DSU Dongseo University 동서대학교

IAI 엠비언트 인텔리전스 연구소 Institute of Ambient Intelligence

Image Processing and Interactive Arts - Industrial and Students Projects

lbg@dongseo.ac.kr

DSU Dongseo University 동서대학교

Top Ten & To the World
너의 가슴에 세계를 담아라 !

너의 가슴에 세계를 담아라!
Cherish the World in Your Heart!

하늘 저 끝까지 솟구쳐 올라라.
단단한 땅을 박차고 올라
거대한 세계 속으로
날개를 활짝 펼쳐라
그리고… 너의 가슴에 세계를 담아라!

동서대학교,
날개를 펼치기 위한 도움닫기가 시작되는 곳,
그곳에서 세계를 향한 힘찬 날개 짓이 시작 된다.

Soar high in the sky.
Take off vigorously and
spread your wings toward the huge world.
And hug the world in your arms!

Dongseo University!
Begin to spread your wings here.
Taking flight toward the world begins here.

1992~2001

1965. 3 동서학원 설립
1992. 3 개교(설립자 장성만 박사 및 제1회 입학식 (8개 학과 400명)
1992. 2 제1회 학위수여식
1996. 3 동서공과대학교에서 동서대학교로 교명 변경
1996. 6 C.T. VISION 2000 선포
1998. 7 동아일보 주관 대학 정보화 평가 우수대학으로 선정
국제기술봉사단(Tech. Corps) 창단
1996. 10 독일베를린공대와 공동학위과정(석 · 박사 합의 / 교육부평가 " 세계화 · 정보화 부문 우수대학"으로 선정
1997. 2 교육의 세계화 선언 및 상징물 건립
1997. 5 낙동강 환경봉사단 창단
1997. 11 한 · 독 공동연구센터 개소
1998. 5 독일 루르알대 한지 공동연구센터 개소 / 부경인 자비센터 개소
1998. 9 교육부평가 교육개혁 "대학과 지역사회의 연계 분야" 우수대학으로 선정
1999. 2 제4대 차동륜 총장 취임
1999. 9 민속로조센터 개관
1999.10 디지털디자인대학원 석 · 박사과정 인가
1999. 11 Dream Engineering Valley 개관
2000. 3 종합정보시스템 (DAKOTAS)배통식 / 학생문화관 준공 / 대학종합평가 "교육영역, 사회봉사영역, 대학원영역" 우수대학 선정
2000. 7 산업자원부 주관 "영남권 디지털디자인 거점대학" 선정(DDC)
2000. 8 산업자원부 주관 "신발산업 고급인력 및 기술전문가양성 기관" 선정 / 교육부평가 "이공계 연구소 기자재 첨단화 지원사업" 선정
2000. 9 교육부평가 "대학별 자체교육개혁 실천 분야" 우수대학 선정
2001. 6 교육부평가 "이공계연구소 기자재 첨단화지원 사업" 선정
2001. 7 소프트웨어전문대학원 설립인가
2001. 8 교육인적자원부 평가 "대학별 자체교육개혁 실천분야" 우수대학선정
2001. 11 Mobile Campus 구축





Mar. 1965 Dongseo Academic Institute Founded
Mar. 1992 Dongseo College of Technology was established (8 majors with 400 students).
Feb. 1996 The first commencement ceremony.
Mar. 1996 Dongseo University of Technology was renamed Dongseo University.
Jun. 1996 C.T. VISION 2000 was declared.
Jul. 1996 Chosen as the Best Information University by Donga Daily Newspaper / International Technology Corps was organized.
Oct. 1996 Dual degree program with Technical University of Berlin (MA and Ph.D.) began. / Chosen as the Best Information and Globalized University by the Ministry of Education
Feb. 1997 Declared "Globalization" of Education and built a memorial sculpture.
May.1997 Nak-dong River Environment Protection Corps was organized.
Nov. 1997 Korea-Germany Joint Research Center opened.
May.1998 The Joint Research Center at Lukenwalde, Germany opened. / Java Center authorized by Sun opened.
Sep. 1998 Chosen as the Best Educational University by the Ministry of Education.
Feb. 1999 President Park Dong Soon was inaugurated.
Sep. 1999 Minseok Sports Center opened.
Oct. 1999 Approval of MA and Ph.D. programs at the graduate school of Digital Design
Nov. 1999 Dream E. Valley opened.
Mar. 2000 The unified information system, DAKOTAS, opened. / Student Union completed./ Chosen as the Best University in the fields of education, social services, and graduate school by the Ministry of Education.
Jul. 2000 Chosen as the base university for digital design in Youngnam Province.
Aug. 2000 Chosen as the Institute for fostering high-class manpower and technical experts in the footwear field by the Ministry of Commerce, Industry and Energy. / Support received for advancement of apparatus and materials in the science and engineering field by the Ministry of Education and Human Resources.
Sep. 2000 Chosen as the best university in the field of "self-practice of the university reform plans" by the Ministry of Education and Human Resources.
Jun. 2001 Support received for advancement of apparatus and materials in the science and engineering field by the Ministry of Education and Human Resources.
Jul. 2001 Approval of opening of the Graduate School of Software.
Aug. 2001 Chosen as the best university in the field of "self-practice of the university reform plans" by the Ministry of Education and Human Resources.
Nov. 2001 Establishment of the Mobile Campus.

2002~2005

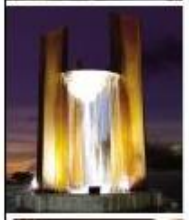
2002. 2 한국대학교육협의회 주관 '교양교육' 과 '디자인학문' 평가에서 전국 최우수대학에 선정
2002. 9 한국산업인력공단 일본취업전제 IT 연수기관 선정
2002. 11 교육인적자원부 지방대학 육성지원대학 선정
2003. 2 제5대 차동륜 총장 취임
2003. 3 정보통신부 'IT 학과 교과과정개편지원사업' 선정
2003. 3 뉴밀레니엄관 완공, 개교 10주년 기념식
2003. 7 교육인적자원부 지방대학 육성지원대학 선정
2003. 8 산업자원부 지역기술혁신센터(TIC) 선정
2003. 9 Japan Center 개소
2004. 6 교육인적자원부 지방대학혁신역량강화사업(NURI) 5개 사업단 선정
2004. 7 교육인적자원부 학교기업지원대상대학 선정
2004. 8 산업자원부 지역혁신특성화사업대학 선정
2005. 2 대학종합평가 "발전전략 및 비전" 분야 전국 1위
2005. 5 u-Campus 구축 및 Ubiquitous 체험관 개관식
2005. 5 한국문화콘텐츠진흥원 문화콘텐츠 특성화 교육기관 선정
2005. 6 정보통신연구진흥원 IT명예 학외교수 초빙지원사업우수대학 선정
2005. 6 독일 에어랑겐대학과 공동학위과정 협정
2005. 6 삼성경제연구소 주관 "대학혁신과 경쟁력" 대학우수 사례 발표(목: 동서대학교 특성화프로그램)
2005. 7 동서대, 북경이공대, 고려예술대학 공동연구 실시에 대한 협정서 조인
2005. 8 프랑스 오을루대학 공동학위프로그램 개설
2005. 10 중국 심천대 공동학위프로그램 협정 체결
2005. 10 중국 중산대 학술교류 협정 체결

Feb. 2002 Selected as one of the best universities in the fields of Liberal Arts and Design Education by the Korea Council for University Education.
Sep. 2002 Chosen as the IT Training Institute for employment in Japan by the Korea Industrial Human Resources Cooperation.
Nov. 2002 Financial support received for the development of regional universities by the Ministry of Education and Human Resources.
Feb. 2003 President Park Dong Soon was inaugurated.
Mar. 2003 Support received for curriculum development for IT majors by the Ministry of Information and Communication
Mar. 2003 New Millenium Building opened.
Jul. 2003 Financial support received for the development of regional universities by the Ministry of Education and Human Resources.
Aug. 2003 Selected as a Technology Innovation Center(TIC) by the Ministry of the Commerce, Industry and Energy.
Sep. 2003 Japan Center opened.
Jun. 2004 Won five business proposals for the New University for Regional Innovation (NURI) offered by the Ministry of Education and Human Resources.
Jul. 2004 Support received for University Business Development from the Ministry of Education and Human Resources.
Aug. 2004 Selected as the University for Regional innovation System by the Ministry of Commerce, Industry and Energy.
Feb. 2005 Ranked first in "Development Strategy and Vision" in the Comprehensive University Evaluation.
May. 2005 Built U-Campus and had an opening ceremony of The Ubiquitous Experience Hall.
May. 2005 Selected as an educational institute specialized in cultural content production by Korea Culture & Content Agency.
Jun. 2005 Selected for Overseas Professor Invitation Project in IT (Best Practice) by Institute of Information Technology /Assessment.
Jun. 2005 Signed a dual degree program with Erlangen University of Germany.
Jun. 2005 Presented a case study on "University Innovation and Competitiveness" organized by Samsung Economic Research Institute.
Jul. 2005 Signed joint research & development projects with Beijing Institute of Technology, Kobe College of Liberal Arts.
Aug. 2005 Opened dual degree program with University of Oulu in Finland.
Oct. 2005 Signed a dual degree program with Shenzhen University in China.
Oct. 2005 Academic exchange agreement with Sun Yat-Sen University in China.

2006~2007

2006. 1 미국 조지워싱턴대학과 학술교류협정 체결
2006. 2 해외인턴사원 취업지원사업에 선정(2004년,2005년 이어 3년 연속)
2006. 2 호주 선샤인코스트대학과 학술교류협정 체결
2006. 4 교육인적자원부 '2단계 BK21' 사업 에 3개 팀 선정
2006. 5 스웨덴 룰레아 공과대학과 학술교류협정 체결
2006. 6 인도네시아 페트라크리스챤대학과 Tech. Corps 관련 협정 체결
2006. 6 2006 세계 대학 총장 회의 개최
2006. 6 개교 15주년 기념식
2006. 6 중국 중산대학과 학술교류협정 체결
2006. 6 일본 리츠메이칸대학과 학술교류협정 체결
2006. 6 미국 호프스테드대학과 학술교류협정 체결
2006. 6 동서대 일본연구 센터와 세종연구소 학술교류협정 체결
2006. 7 중국 노동함대학과의 학술교류협정 체결
2006. 7 독일 바이엔테에술대학과 디자인학부, 교환학생관련 협정 체결
2006. 9 한 일 6개 대학 공동세미나 개최
2006. 10 미국 호프스테드대학과 교환학생관련 협정 체결
2006. 10 중국 중남재경정법대학 학술교류 협정
2006. 11 부산시와 독일 'NI 그래픽스센' 과 공동으로 유비쿼터스와 VR/CG 기술개발 연구소인 IA를 우리 대학에 설립
2006. 12 부산 경남 최초의 IPv6 기반의 와이브로 기지국 개통
2007. 2 제6대 박동순 총장 취임
2007. 2 제7회 학위수여식
2007. 2 2007학년도 입학식
2007. 4 동서대 공자 아카데미 개원
2007. 6 중국 중남재경정법대학 항목 합작대학 설립
중국 웨이팡과학기술대학 한중 국제유학원 개원
2007. 7 임권택영화예술대학 설립
2007. 8 국제생활관 개관
2007. 9 민속도서관 개관
2007. 10 임권택영화 연구소 개소





Jan. 2006. Academic Exchange Agreement with University of George Washington in the US
Feb. 2006 Selected for Overseas Internship Support (consecutive 3years, 2004-6)
Feb. 2006 Academic Exchange Agreement with University of Sunshine Coast in Australia
Apr. 2006 3 Teams were selected for "Phase 2 BK21" by Ministry of Education & Human Resources Development
May. 2006 Academic Exchange Agreement with Lulea University of Technology in Sweden
Jun. 2006 Academic Exchange Agreement on Tech. Corps related Fields with Petra Christian University in Indonesia
Jun. 2006 Held World University Presidents Forum 2006
Jun. 2006 Celebration of the 15th Anniversary of the University Foundation
Jun. 2006 Academic Exchange Agreement with Sun Yat-Sen University in China
Jun. 2006 Academic Exchange Agreement with Ritsumeikan University in Japan
Jun. 2006 Academic Exchange Agreement with Hope International University in the US
Jun. 2006 Academic Exchange Agreement between Dongseo University Japan Center and Sejong Institute
Jul. 2006 Academic Exchange Agreement with Nottingham University in China
Jul. 2006 Agreement on Exchange Students of Division of Digital Design with Kunsthochschule Berlin-Weiβensee in Germany
Sep. 2006 Held 6 Universities Joint Seminar of Korea-Japan
Oct. 2006 Agreement on Exchange Students with Hope International University in the US
Oct. 2006 Academic Exchange Agreement with Zhongnan University of Economics and Law in China
Nov. 2006 Establishment of IAI(The Institute for Ambient Intelligence) jointly with Busan Metropolitan City and 'NI Graphics' in Germany
Dec. 2006 Opened IPv6 based WiBRO Radio Access Station firstly in the area of Busan City and Kyungnam Province
Feb. 2007 Inauguration of the 8th President, Dong-Soon Park
Feb. 2007 The 12th Laureation
Feb. 2007 2007 Entrance Ceremony
Apr. 2007 Opened Dongseo University Confucius Institute
Jun. 2007 Establishment of Joint College with Zhongnan University of Economics and Law in China
Opened 'Korea-China Overseas Education Center' at Weifang Science & Technology Vocational College in China
Jul. 2007 Establishment of Im Kwon Taek College of Film & Performing Arts
Aug. 2007 Opened International House
Sep. 2007 Opened Minseok Library
Oct. 2007 Opened Im Kwontaek's Film Research Center


Academic Divisions
경영학부
Division of Business Administration
외국어계열
Division of Foreign Languages
국제학부
Division of International Studies
국제학과
Department of International Studies
영상매스컴학부
Division of Visual Communication
관광학부
Division of Tourism
사회복지학부
Division of Social Welfare
보건의료계열
Division of Health Science
정보시스템공학계열
Division of Information Systems Engineering
컴퓨터정보공학부
Division of Computer & Information Engineering
건축토목공학부
Division of Architecture & Civil Engineering
응용생명공학부
Division of Applied Bio-Engineering
디지털콘텐츠학부
Division of Digital Contents
디자인학부
Division of Design
레포츠과학부
Division of Leisure & Sports Science
임권택영화예술대학
Im Kwon Taek College of Film & Performing Arts
Divisions : 16
Students : 14,845
Graduate Students : 359
Professors : 293
Lectures : 474
Employees : 307












