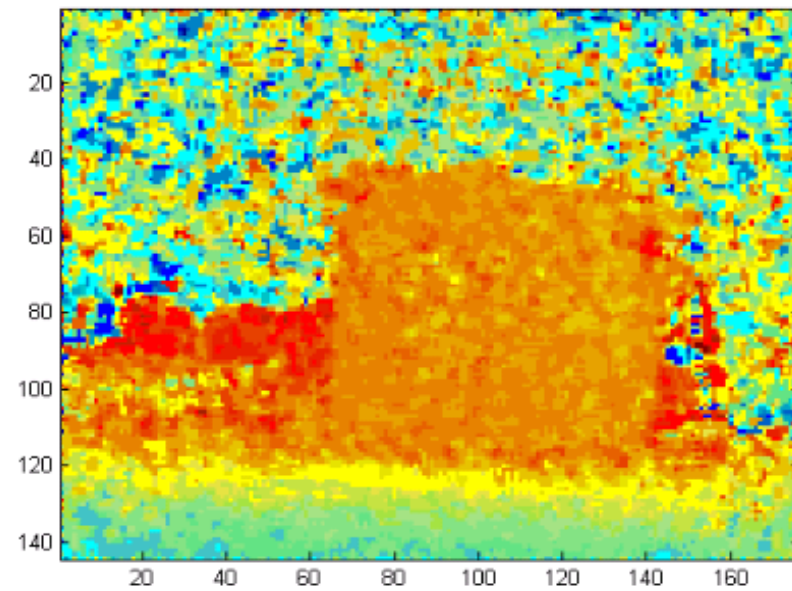
Flash LADAR



CSEM, 2008

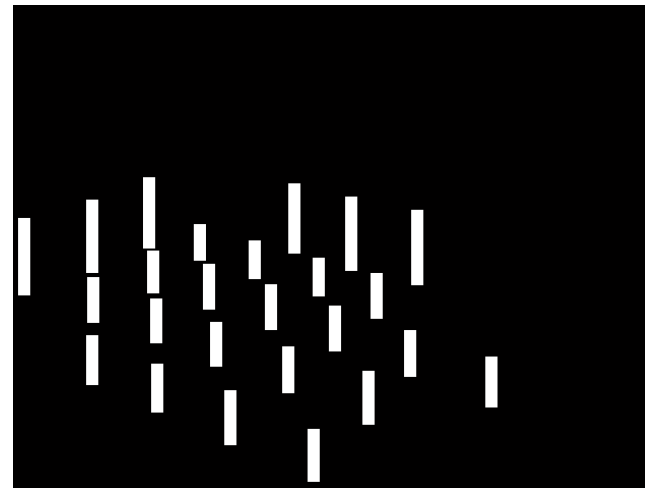