Image Sensor

lbg@dongseo.ac.kr

Camera


XBOX 360
KINECT


bumblebee™


Canon
EOS 50D


Nikon
D7000


SAMSUNG
12:45
Thu. 3 May
SAMSUNG


SAMSUNG
7x


HVS
HVS

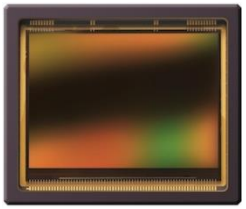

RX1
SONY
Carl Zeiss
Sonnar T* 2/35
DMF
MF

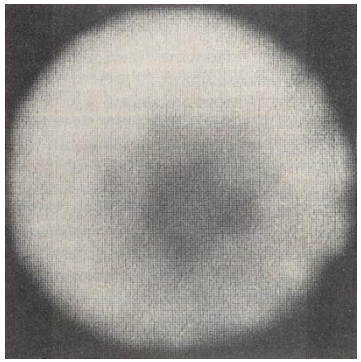

HDV
SONY
HDV

http://en.wikipedia.org/wiki/Active_pixel_sensor

Image Sensor

- A device that converts an optical image to an electric signal
- Charge-Coupled Device (CCD)
- Complementary Metal–Oxide–Semiconductor (CMOS)





http://astro.kias.re.kr/~hshwang/ccd.htm

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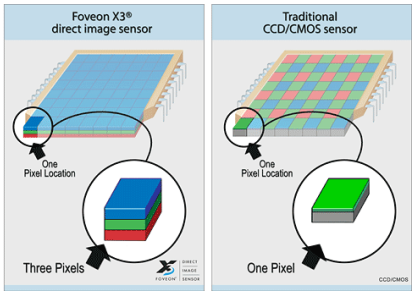
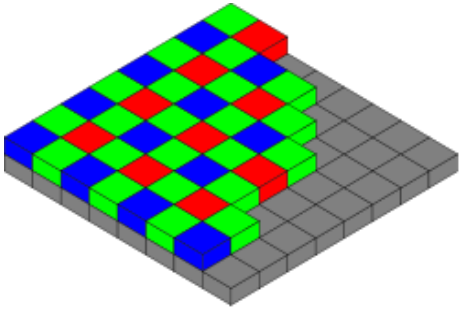
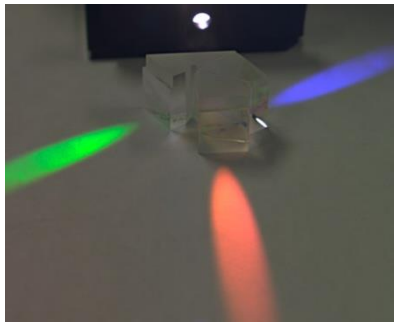
http://en.wikipedia.org/wiki/Image_sensor
https://www.youtube.com/watch?v=oa2DbQcKAEU

Color Sensor

- Bayer sensor – Demosaicking
- Foveon X3 sensor
- 3CCD







The Bayer arrangement of color filters on the pixel array of an image sensor. Each two-by-two cell contains two green, one blue, and one red filter

Industrial Projects with Image Sensor

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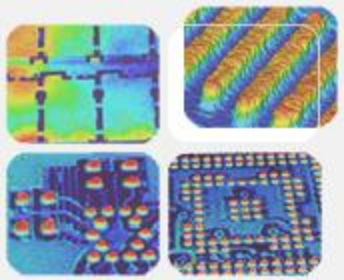
COMPANY PRODUCTS SUPPORT English / Korean

PARMI

The Leader of

3D Solder Paste Inspection

Parmi is a world leader in 3 dimensional inspection for printed solder paste on PCB.
We provides a series of products to meet various customer needs. Top level quality and surprisingly high inspection speed of our machines are based on the unique 3D RSC (Range scan camera) sensor.



HOME

Multilevel B-spline

PARMI

4DCULTURE

4DCULTURE

Digital Culture by 3D Scanning Technology

An Efficient Scattered Data Approximation Using Multilevel B-splines Based on Quasi-Interpolants

The 5th International Conference on 3-D Digital Imaging and Modeling
Byung-Gook Lee, Joon Jae Lee, Jaechil Yoo
lbg,jjlee@dongseo.ac.kr,yoo@deu.ac.kr

DONG-EUI UNIVERSITY

Ubiquitous Frontier Digital DSU Dongseo University

B-spline approximation

- Global approximation
- Quasi-interpolants

Multilevel B-spline approximation

Applications

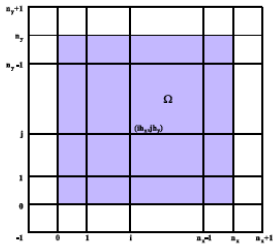
- Surface approximation with scattered data
- Image representation and compression
- Filling holes in Range data

B-spline approximation

$$f(x,y) = \sum_{i=1}^{n_x+1} \sum_{j=1}^{n_y+1} c_{ij} B_{i,d}(x) B_{j,d}(y)$$

Given a set of scattered points $P = \{P_i\}$, $P_i = (x_i, y_i, z_i) \in R^3$ and let $\Omega = \{(x, y) | 0 \le x < m_x, 0 \le y < m_y\}$ be a rectangular domain in the xy-plane such that (x_i, y_i) is a point in Ω. Let Φ be a control lattice overlaid on a domain Ω. The control lattice Φ is an uniform tensor product grids over Ω. The knot intervals are uniform interval defined as h_x in x-axis and h_y in y-axis. So, for uniform cubic B-spline case, degree d=3 and the set of knot vectors are defined as below:

$$\tau_x = \{-dh_x, \ldots, 0, h_x, \ldots, n_x h_x, \ldots, (n_x + d)h_x\}$$
$$\tau_y = \{-dh_y, \ldots, 0, h_y, \ldots, n_y h_y, \ldots, (n_y + d)h_y\}.$$



Let Φ be a control lattice overlaid on a domain Ω.

Multilevel B-spline approximation

The algorithms run in a multiresolutional setting over uniform partitions such that the final surface f is composed of a sequence of surfaces at dyadic scales,

$$f = f_0 + f_1 + \ldots + f_k,$$

where $f_i \in S_i$, $i = 0, 1, \ldots, k$, and $S_0, S_1, \ldots, S_k$ is a nested sequence of subspaces of S_k,

$$S_0 \subset S_1 \subset \ldots \subset S_k.$$

The MBA algorithm serves result as smooth initial approximation f_0 to $\Delta^0 P = P$ defined on the coarsest control lattice $\Phi_0 = \Phi$, by applying the BA algorithm. To continue to the finer levels, below explanation are quoted from [7]: The first approximation possibly leaves large discrepancies at the data points in P.
In particular, f_0 leaves a deviation

$$\Delta^1 z_i = z_i - f_0(x_i, y_i) \text{ for } i = 0, \ldots, n. \quad (3)$$

The next finer control lattice Φ_1 is then used to obtain function f_1 that approximates the difference $\Delta^1 P = \{(x_i, y_i, \Delta^1 z_i)\}$. Then, the sum of $f_0 + f_1$ yields a smaller deviation (3) for each (x_i, y_i) in Ω.

$$\Delta^2 z_i = z_i - f_0(x_i, y_i) - f_1(x_i, y_i) \text{ for } i = 0, \ldots, n.$$

In general, for each level k in the hierarchy, the point set $\Delta^k P = \{(x_i, y_i, \Delta^k z_i)\}$ is approximated by a function f_k defined over the control lattices Φ_k, where

$$\Delta^k z_i = z_i - \sum_{l=0}^{k-1} f_l(x_i, y_i) = \Delta^{k-1} z_i - f_{k-1}(x_i, y_i)$$

Quasi-interpolants

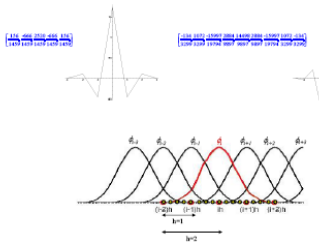
Given a function f, the basic problem of spline approximation is to determine B-spline coefficients (c_i) such that

$$Pf = \sum_{i=1}^{n} c_i B_{i,d}$$

is a reasonable approximation to f.

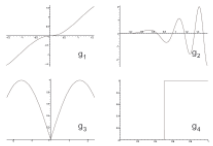
We fix k and propose the following procedure for determining c_k:
(i) Choose a local interval $I = (t_\mu, t_\nu)$ with the property that I intersects the (interior of the) support of $B_{k,d}$: $I \cap (t_\mu, t_{\mu+\nu+1}) = \emptyset$. Denote the restriction of the space $S_{d,\tau}$ to the interval I by $S_{d,\tau,I}$, i.e., $S_{d,\tau,I} = \text{span}\{B_{\mu-d,d}, \ldots, B_{\nu-1,d}\}$.
(ii) Choose some local approximation method P_I with the property that $P_I g = g$, for all $g \in S_{d,\tau,I}$.
(iii) Let f_I denote the restriction of f to the interval I. Then there exist B-spline coefficients $(b_i)_{i=\mu-d}^{\nu-1}$ such that $P_I f_I = \sum_{i=\mu-d}^{\nu-1} b_i B_{i,d}$. Note that $\mu - d \le k \le \nu - 1$ since $\text{supp} B_{k,d}$ intersects I.
(iv) Set $c_k = b_k$.

Weights : uniform data case



Applications

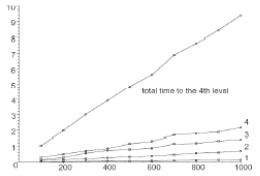
$$g_1(x) = |x| sin(x)$$
$$g_2(x) = x^2 sin(\pi x^2)$$
$$g_3(x) = |sin(x)|$$
$$g_4(x) = \begin{cases} 0 & \text{if } x \le 0.5, \\ 1 & \text{if } x > 0.5. \end{cases}$$



Given a test function $g_k(x)$, we first sampled data points from it and applied to the algorithm to obtain an approximation function f. The difference between g_k and f is then measured by computing the normalized RMS(root mean square) error which is divided the RMS error by the difference of maximum and minimum values of g_k between the function values on a dense grid.

$$RMS = \sqrt{\frac{\sum_{i=0}^{N} (g_k(x_i) - f(x_i))^2}{(N+1)}}$$

global	e_1	e_2	e_3	e_4
5	.74	**Table 1.** Normalized RMS errors.		.1640436
9	.7445050	.8493500	.0302326	.1251580
17	.7445548	.7991659	.0257063	.0880861
quasi	e_1	e_2	e_3	e_4
5	.7442964	.9196416	.0496652	.1640436
9	.7446013	.8462046	.0335381	.1388721
17	.7445674	.7988042	.0261447	.1079658



To demonstrate the time efficiency of the proposed method, we calculate time as the sample points increase from 100 to 1000 by 100 steps where the number of control points at initial level is 7×7 and four levels are performed. Fig. 4 plots the relative time value to 100 sample points according to the sample size. From this result, we can see it linearly increases with sample size. The space complexity is $O(n + (2^{n+2} - 1)n_x n_y)$ because we have to store all the control lattices in the hierarchy. But if an adaptive control lattice hierarchy is used, a control lattice can be reduced by a simple set of necessary control points.

$g(x, y) = sin(x) + sin(y)$.

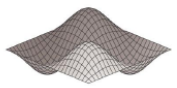
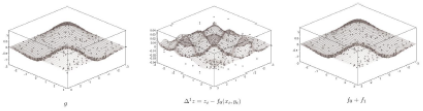


Table 2. Normalized RMS errors between test functions and their approximations.

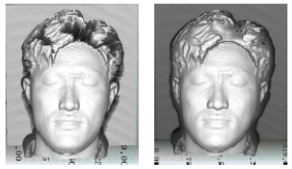
level	M100	M500	R500
1	.0049298	.0040021	.0041634
2	.0020481	.0001827	.0004930
3	.00176756	.0001323	.0004057



We used three data sets of M100, M500 and R500, where M100 and M500 are small and large data sets, which consist of 100 and 500 points, respectively. We uniformly sampled 7×7 and 15×15 data points, respectively, while the others was randomly sampled. And R500 points were totally randomly sampled.

A) Original Image B) Level=1 C) Level=3 D) Level=5

The experiment is also performed for large number of uniform data such as flower image with size of 512 by 512. PSNR(20 log(255/RMS))is used as a error metric for image compression. High quality reconstructed image of 31.933dB is obtained with 18.24:1 of compression ratio at the level 5 in Fig. 11.

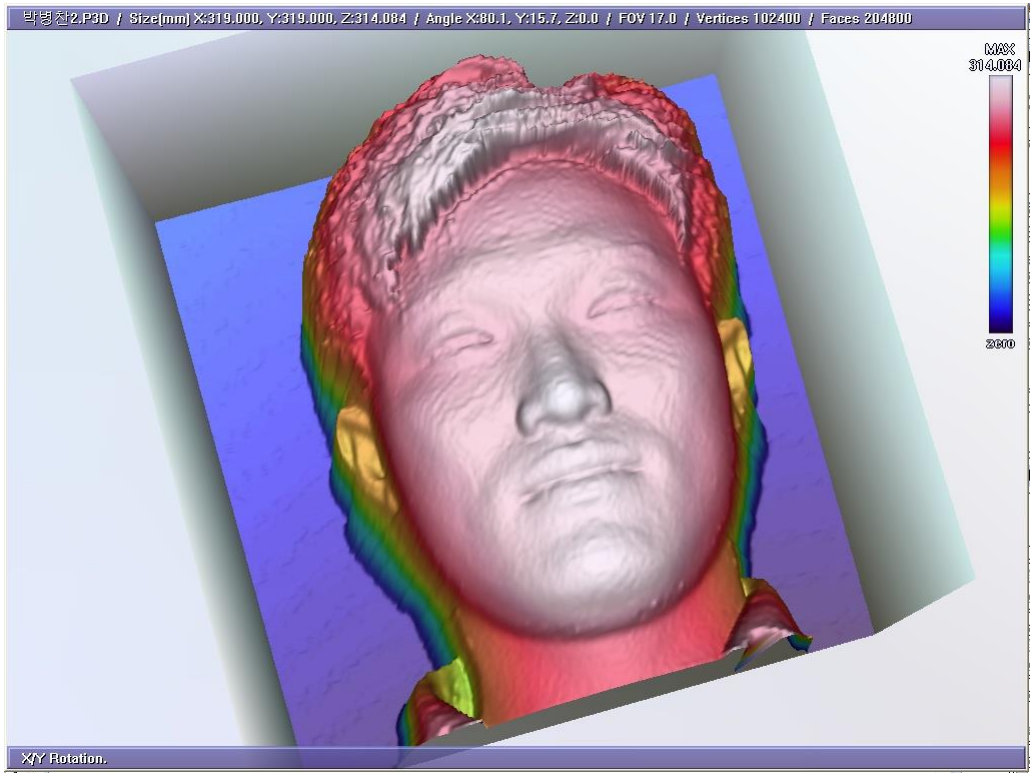


A) Original range data B) Multilevel B-spline approximation : A real range data acquired from 3D scanner is used to prove the efficiency of the proposed algorithm. Fig. 9 shows a head data with many holes in hair region due to low reflection of laser where the size of data is 320x320 and the pixel intensities depict depth values. The undesired hole or missing points are usually case when the data come from laser scanner 3D acquisitions or if they represent damaged objects to be restored. An attractive field of research focuses on situations in which these holes are too geometrically and topologically complex to fill and entirely scattered data set exist. As shown in Fig. 10, the method generates good approximation and smooth surface, filling missing data points by interpolation property where the algorithm generated five level with initial 8x8 control points.

Multilevel B-spline

PARMI

4DCULTURE



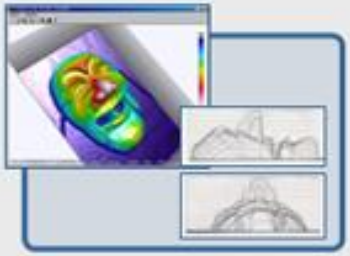
4DCULTURE

Digital Culture by 3D Scanning Technology

4DCULTURE
Digital Culture by 3D Scanning Technology

3D Scanning
Laser scanning
4DCulture I-View

Scan data modify
Texture mapping
Smoothing & optimize



Measurement
Measuring & Report
Section diagram

Surface model
Exchange Surface Model
Extract Features
Export Maya, 3DMax

Application
Toy & Culture industry
Recovery cultural assets

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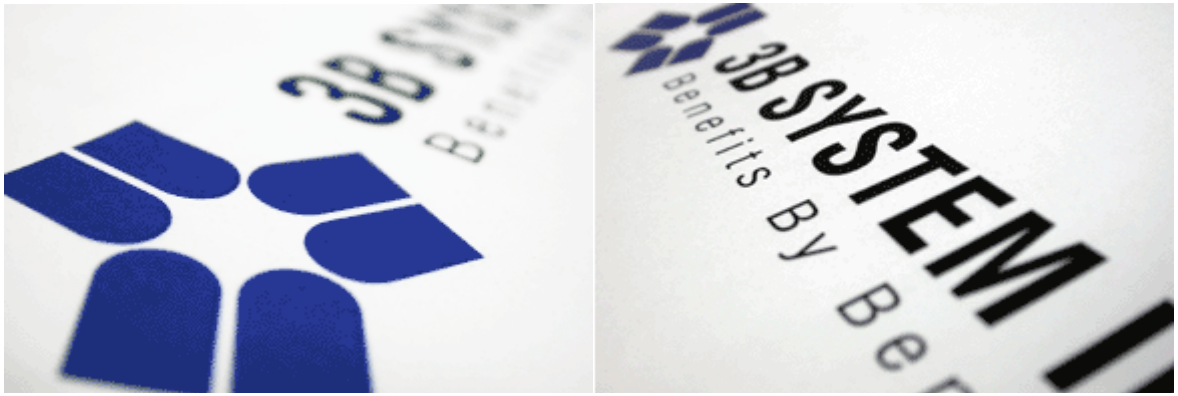
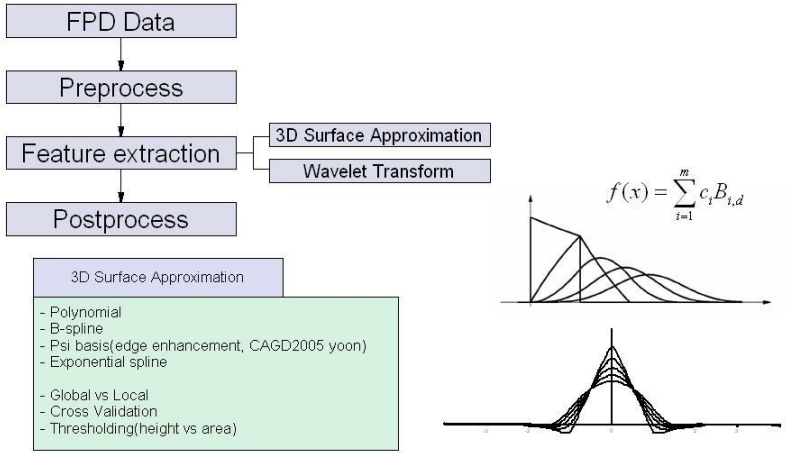
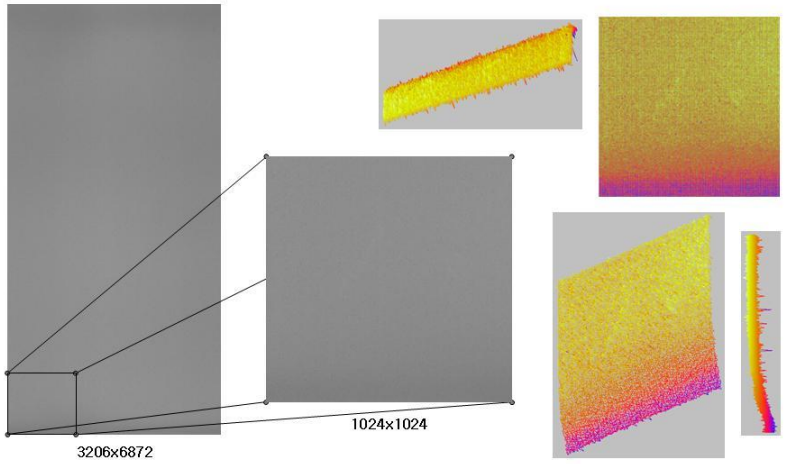
Flat Panel Display Defect Detection



Work flow

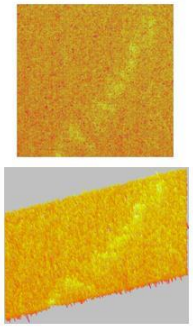


BLU 얼룩불량 377_6317.bmp

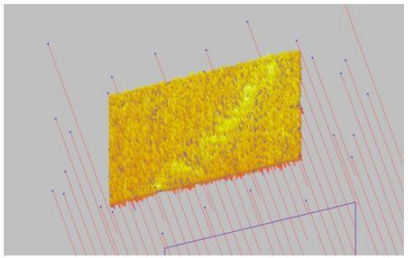


lbg@dongseo.ac.kr lbg@dongseo.ac.kr

Cubic B-spline approximation

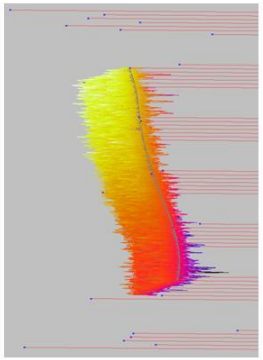


256x256 bmp image

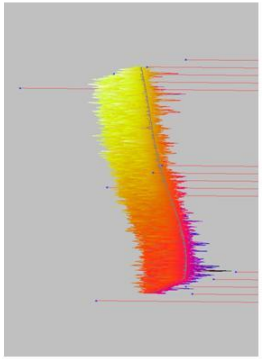


Cubic B-spline approximation with 7x7 control points

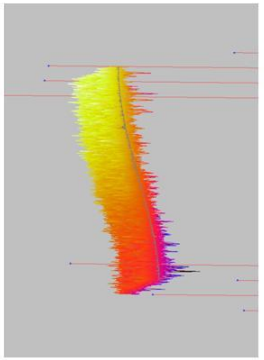
Number of control points



7x7 control points



5x5 control points



4x4 control points

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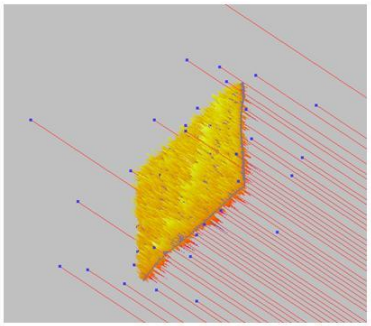
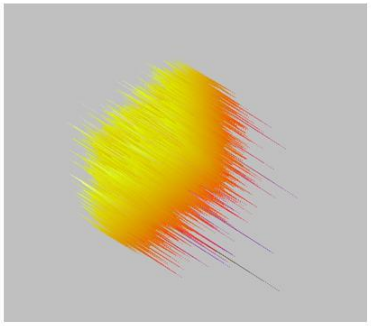
Difference image



Cubic B-spline approximation with 7x7 control points



Difference bitmap image data

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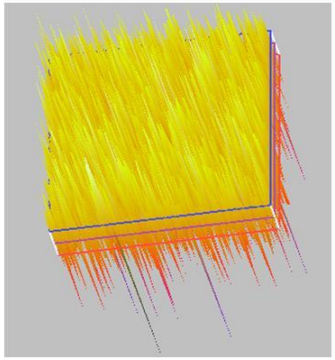
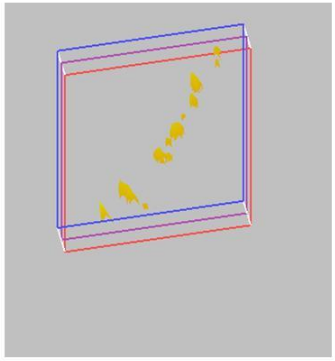
Mura detection filter





with mura detection filter

A WAVELET BASED FLAT PANEL DISPLAY DEFECT DETECTION

WavE 2006, July 10-14, 2006, EPFL Lausanne, Swiss
Byung-Gook Lee, Joon Jae Lee, Hoon Yoo, Yeon Ju Lee, Jungho Yoon
lbg@dongseo.ac.kr http://kowon.dongseo.ac.kr/~lbg/

Objectives

- Defect Detection of Plat Panel Display

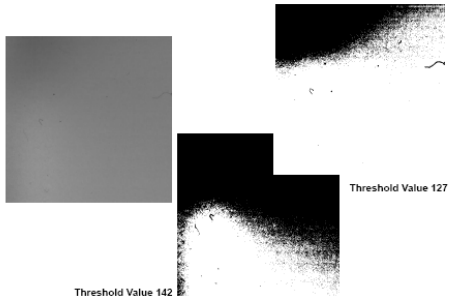
Problems

- Uneven illumination due to self radiation
- High frequency noise inherent in images

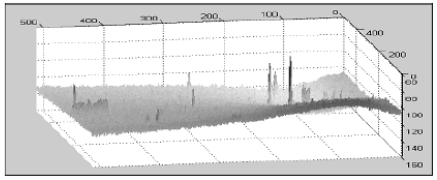
The Proposed Method

- Surface approximation based approach using wavelet multiresolution

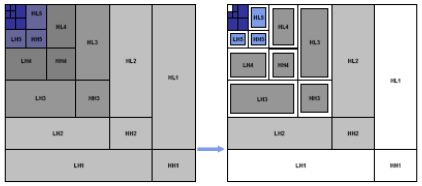
Uneven illumination



Idea for uneven illumination compensation

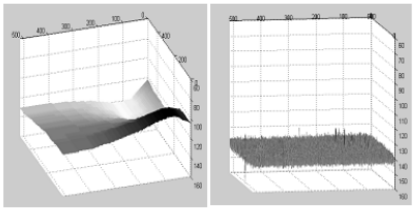


Wavelet Representation



- Field of automatic inspection and FPD products
  Why do we need the automatic inspection of FPD
  What is the FPD products?
- Approaching points and Algorithms
  Analyze the defects in FPD
  How can we solve the problems?
  Understanding the algorithms previously proposed
- Multi-layered structure.
  High probability of defect occurrence at the inside of panel
  Needs of high cleaning level
- The array of many integrated semi-conductor
  Adjust the amount of light from light source
  Adjust the amount of light which are emitted by itself
- Products
  TFT-LCD, PDP, OEL, OLED, CELL, BLU, FILM, etc

Elimination parts for compensation



Compensation approach

$$F(\omega) = (HH_1 + HL_1 + LH_1) + (HH_2 + HL_2 + LH_2) \ldots\ldots (LL_k + HH_k + HL_k + LH_k)$$

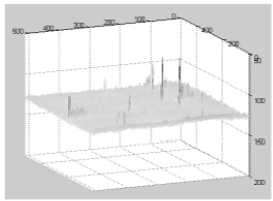
$$F_h(\omega) = HH_1 + HL_1 + LH_1$$

$$F_l(\omega) = LL_k$$

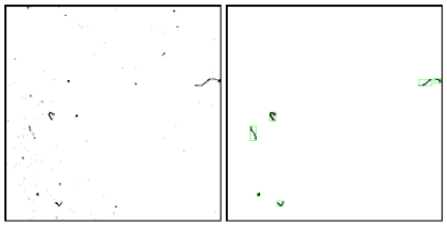
$$F_b(\omega) = (HH_{3B} + HL_{3B} + LH_{3B}) + (HH_{4B} + HL_{4B} + LH_{4B}) + (HH_{5B} + HL_{5B} + LH_{5B})$$

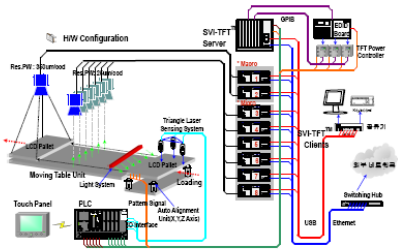
$$F'(\omega) = F(\omega) - F_h(\omega) - F_l(\omega) - F_b(\omega)$$

Compensated image result



Detected result by simple threshold





Performance

CPU : 3GHz, Memory : 1GB

Procedure \ Input size	1MB	16.8MB	19.5MB	22MB	53MB
Wavelet Decomposition	0.015	0.328	0.375	0.437	1.062
Wavelet Synthesis	0.032	0.328	0.375	0.438	1.031
Thresholding	0.016	0.282	0.296	0.36	0.86
Blob analysis	0.063	1.683	1.823	2.021	6.20
Total	**0.126**	**2.261**	**2.869**	**3.256**	**9.153**

Conclusion and further research

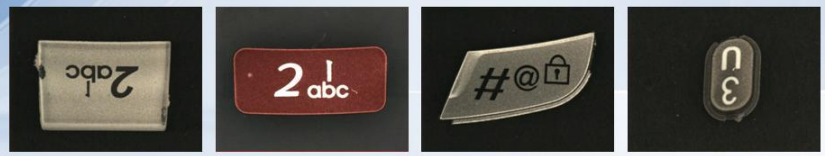
- Mathematical analysis using surface approximation for illumination compensation
- Performance
  Accuracy, Speed, Reliability
- General method for various defect types

Keypad Inspection System

Digital DSU Dongseo University

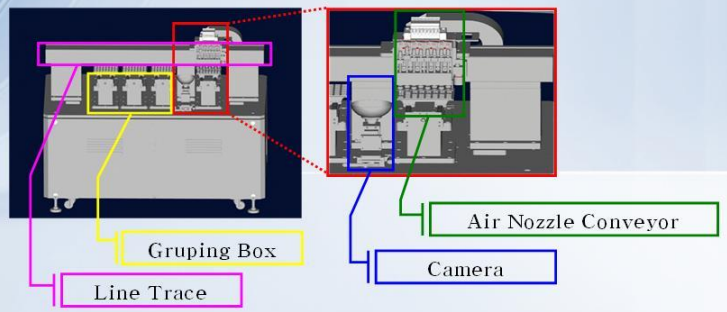
Keypad Inspection System of Cellular Phone