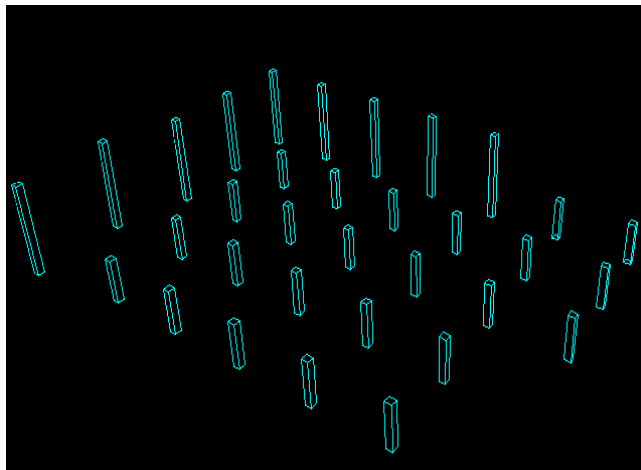
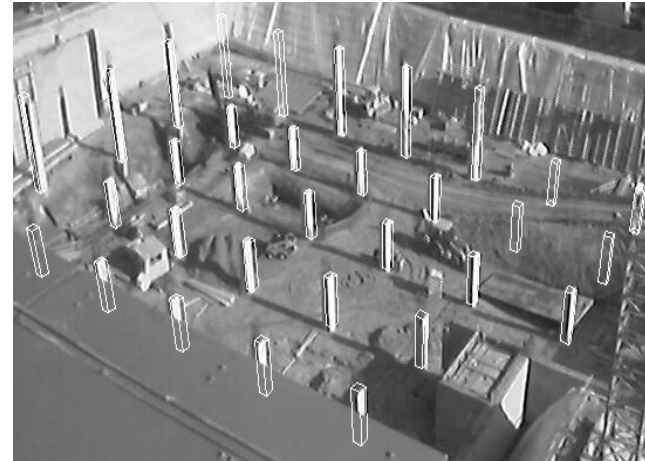
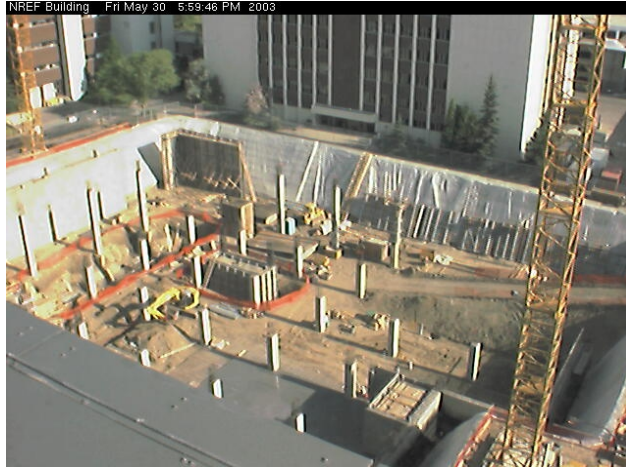