Seung Il Han, Du Cheol Gang, Byung Gook Lee, Joon Jae Lee
Graduate School of Design & IT, Dongseo University
{ted12, newsephiro, lbg, jjlee}@dongseo.ac.kr



Inspection Machine

- Part
  - Air Nozzle Conveyor
  - Camera
  - Grouping Box
  - Line Trace



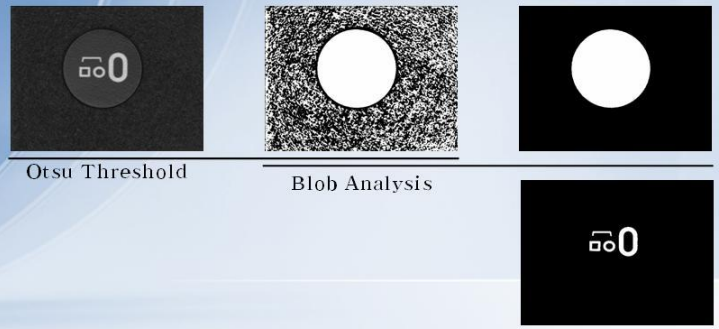
Inspection Object

- Color Grade

- KeyButton Defect Detection
  - Font Defect Detection
  - Scratch Detection

Font Defect Scratch

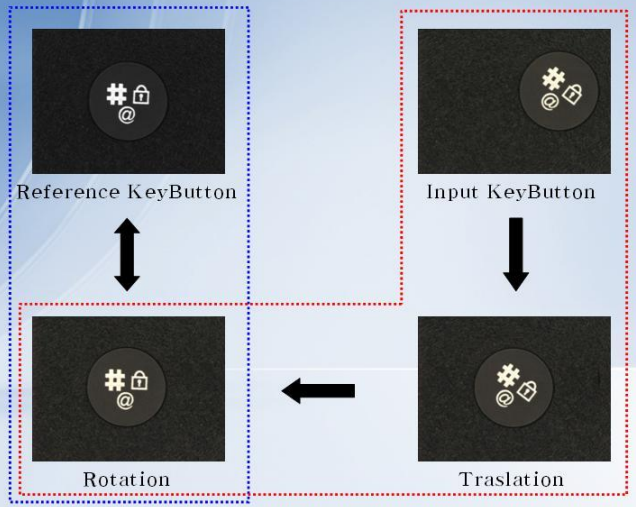
KeyButton & Font Area Detection



Otsu Threshold Blob Analysis

CGiV07, 14~17 August 2007, Bangkok, Thailand Keypad Inspection System of Cellular Phone

Affine Transformation



Scratch & Font Defect Detection

- Scratch Detection

Input KeyButton Scratch

- Font Defect Detection

Reference KeyButton Input KeyButton Font Defect Detection

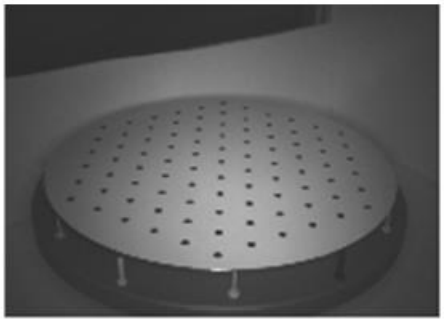
Development of Vision System for Wafer Position Recognition usiong Radial Shape Calibrator

lbg@dongseo.ac.kr 2008.12.03

Machine Solution Vision

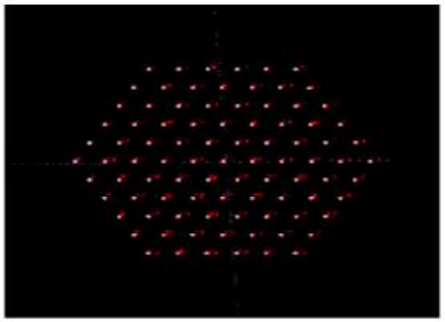
Digital Area Scan Camera

Radial Shape Calibrator



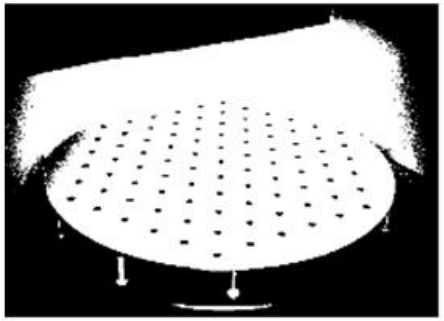
$$x_p = \frac{m_0 x_u + m_1 y_u + m_2}{m_6 x_u + m_7 y_u + 1}$$

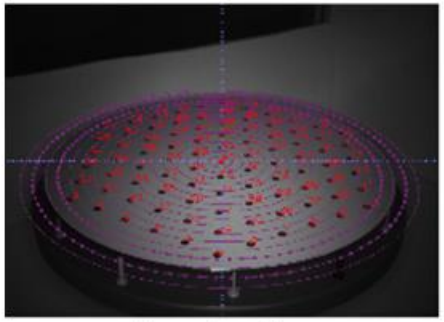
$$y_p = \frac{m_3 x_u + m_4 y_u + m_5}{m_6 x_u + m_7 y_u + 1}$$



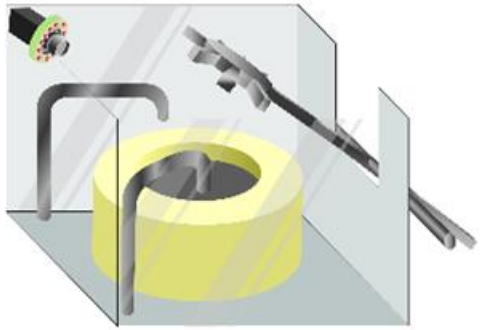
Calibration

Binary Image

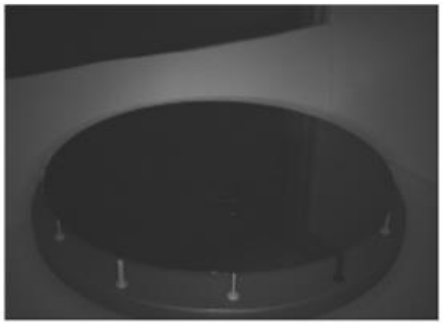




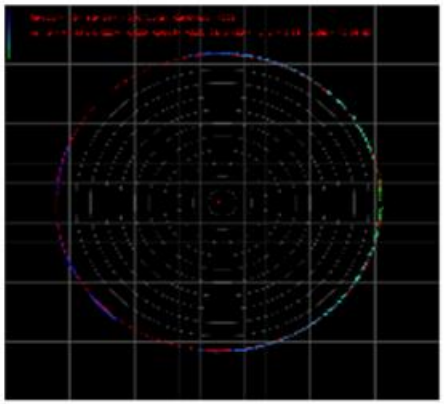
Numbering



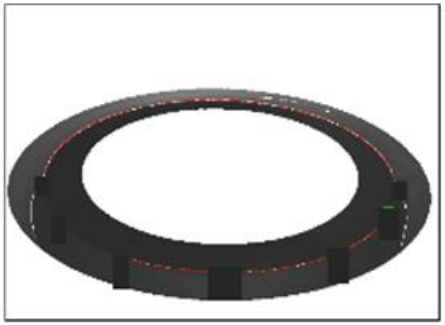
System Overview



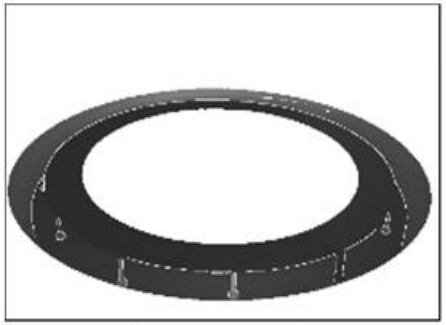
Clipping



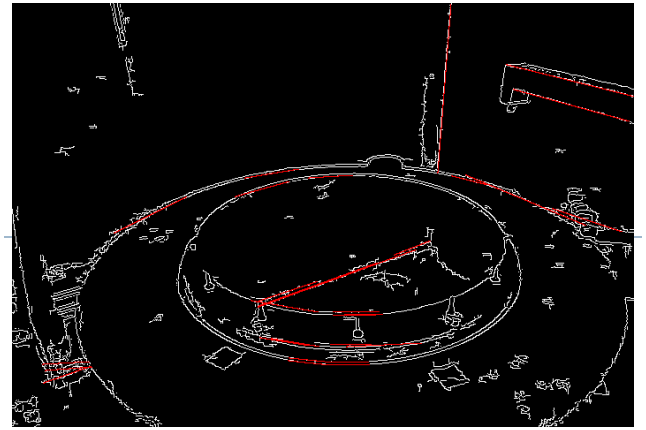
Wafer Circle Estimation

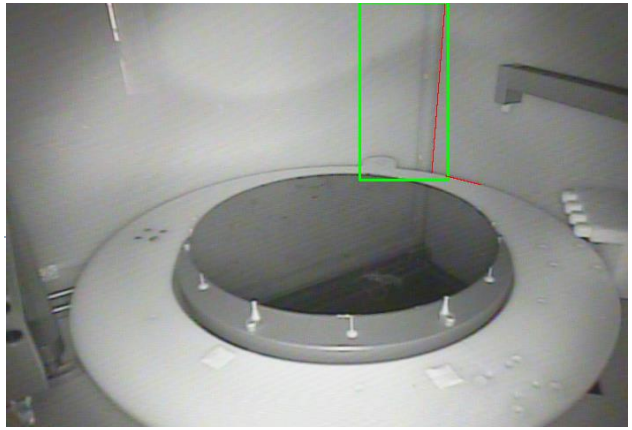


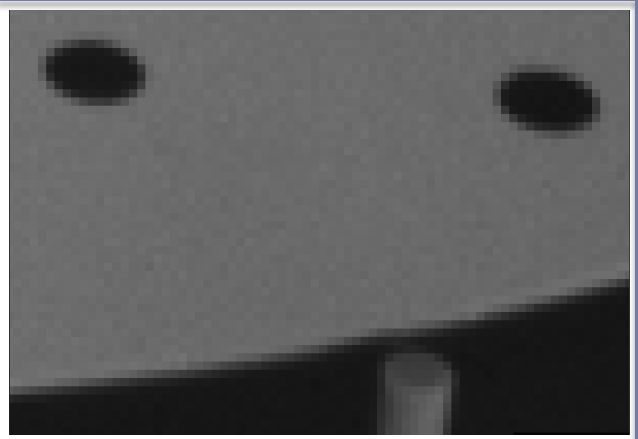
Wafer Edge Detection



Edge Detection

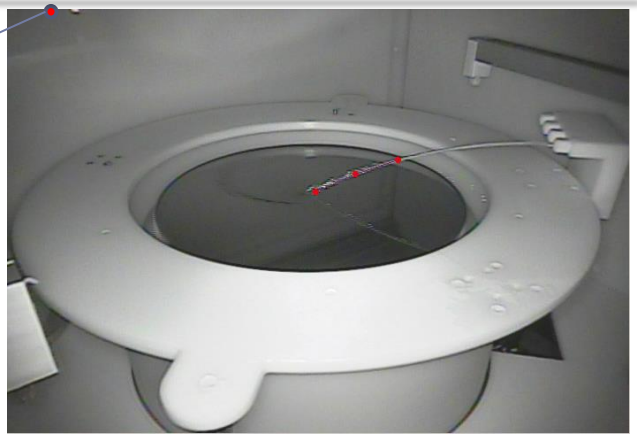


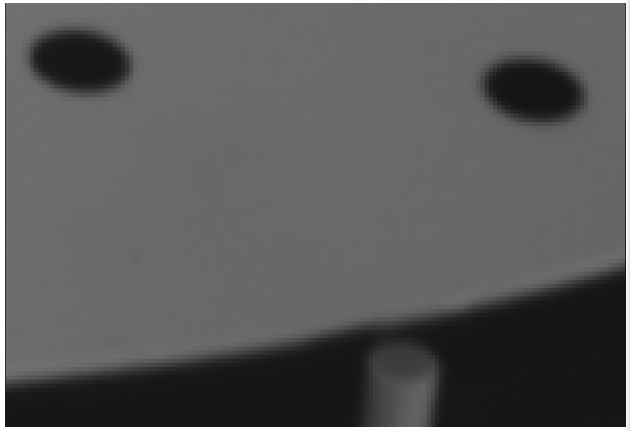


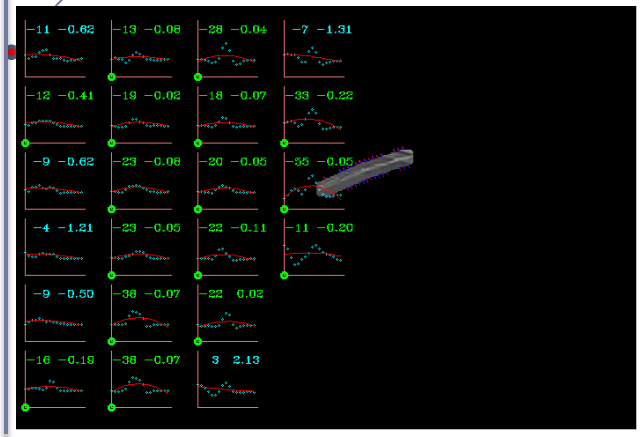


StepSize

Path Width





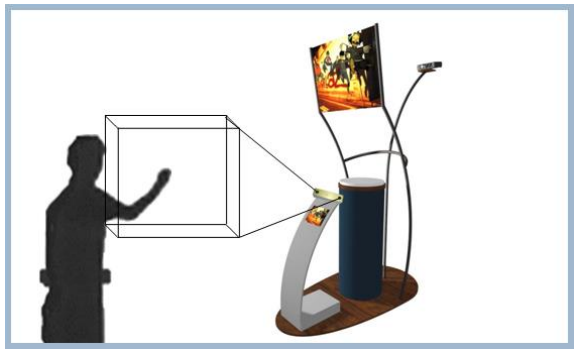


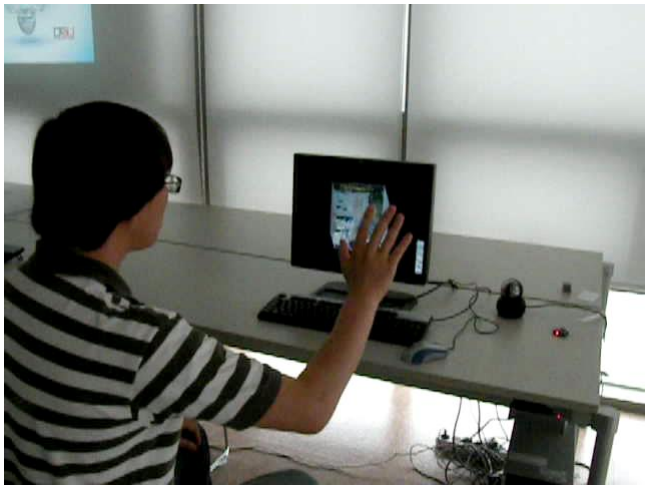
Interactive Arts with Image Sensor - Students Projects

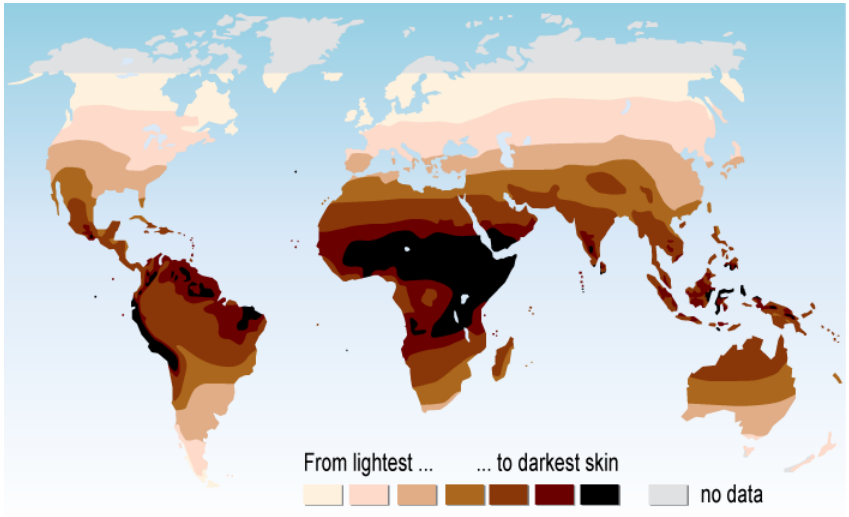
lbg@dongseo.ac.kr

http://www.youtube.com/watch?v=19NqwLUM624
http://www.youtube.com/watch?v=v5HNT_okvI8

Hand Tracking







Source: Chaplin G.© , *Geographic Distribution of Environmental Factors Influencing Human Skin Coloration*, American Journal of Physical Anthropology 125:292–302, 2004; map updated in 2007.