The Site Image



Range Image

Image processing for construction monitoring



USN + RFID System Specification



Fig. 1 TX (Left) and RX (Right) Antennas

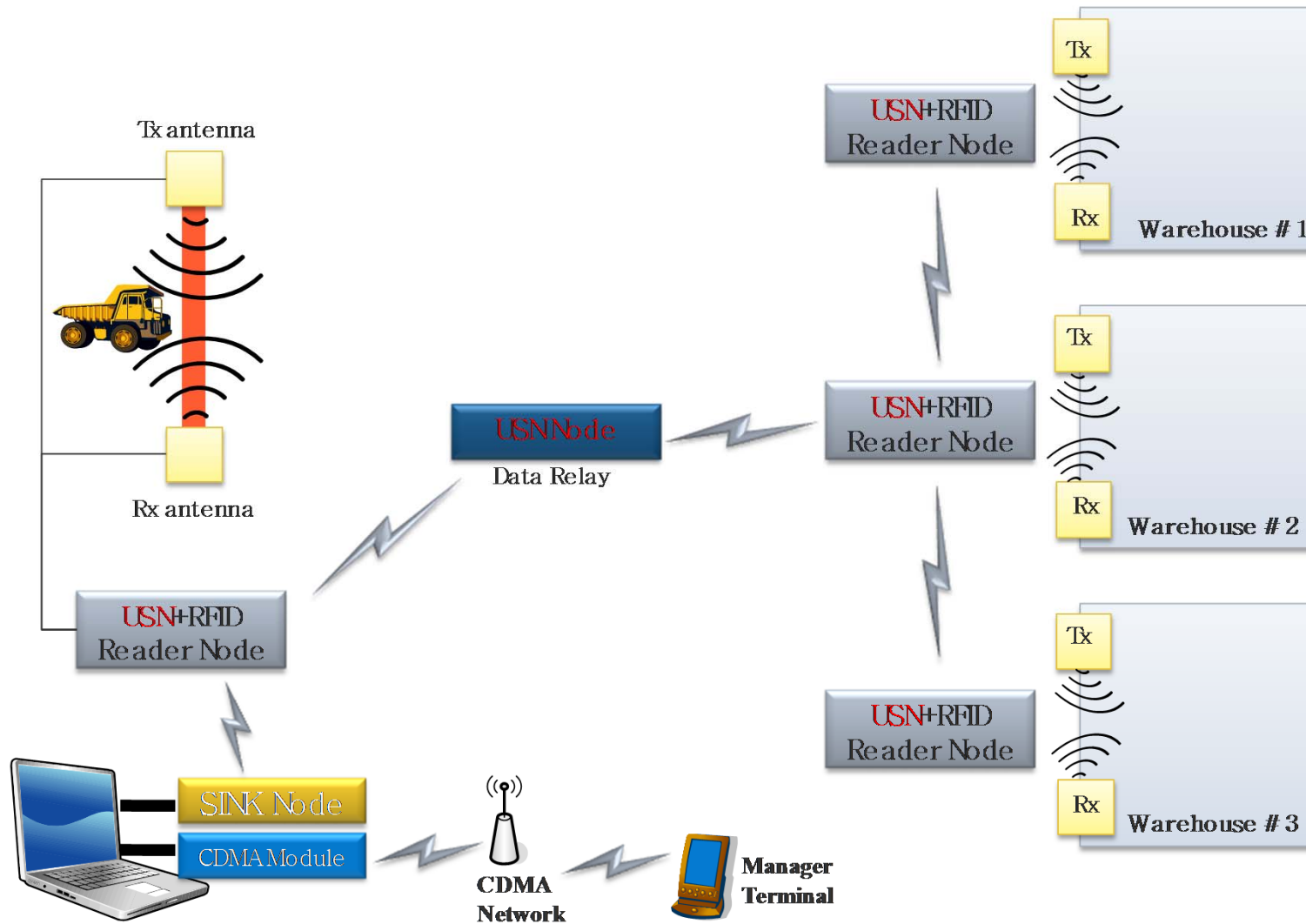


Fig. 2 USN Module (Sensor Node) and RFID reader

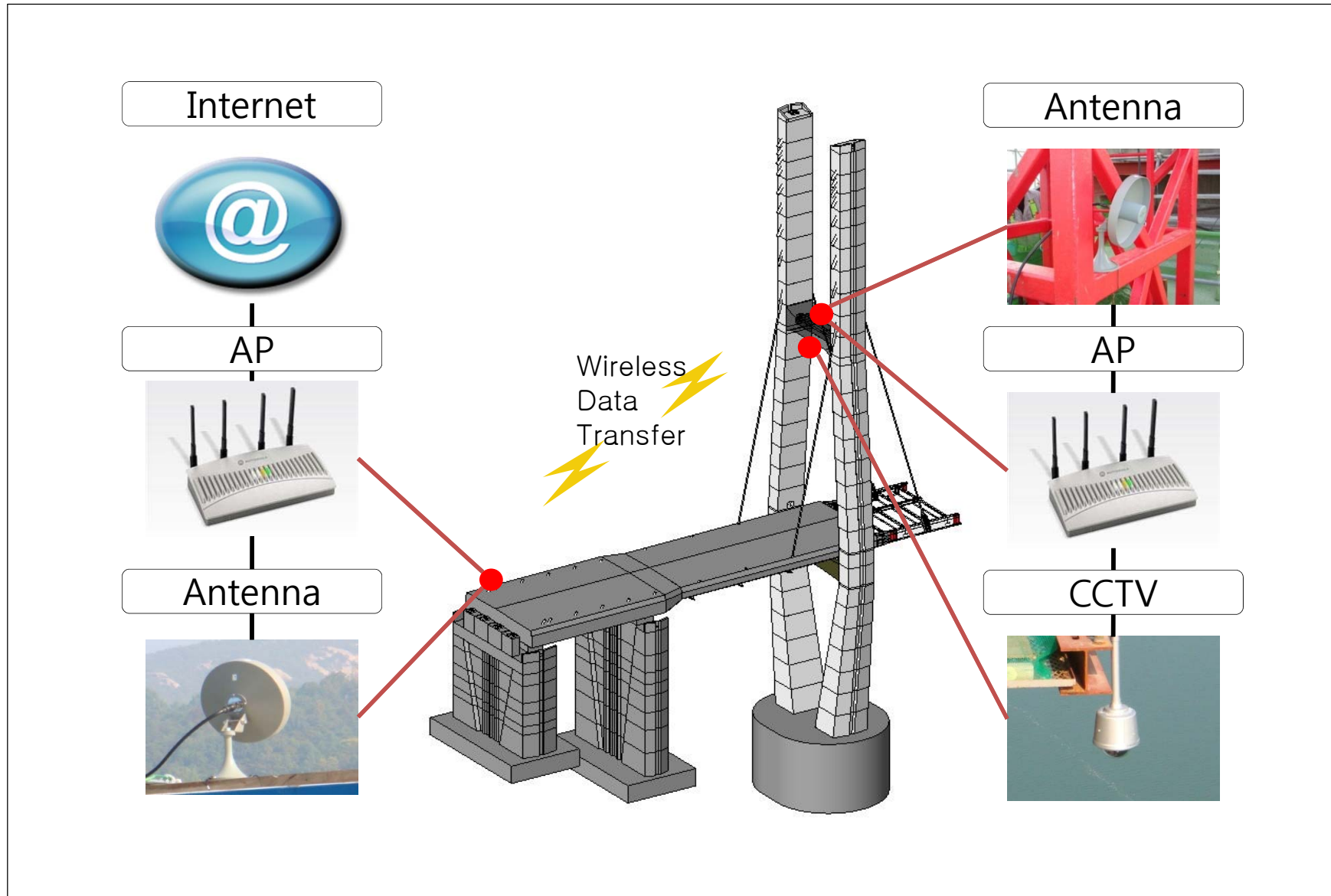


Fig. 3 Laptop with USN Module (Sink Node)

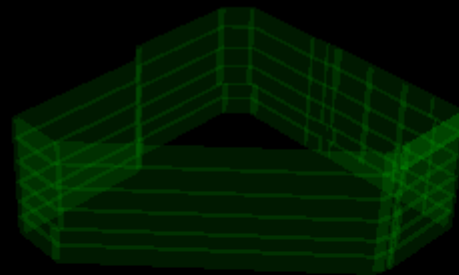
RFID/USN for Intelligent Material Tracking