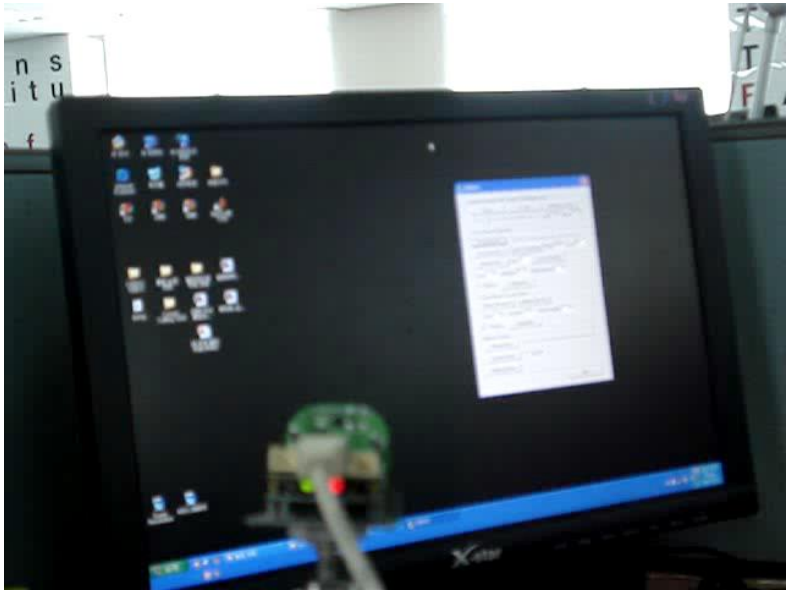
http://www.mine-control.com/

Shadow Garden

http://www.youtube.com/watch?v=pkLJi_Gz1nI

http://www.youtube.com/watch?v=-tuS3GbHtV8

Interactive Board – IR Pen & Laser Pointer



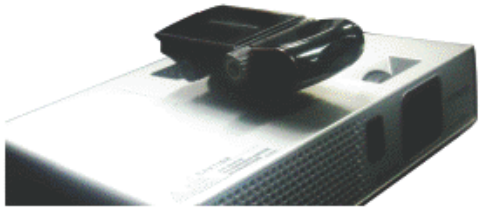
http://www.iscom.co.kr/ko/

u-Pointer

communications
IScommunications CO., Ltd.

a Virtual Interactive Board.

Main Feature of U-Pionter



Easy Installation

- Place the U-Pointer on top of the projector and connect it to the PC via a USB cable.
- Align the U-Pointer on the beamed screen and adjust it by knob.
- Light weight along with easy installation enables the U-Pointer to be your presentation partner.

Interaction with PC via the projected screen

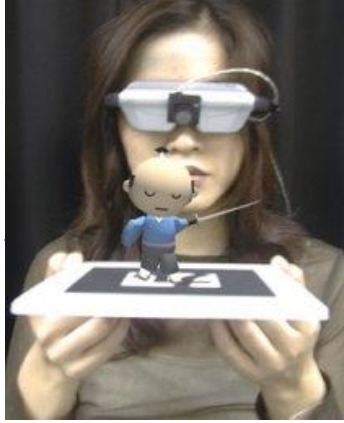
- Click, double click and drag functions of conventional mouse are all fully supported by the U-Pointer's pen.
- It can control PC from the projected screen interactively.
- It provides the freedom of a wireless presentation in a seminar or conference, and the size of the projected screen is up to 150 inches.

Accurate Pen Work

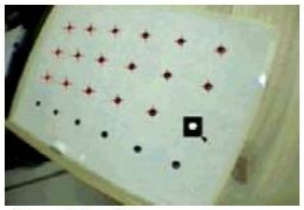
- The high resolution of the U-Pointer provides the capability of writing smaller characters, than those written with a tablet.
- The fast response time and over 59 frames per second of sampling rate give you the same feeling as if you were using a white board.

http://www.hitl.washington.edu/artoolkit

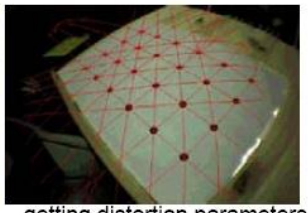
ARToolkit



Step 1: Getting distortion parameters: 'calib_dist'

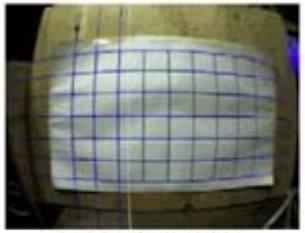


selecting dots with mouse

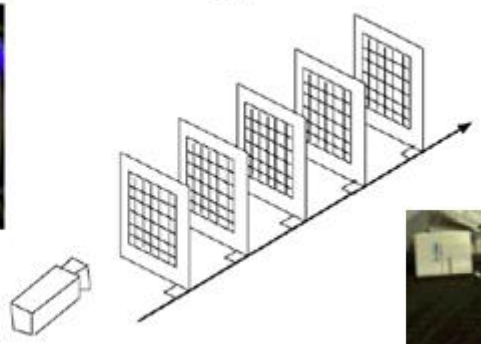


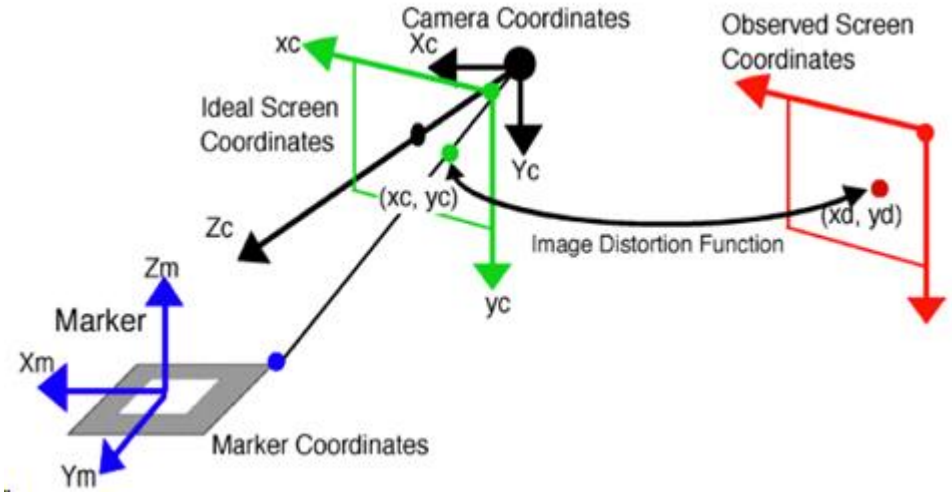
getting distortion parameters by automatic line-fitting

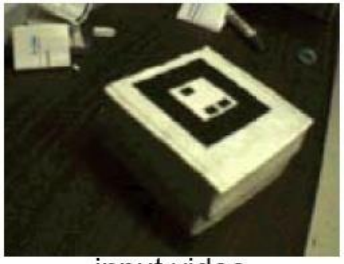
Step 2: Getting perspective projection matrix: 'calib_cparam'



Manual line-fitting

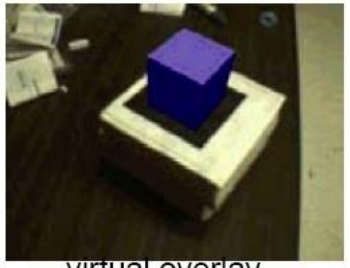






input video

thresholded video



virtual overlay

https://www.youtube.com/watch?v=I-ZW9I61kNY

A Study on Effective Visual Communication Method with the 'Pictomation' Contents in Augmented Reality Environment

2009.07.15 | DEPT. OF VISUAL CONTENTS, DONGSEO UNIVERSITY
Hosung Myung, Byunggook Lee, Hyungwoo Kim, Shanghyun Kang
http://kowon.dongseo.ac.kr/~lbg/

Definition of pictogram

- The pictogram is a compound word where means the picture and a telegram.
- The pictogram delivers information easily & quickly.

pictogram = picture + telegram

Functions of pictogram

Guidance Function
Public people understand some information easily.

Command Function
The human being must observe.

Conditions of pictogram

- Must read quickly, easily and exactly.
- Must deliver the meaning easily.
- Must be considered the brief expression and an esthetic characteristic.
- Must be induced the act of consumer to original intent.
- Must be popular, public and convenient to use.

A Study on the 'PICTOMATION' Contents Effective Visual Communication Method in Augmented Reality Environment

Dept. of Visual Contents, Dongseo University
Hosung Myung, Namseok Choi, Hohwan Shin,
Eunkyung Jung, Byunggook Lee, Hyungwoo Kim
http://kowon.dongseo.ac.kr/~lbg/

This research was financially supporting by the Ministry of Education, Science Technology (MEST) and Korea Industrial Technology Foundation (KOTEF) through the Human Resource Training Project for Regional Innovation

Pictomation using ARToolkit

Ⓐ Marker pattern input
Ⓑ Video output (computer graphics area)
Ⓒ Video output (real world area)

Proposal of the pictomation

Visual elements of pictogram should be expressed and reconstituted in common experience, not creation a new one.

'A **MAN** IS DRINKING **WATER**'
Visual elements : 'Man', 'Water' : [noun]

'A MAN IS **DRINKING** WATER'
Animation elements : 'Drinking' : [verb]

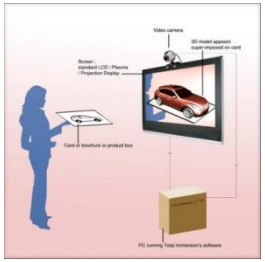
First, I abstracted 'man' and 'water' from linguistic element in 'a man is drinking water' and expressed it as visual elements. Second, I made an animation with behavior elements which is 'drink'.

Proposal of the pictomation

Pictomation = Pictogram + Animation

['DRINKING FOUNTAIN' PICTOMATION]

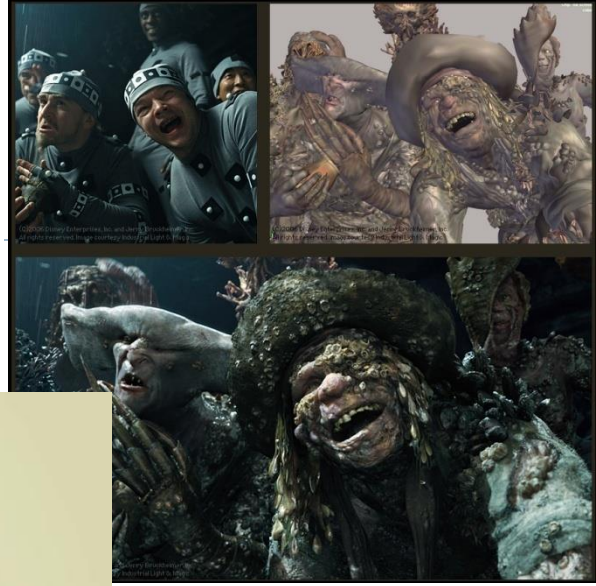
Augmented Reality

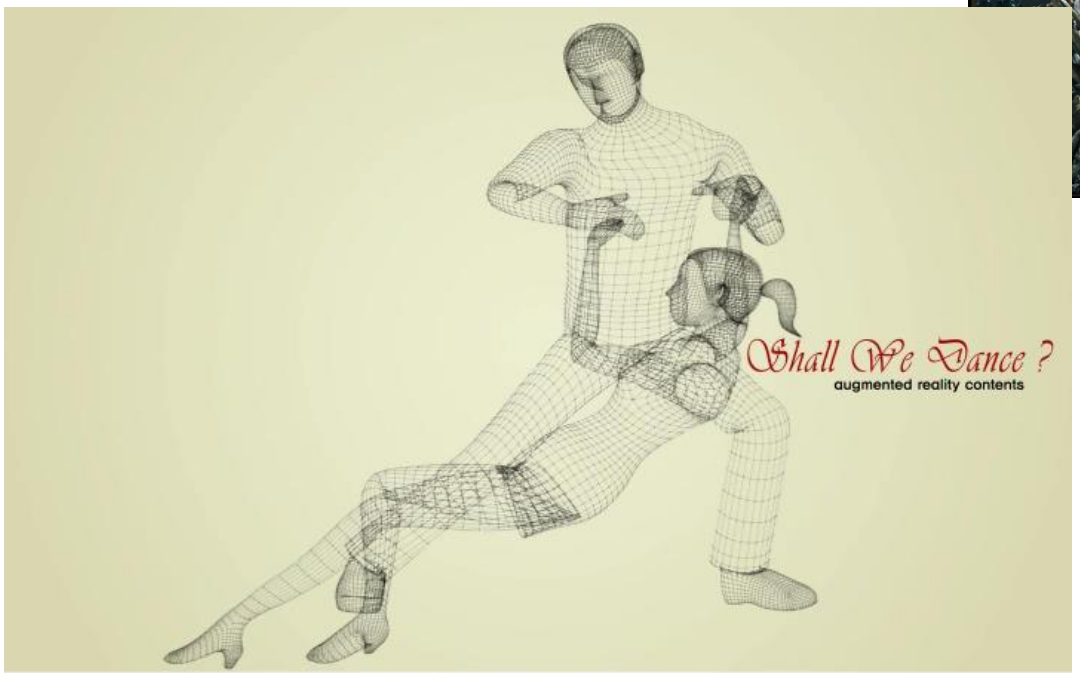


AR(augmented reality) provide vivid 3d information
[http://www.mini.de/webcam]

https://www.youtube.com/watch?v=sMjqvxJB_Yc

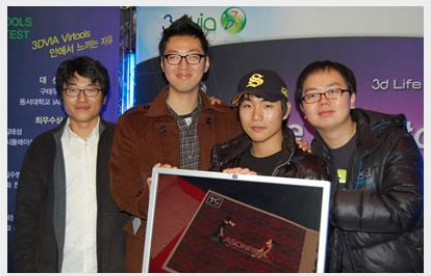
Shall we dance





IAI 엠비언트 인텔리전스 연구소 Institute of Ambient Intelligence DSU 동서대학교

'3DVIA 버툴 콘테스트' 대상



다쏘시스템이 주최한 제2회 3D 콘테스트에서 대상을 차지한 동서대 디자인학부 학생들(왼쪽부터 명호성, 구태우, 우정우, 연재혁씨).

http://www.marcotempest.com/
http://www.youtube.com/watch?v=i7woG0pqFjs

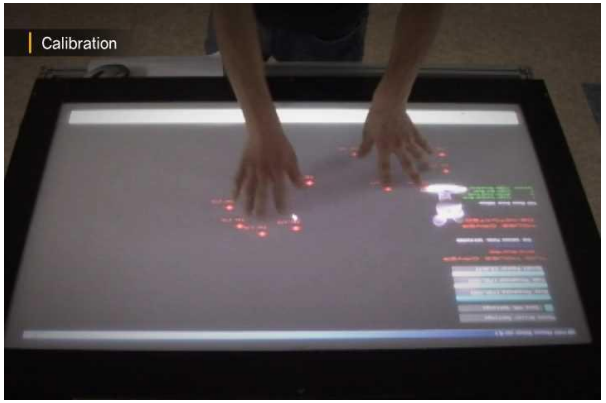
Magic Projector

Augmented Reality Projection Tracking
「マジック・プロジェクション」

T.O.P
Top Of Profesional

http://www.youtube.com/watch?v=QKh1Rv0PlOQ
http://perceptivepixel.com/

MTS@DSU



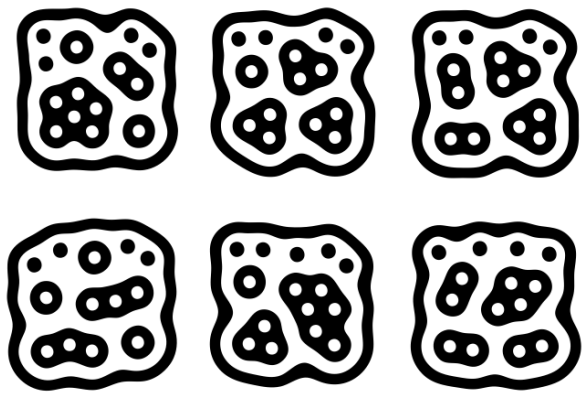
Multi-User Interaction Technology for Ubiquitous Smart Space – Multi Touch System

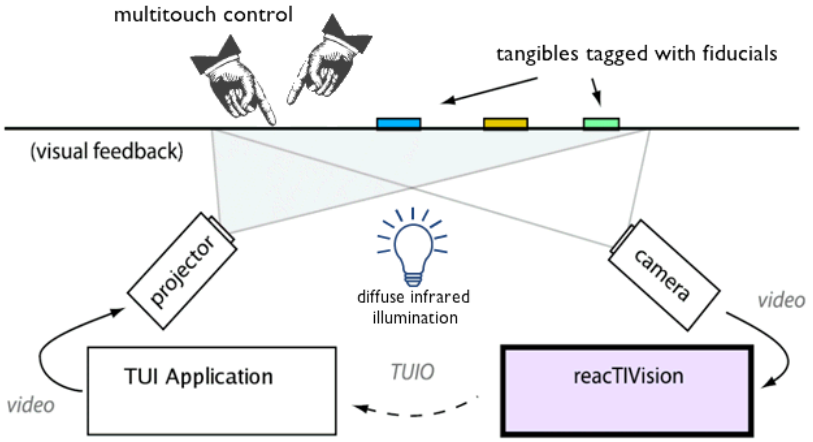
Dept. of Visual Contents, Dongseo University
Hosung Myung, Namseok Choi, Taehwan Lim, Byunggook Lee
http://kowon.dongseo.ac.kr/~lbg/

This research was financially supporting by the Ministry of Education, Science Technology (MEST) and Korea Industrial Technology Foundation (KOTEF) through the Human Resource Training Project for Regional Innovation

http://reactivision.sourceforge.net/
http://www.bcnvisualsound.org/
http://www.youtube.com/watch?v=CooP1C1B_Jg

reacTIVision

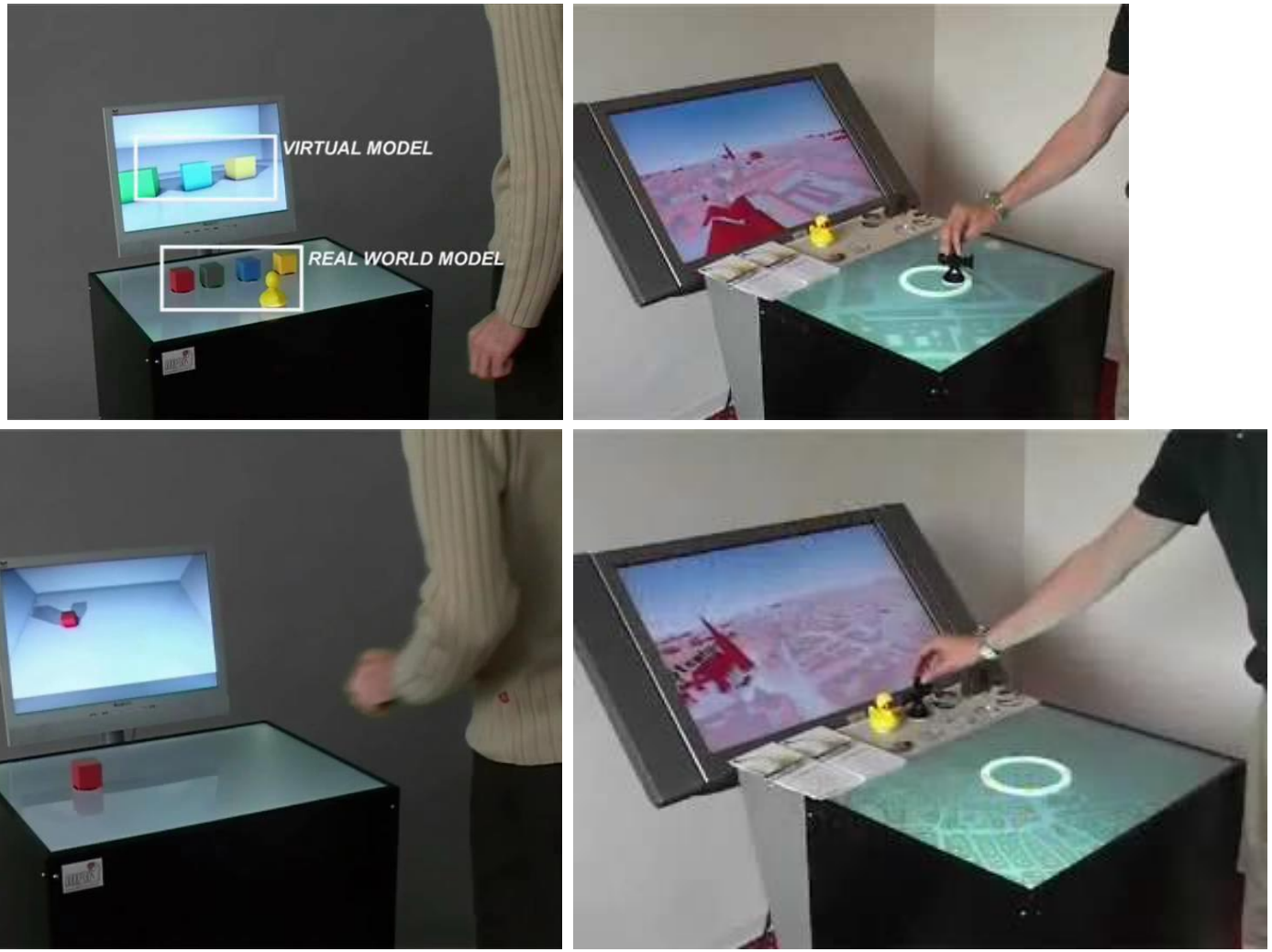




http://kommerz.at/Files/160/MRI_productfolder-eng.pdf

KOMMERZ

Mixed Reality Interfaces



http://www.youtube.com/watch?v=s1FcSpLabhw

Ubiquitous Frontier
DSU
Dongseo University

Image Deformation using Radial Basis Function Interpolation

Jung Hye Kwon, Byung Gook Lee, Jungho Yoon, Jun Jae Lee

kjh@dit.dongseo.ac.kr, lbg@dongseo.ac.kr,
yoon@ewha.ac.kr, joonlee@kmu.ac.kr

The 17-th International Conference on Computer Graphics, Visualization and Computer Vision
February 2-5,2009, Plzen, Czech Republic

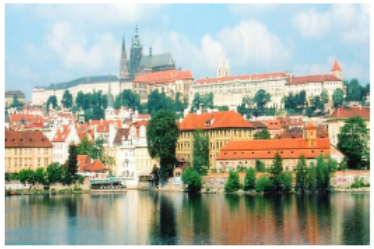


Image Deformation

- As one field of computer graphics
- The deformation method of changing image to be wanted by user
  - Used in the filed of computer animation, morphing and medical image
- To perform deformation the user selects some set of handle
  - Points, lines, or grids

Previous Deformation Techniques

- Mesh base method
  - T. Igarashi, T. Moscovich, and J. F. Hughes, "As-rigid-as-possible shape manipulation .", ACM Trans. Graph 2005, 24, 3, pp 1134-1141 (2005).
  - Y. Weng, W. Xu, Y. Wu, K. Zhou, B. Guo, "2D shape deformation using nonlinear least squares Optimization.", The visual computer, pp 653-660(2006).
- Approximation method
  - S. Schaefer, T. McPhail, J. Warren, "Image deformation using moving least squares.", Proceedings of ACM SIGGRAPH , pp. 533-540 (2006).
  - N. Arad, N. Dyn, D.Reisfeld, Y.Yeshurun, "Image warping by radial basis functions :Application to facial expressions", Computer Vision Graphics and Image Processing , p.p 161-172 (1994).

Radial Basis Function

- A function $f:\mathbb{R}^{d_1}\to\mathbb{R}^{d_2}$ is known only at a set of discrete points $U:=\{u_1,u_2,\cdots,u_n\}$ and

with

Here ons

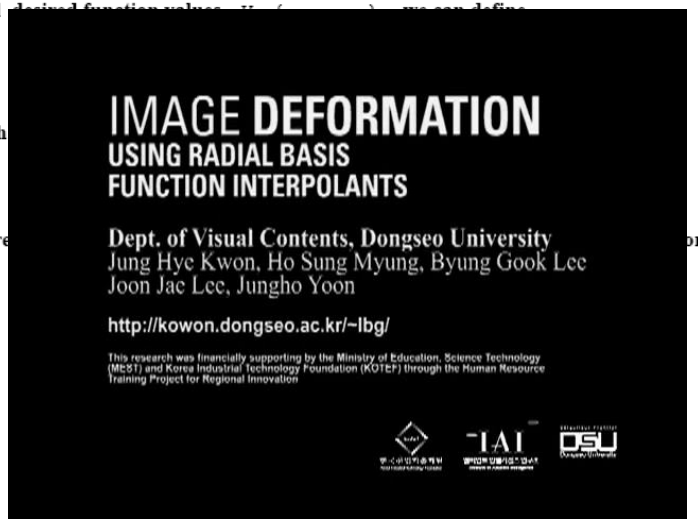


Image deformation using RBF

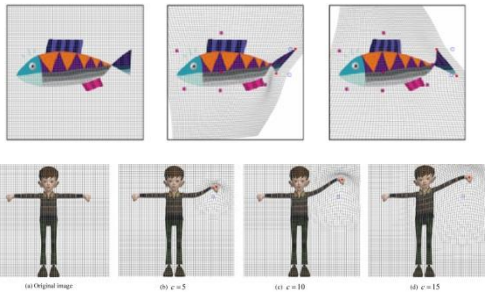
- Since constructing a deformed image from an original one is a mapping from $\mathbb{R}^2$ to $\mathbb{R}^2$, we have given two sets of 2-dimensional data $U:=\{u_1,u_2,\cdots,u_n\}$ and deformed position $V:=\{v_1,v_2,\cdots,v_n\}$. We solve for the radial basis function interpolation $S_{f,U}(u)$, satisfying

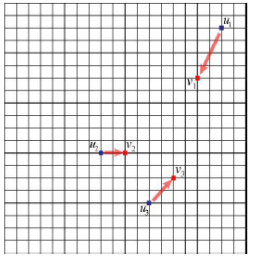
$$S_{f,U}(u_i)=v_i-u_i,\quad i=1,2,\cdots,n.$$

where v_i-u_i is difference vector v.

Finally, we obtain a deformed position

$$v=u+S_{f,U}(u)$$





Digital Contents Fair

2005.12.1~4 서울 코엑스 1층
소프트엑스포 & 디지털콘텐츠페어 2005
소프트웨어체험관 DSU-U Frame,
Laser Pointer Interaction 등 7작품 전시

Digital Contents Fair @ KOEX 2005


IT / 과학 2005년 11월30일 수요일 제 19020호 21

"u-체험제품 우리가 만들었어요"

동서대, 레이저포인터·포토센서 등 개발

대학서 첫 성공…소프트엑스포 전시 예정

부산지역 대학생들이 신기하고 흥미진진한 유비쿼터스 관련 체험 제품들을 직접 개발해 화제가 되고 있다.

국내 대학에서 처음으로 유비쿼터스 체험관을 만든 동서대 대학생들은 최근 흥미로운 유비쿼터스 장난감과 게임 등을 개발하는데 성공했다.

u-장난감 등은 내달 1일 서울 코엑스에서 열리는 제8회 '소프트엑스포&디지털콘텐츠 페어 2005'에서 한국소프트웨어진흥원의 IT839SW체험관에 전시될 예정이다.