Intelligent Bridge Construction



4D CAD Model for Building

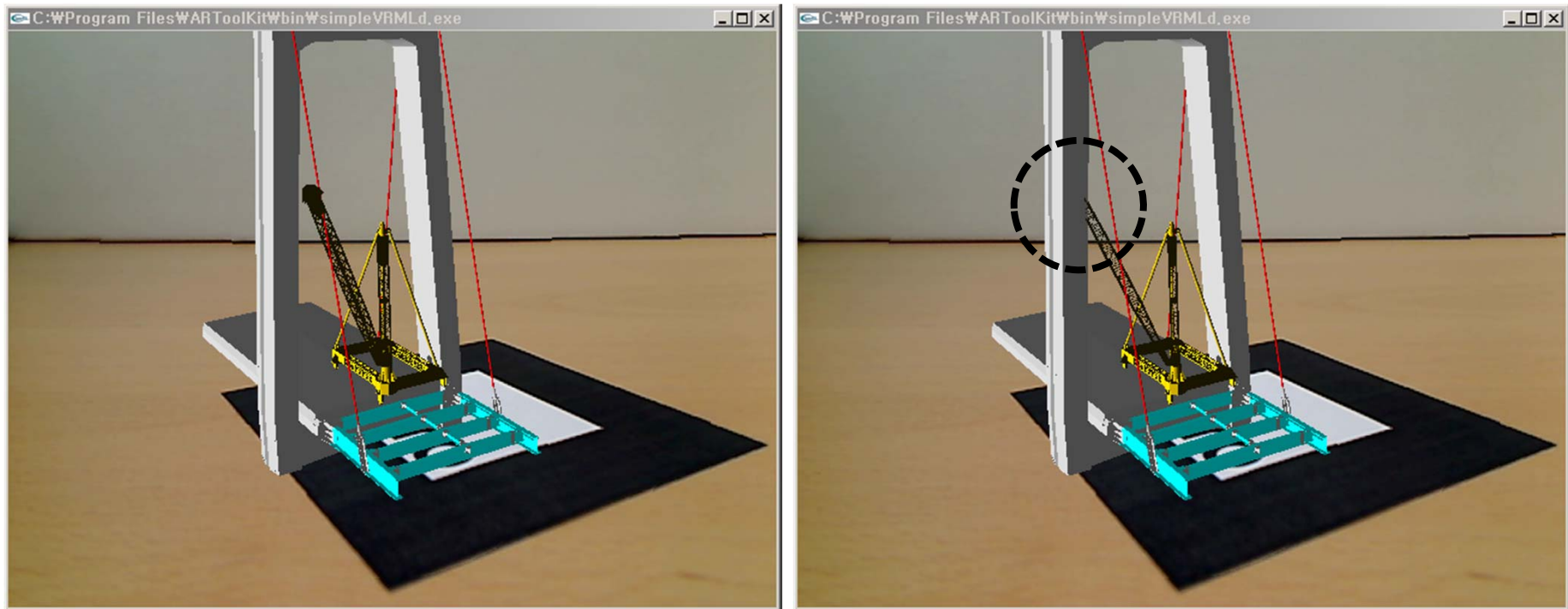


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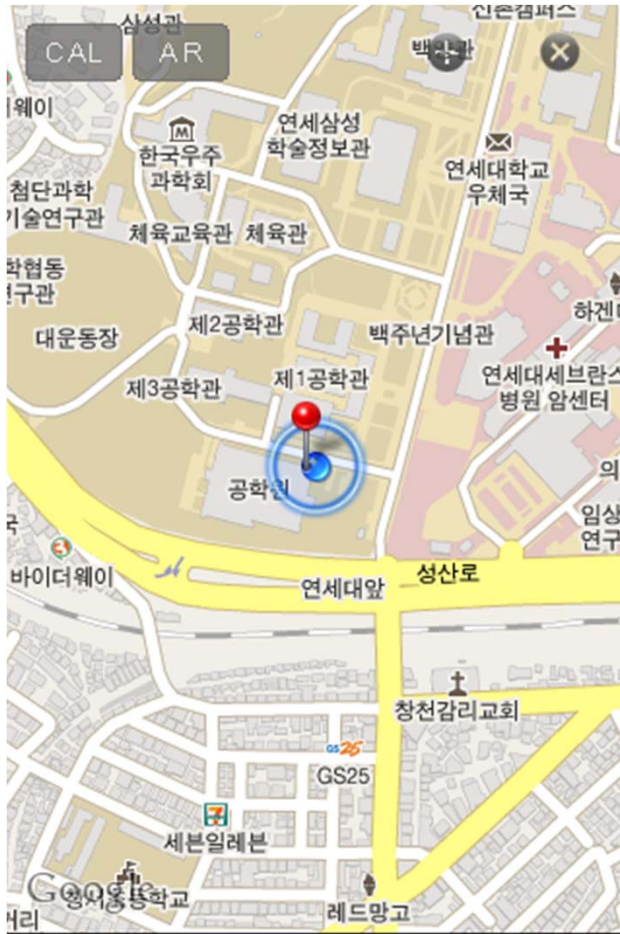
Augmented Reality for Construction Simulation