동서대 안터넷공학부와 디지털디자인학부(지도교수 이병국·안터넷공학부) 대학생 18명은 지난 9월 동서대 u-체험관 등을 설치하면서 익힌 지식을 바탕으로 자신의 아이디어와 열정을 더해 유비쿼터스 장난감인 RFID무선전자태그인 오케스트라와 포토센서,레이저 포인터 마우스 등 독특한 유비쿼터스 체험 제품들을 개발했다.

RFID 오케스트라는 RFID태그가 내장된 피아노,바이올린,첼로 등의 5가지 악기 모형으로 이뤄진 장난감으로,바이올린과 피아노 악기 모형을 책상 위에 올려놓으면 2개의 악기로 연주한 음악이 나온다.

레이저 포인터 마우스는 강연 등에 사용하는 레이저 포인트를 이용해 컴퓨터를 작동시키는 것으로 멀리서 여러 명이 동시에 컴퓨터를 작동시켜 게임 등을 즐길 수 있는 장점이 있다.

포토센서는 사람이 앞을 지나가면 반응하는 전시물 바닥 등에 설치된 포토센서가 앞을 지나가는 관객을 인식해 대형 PDP 화면 속의 3D 캐릭터가 관람자의 움직임을 따라가면서 체다보거나 다수의 PDP가 연속된 장면을 이어서 보여준다.

RFID오케스트라와 레이저포인터 마우스를 개발한 등 3년째는 "유비쿼터스 센서네트워크 기술을 통해 내 아이디어를 직접 구현해볼 수 있어 흥미로웠다"며 "처음 시도하는 일이다보니 막힐 때마다 해결책을 직접 찾아야 하는 것이 가장 어려웠다"고 털어놓았다.

또 이들은 전시회 관람객들이 RFID 카드를 등록해 입장하면 지능형 게시판이 이름을 부르며 인사를 하는 관객통합관리시스템, USB키메라 2개와 u-프레임을 이용해 직접 제작한 3차원 안식기 홈로포인터 등도 전시할 계획이다.

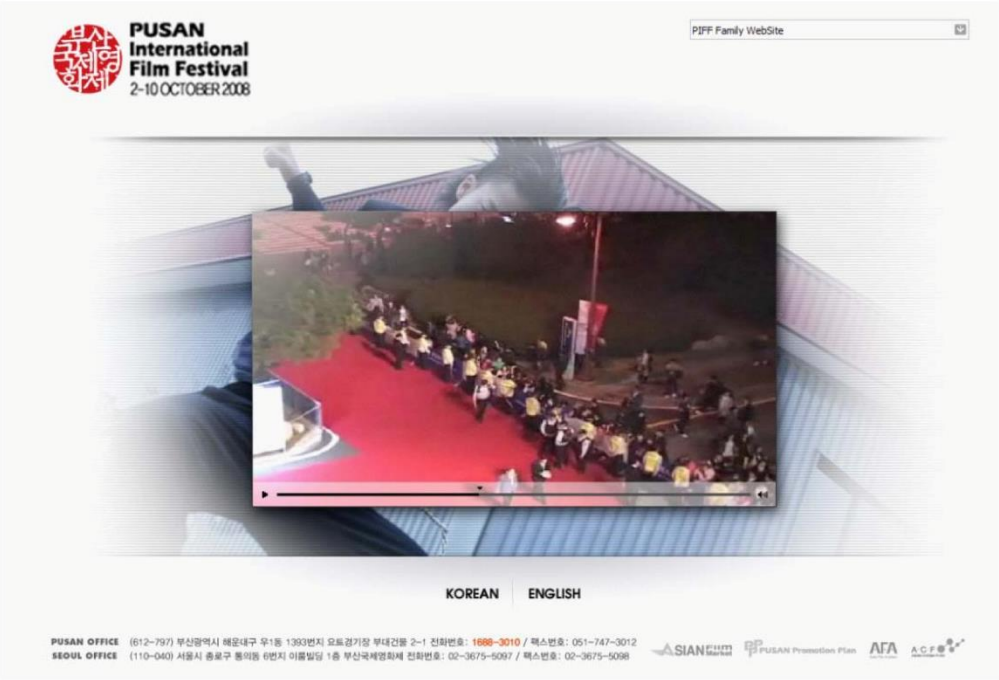
홈로포인터를 제작한 최남혁(안터넷공학부 컴퓨터공학과 4년)씨는 "u-체험관을 구축하면서 장비 설치,유지보수 등을 배워 이번에 일반 부품으로 수천만원의 장비를 독같이 개발했다"며 "유비쿼터스 분야는 블루오션이기 때문에 기술을 더 보완하면 적어나 제품화 등도 가능할 것"이라고 자랑스러워했다.

이병국 교수는 "학생들이 지혜를 짜내 수천만원짜리 3차원 컴퓨터입력장치인 홈로포인터를 5만원 정도하는 USB키메라 2개 등으로 개발했다"며 "한국소프트웨어진흥원에서 우리 아이디어 및 시작품을 보고 편지 전시회 참여를 제의해 참가를 결정했는데 이번 전시회를 통해 우리 학생들의 실력을 대외적으로 넓이 알릴 수 있어 매우 기쁘다"고 밝혔다. 임현철기자

u-체험제품을 개발한 동서대 이병국(왼 오른쪽) 교수와 대학생들이 포즈를 취하고 있다.

PIFF 2008

PUSAN International Film Festival
2-10 OCTOBER 2008



IT도 PIFF 바람

동서대, 게스트관리시스템 개발

'우리 손으로 유비쿼터스 부산국제영화제를 만든다.'

동서대 이병국(인터넷공학학부) 교수와 디자인&IT 전문대학원생들(사진)이 제11회 부산국제영화제 기간에 열리는 아시안필름마켓의 유비쿼터스 게스트출입 관리시스템을 개발해 화제가 되고 있다.

아시안필름마켓은 40여개국 2천여명의 영화산업 종사자들이 참여해 파이낸싱에서부터 프로덕션,세일즈를 아우르는 행사로 15일부터 18일까지 4일 동안 부산 해운대 그랜드호텔과 프리머스시네마에서 열린다.

이 교수와 12명의 대학원생들은 지난 여름방학 동안 교내 유비쿼터스 출결시스템 소스를 아시안필름마켓에 맞게 수정 및 개선해 게스트 등록에서부터 인증 등이 자연스럽게 이루어질 수 있는 시스템을 개발해 프리머스시네마 8층 10개의 상영관 입구에 설치했다.

이 교수는 "인식거리 2~3m인 900㎒의 무선전자태그와 리더기를 설치했기 때문에 ID카드 검사 없이 자유롭게 영화관에 입장하면 등록 및 인증이 될 뿐 아니라 누가 어느 영화를 몇 시간 동안 관람했는지도 실시간으로 알 수 있어 'IT강국 코리아,유비쿼터스 도시 부산'의 면모를 보여줄 수 있을 것"이라고 자랑했다.

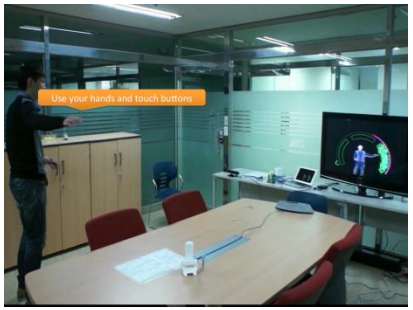
임원철기자

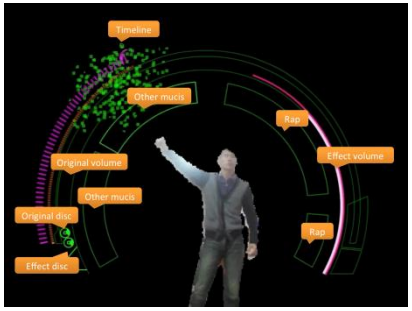
https://www.youtube.com/watch?v=GXdPaQPfHH0

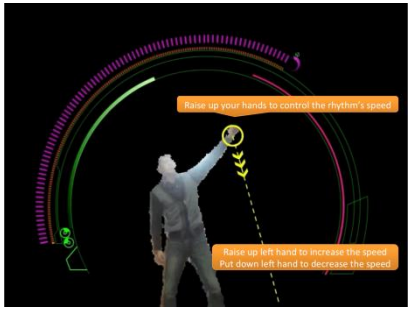
DJ Mix with Kinect

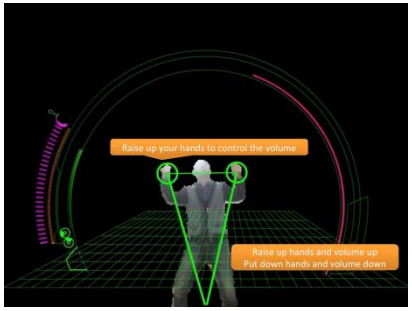
PrimeSense

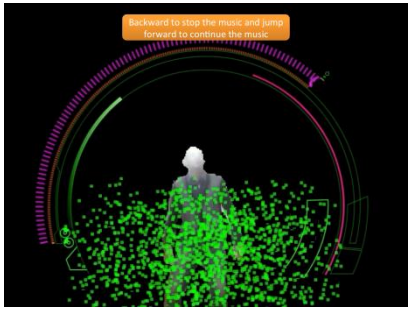
Microsoft











KINECT & DJ

Han JiaQi

DSU Dongseo University 동서대학교

IAI 엠바이트 인텔리전스 연구소

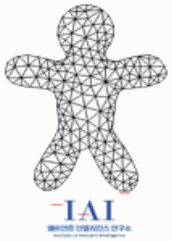
http://www.openni.org/files/deform2d-shape-manipulation/#.UT8Bbhxpky4
https://www.youtube.com/watch?v=HKt8Qt4bLvI

Deform 2D Shape Manipulation

You are here: Home / Software / Deform 2D Shape Manipulation using Depth Sensor

Arena

SOFTWARE DEVELOPERS



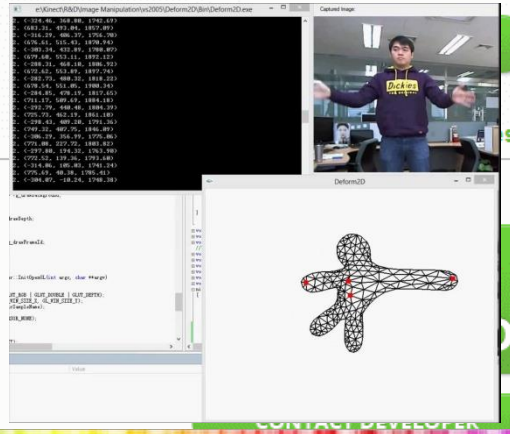
DEFORM 2D SHAPE MANIPULATION USING DEPTH SENSOR

TYPE: APPLICATIONS

Upload Date: 12 Mar 2013 10:05:43 AM
Last Update: 20 Mar 2013 11:40:53 AM
Developer: Yeouf Tan
Category: Body Tracking
Version: 1.0

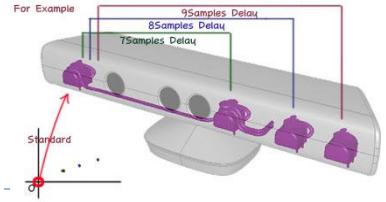
I.A.I (Institute of Ambient Intelligence) introduce OpenNI compliant 3D sensor + Manipulation which allow you to controlling 2D Shape (Image, Animation) by us controlling through sensor kits (every OpenNI compliant 3D sensor)

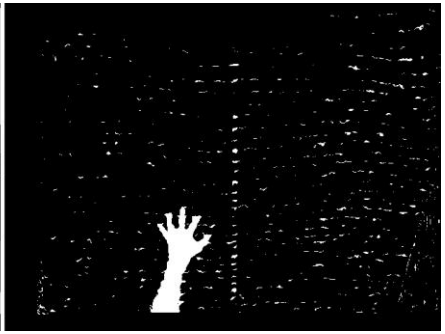
With the combination of Deform 2D Shape Manipulation + 3D Sensor, user able in animation or cartoon image by using body movement such as hand, legs and

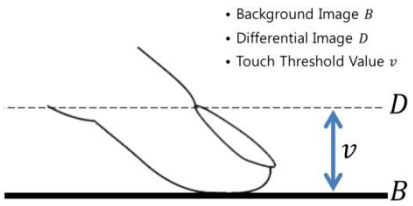


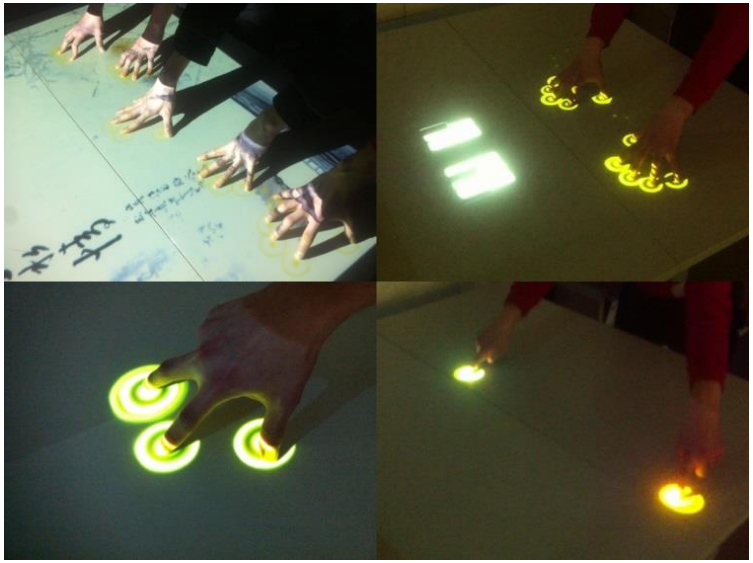
http://www.youtube.com/watch?v=leXT2r1bYBY

Multi Touch System with Kinect









1-inch UniTouch System using Kinect

Dept. of Visual Contents, Dongseo University
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Byung gook Lee