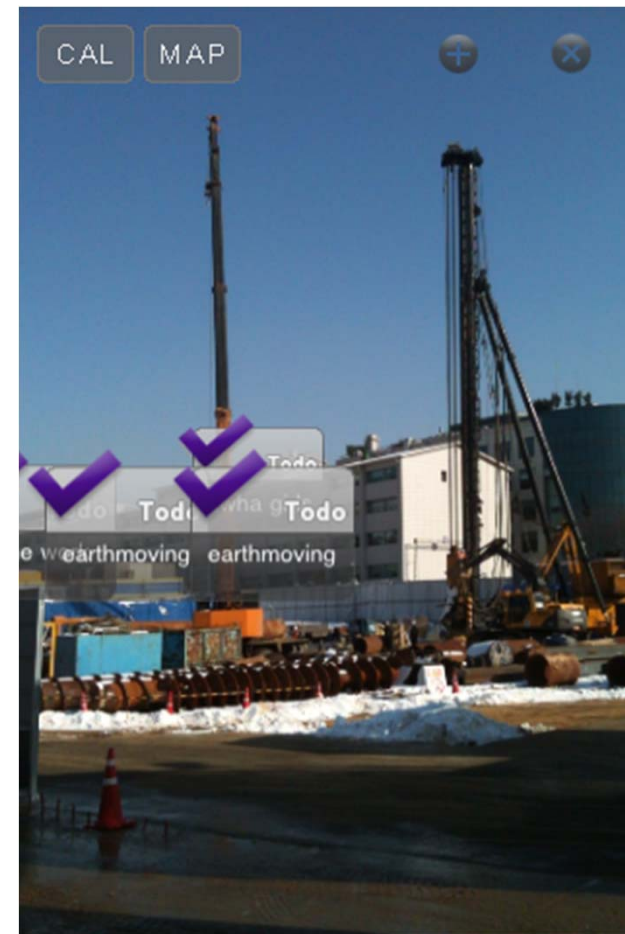
Augmented Reality (cont'd)



Smart Phone Application for Construction Management



Location of the Registered Work Task



Augmented Reality of the Work Task on the Construction Site

Construction Equipment Management System

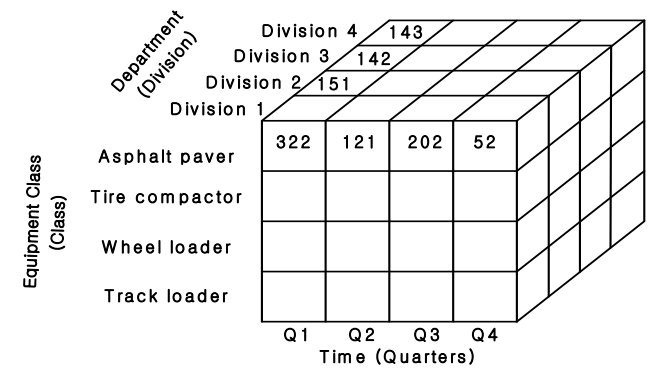
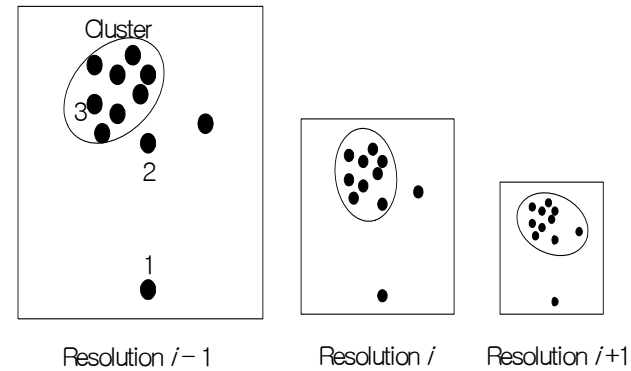
Data Mining



Data Warehouse



Database



	A	B	C	D	E	F
	D	ZIP_CODE	CITY	STATE	AREA_CODE	CITY_ALIAS_NAME
1	1	30501	HOLTSVILLE	NV	516	HOLTSVILLE
2	2	30501	HOLTSVILLE	NV	516	IRS SERVICE CENTER
3	3	30544	HOLTSVILLE	NV	516	HOLTSVILLE
4	4	30544	HOLTSVILLE	NV	516	IRS SERVICE CENTER
5	5	30601	AQUADA	PR	787	AQUADA
6	6	30601	AQUADA	PR	787	JARD DE ADJUNTAS
7	7	30601	AQUADA	PR	787	URB SAN JOAQUIN
8	8	30602	AQUADA	PR	787	EXT LOS ROBLES
9	9	30602	AQUADA	PR	787	AQUADA
10	10	30602	AQUADA	PR	787	ALTS DE AQUADA
11	11	30602	AQUADA	PR	787	URBISABELLA CATOLICA
12	12	30602	AQUADA	PR	787	URB MONTENAR

Artificial Neural Network for Construction Decision Making