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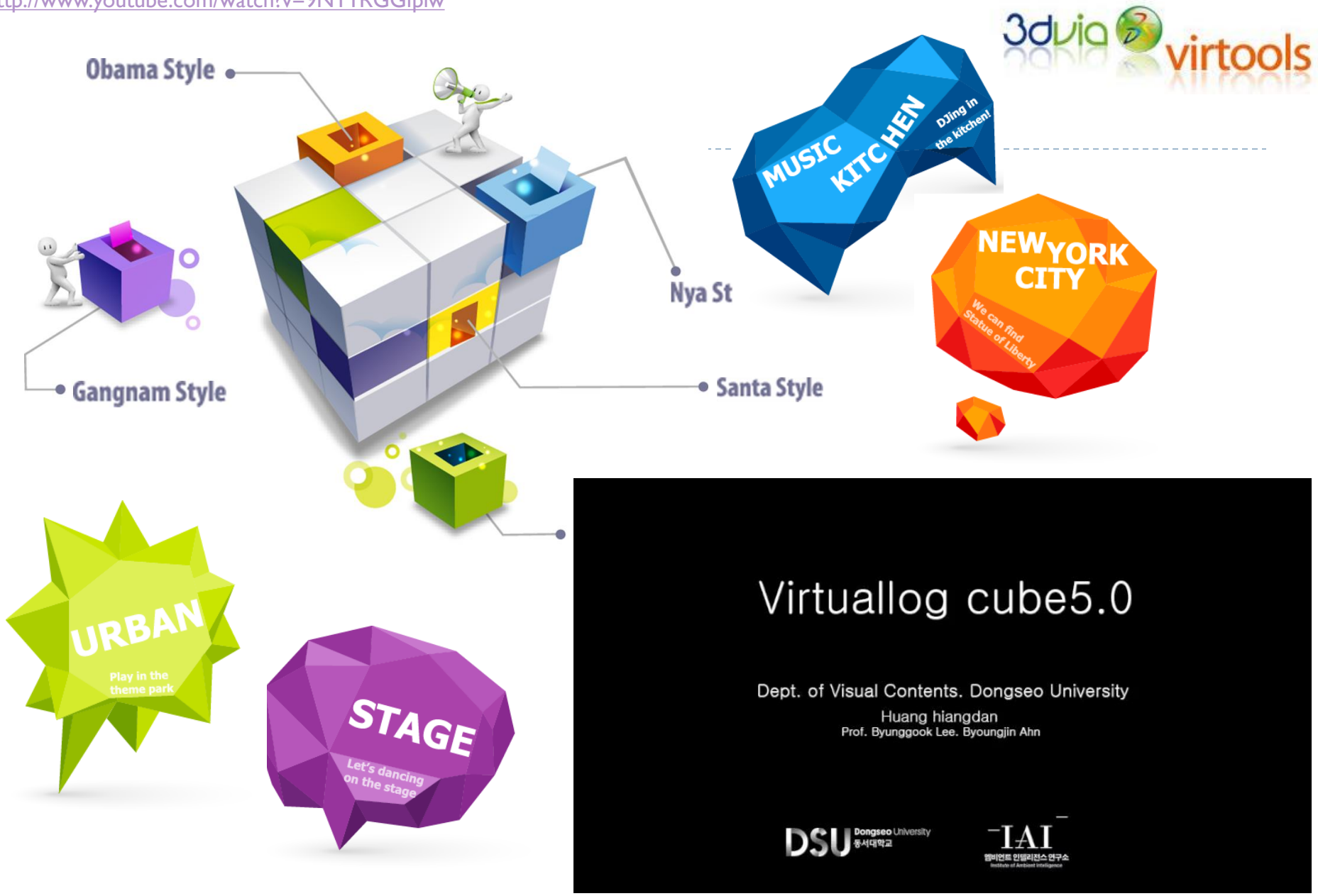
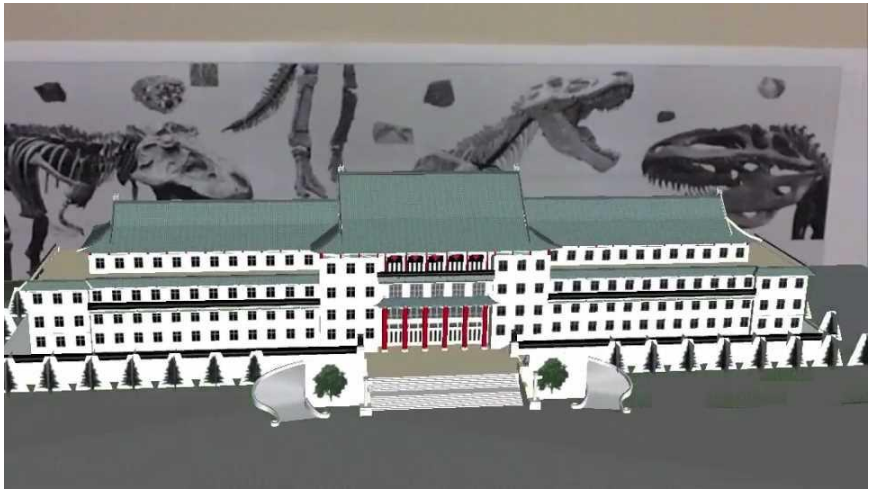
IAI 앰비언트 인텔리전스 연구소 Institute of Ambient Intelligence
DSU Dongseo University 동서대학교

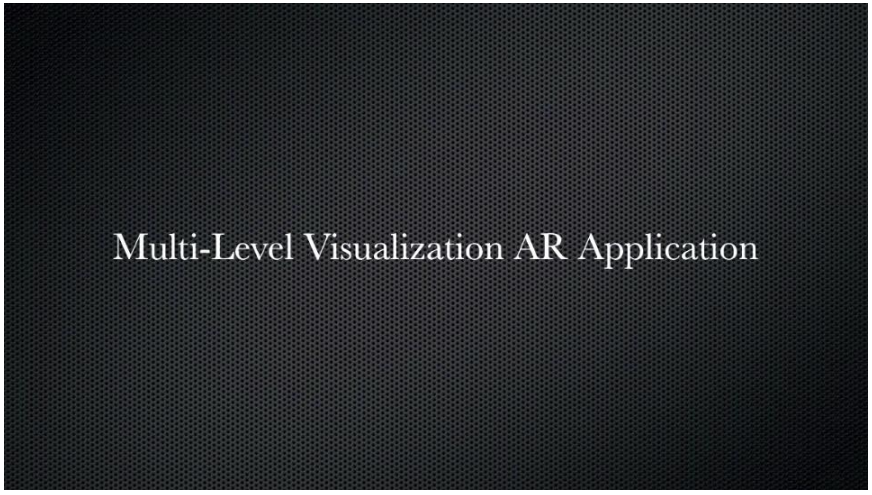
http://www.youtube.com/watch?v=9NT1RGGfplw



https://www.youtube.com/watch?v=-KrscAONVwI

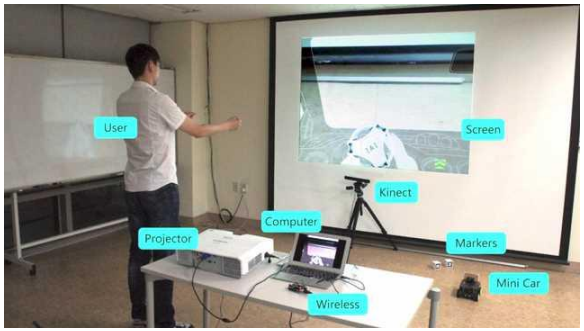
MultiLevel AR

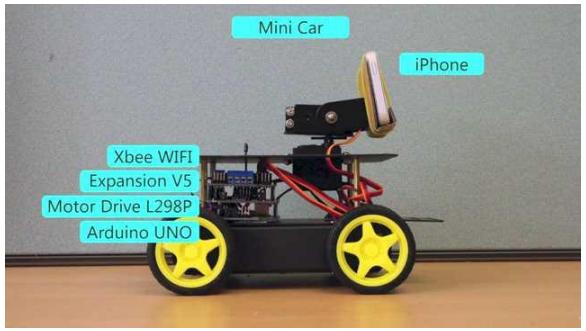


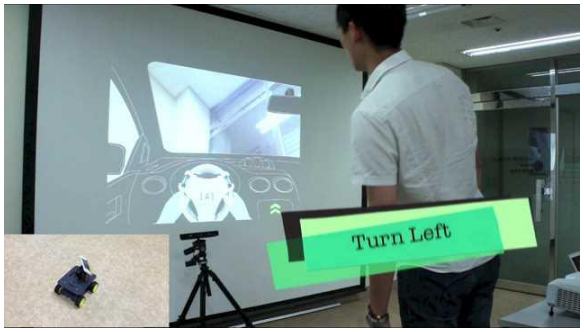


http://www.arduino.cc/
https://www.youtube.com/watch?v=WFNtsA8P8D8

MiniCar with Arduino





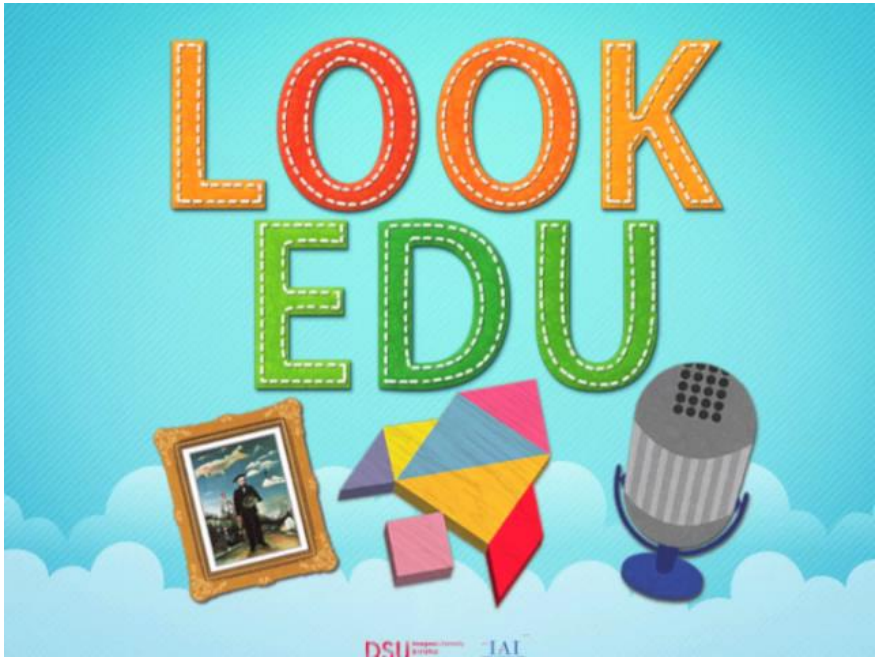


https://www.youtube.com/watch?v=y3w33wE_OrM

MagicalSketchPad

https://www.youtube.com/watch?v=2Byzr1nQ-aE

LookEdu@AR



2012 SupAppKorea

DSU SUPER APP KOREA 2012 IAI

제3차 "슈퍼앱 코리아" 대회

www.appcenter.kr SUPER APP KOREA

대 상 Mockup 이상의 앱 개발이 완료된 스타트업, 팀, 개인
※ 최종 결선에서는 마켓에 올린 앱에 가산점 부여
※ "전통문화를 활용한 스마트콘텐츠(앱)"를 만든 팀에게는 추가 심사하여, 특별상인 "법고창신상" 수여
※ 단, 다른 대회에서 수상한 경력이 있는 앱은 대상에서 제외

접수기간 2012년 10월 23일(화) 18시까지 **문의전화** 070-7525-0500

접수방법 메일(super@appcenter.kr) 접수
※신청서는 www.appcenter.kr 에서 받으실 수 있습니다.

서류심사 결과발표 2012년 10월 30일(화) 14시 이후 ※서류심사 합격자는 별도 개별통지 예정

서류심사 접수된 참가자들의 서류심사를 통해 **각 지역별 15개팀 선발**

예 선 지역별 15개팀 면접심사를 통해 **본선진출 5개팀씩 선발**
(단, 수도권은 약 35개팀 발표하여, 15개팀 선발 예정)

본 선 예선에서 선발된 총 30개팀을 대상으로 심사하여 **결선에 진출할 15개팀 선발**

결 선 본선에서 최종 선발된 15개팀을 대상으로 **최종 심사**

총상금 4,200만원
일반부(8팀) : 최우수상 1팀(문화부 장관상) / 우수상 2팀 / 장려상 5팀
학생부(7팀) : 최우수상 1팀 / 우수상 2팀 / 장려상 4팀
※ 특별상은 "법고창신상"과 관련된 앱을 개발한 팀을 대상으로 추가 수상함

주 최 : 문화체육관광부
주 관 : AppCenter Smart Media KSCI 한국컴퓨터정보학회
후 원 : ITCT 한국정보문화산업진흥원 동서대학교 호남대학교 한남대학교

동서대 학생들 앱 개발 경진대회 '천하 호령'

제3차 슈퍼앱 코리아'에서 최우수상과 우수상, 장려상을 수상한 동서대 학생들이 파이팅하고 있다.

3개 팀 출전 최우수·우수·장려상 휩쓸어
외국 유학생들과 함께 성과 거둬 '화제'

동서대학교 학생들이 문화체육관광부가 주최하고 (사)앱센터운동본부가 주관한 애플리케이션 개발 경진대회인 '제3차 슈퍼앱 코리아'에서 최우수상과 우수상, 장려상 모두를 수상해 화제가 되고 있다.

최우수상의 주인공은 중국 상하이 공정기술대학과 동서대의 '한중합작 멀티미디어디자인 전공' 출신 한자치(영상콘텐츠학과 석사 1년) 씨과 연변대학교 출신 황상단(영상콘텐츠학과 석사 1년) 씨로 구성된 'IAI'팀. 이들은 올해 9월 동서대에 유학 온 중국인 유학생들로 초등학생용 전자 미술교과서 앱인 '매지컬 스케치패드'를 개발해 최우수상의 영광을 차지했다. 이 앱은 초등학생들이 직접 캐릭터를 그리고 스토리를 꾸며 자동으로 애니메이션을 제작해주는 게 특징이다. 현재 이 앱은 앱스토어에서 무료로 다운 받을 수 있다.

우수상 팀은 인도 유학생과 한국 학생들의 조합이 인상적인 팀이다. 인도네시아 치루트라 대학 교수이면서 동서 일반대학원 영상콘텐츠학과에 박사과정으로 유학 온 마르쿠스 산토소 유학생과 석사과정 홍석민, 디자인학부 영상디자인전공 남목주·박수지 학생들로 구성된 팀이 차지했다. 이들은 중국식 펴즐 장난감인 '탱그램'을 증강현실과 융합한 어린이 교육 앱인 'Look EDU AR'로 수상했다. 초등학교 교과서에 나오는 칠교놀이 등을 3D로 보면서 즐길 수 있게 제작됐다.

장려상 팀은 디자인학부 영상디자인전공 박은미·이다은 학생 팀이 아이패드용 전래동화 전우치전 e-북 콘텐츠 앱을 개발해 수상했다. 전우치전 e-북 앱은 아이패드를 이리저리 돌리면 도자기나 엽전 등이 중력 방향으로 움직이거나 애니메이션이 나오는 등 어린이들의 흥미를 자극할 수 있게 구성되어 있다.

최우수상의 주인공이 된 한자치 학생은 "애플리케이션에 대한 아쉬운 점이 많아 상에 대한 기대감 없이 다음에도 참가할 생각으로 임하였는데 최우수상을 수상하게 되어 매우 기뻤다"라고 수상소감을 밝혔다.

지도교수인 이병국(컴퓨터정보공학부) 교수는 "IT기술이 활성화되지 않은 나라의 유학생들이 정보화가 앞선 한국에 와서 한국 학생들과 함께 공부한 결과 이렇게 큰 상을 받으니 모두 크게 기뻐하고 있으며 지도교수 입장에서 보람을 느낀다"고 밝혔다.

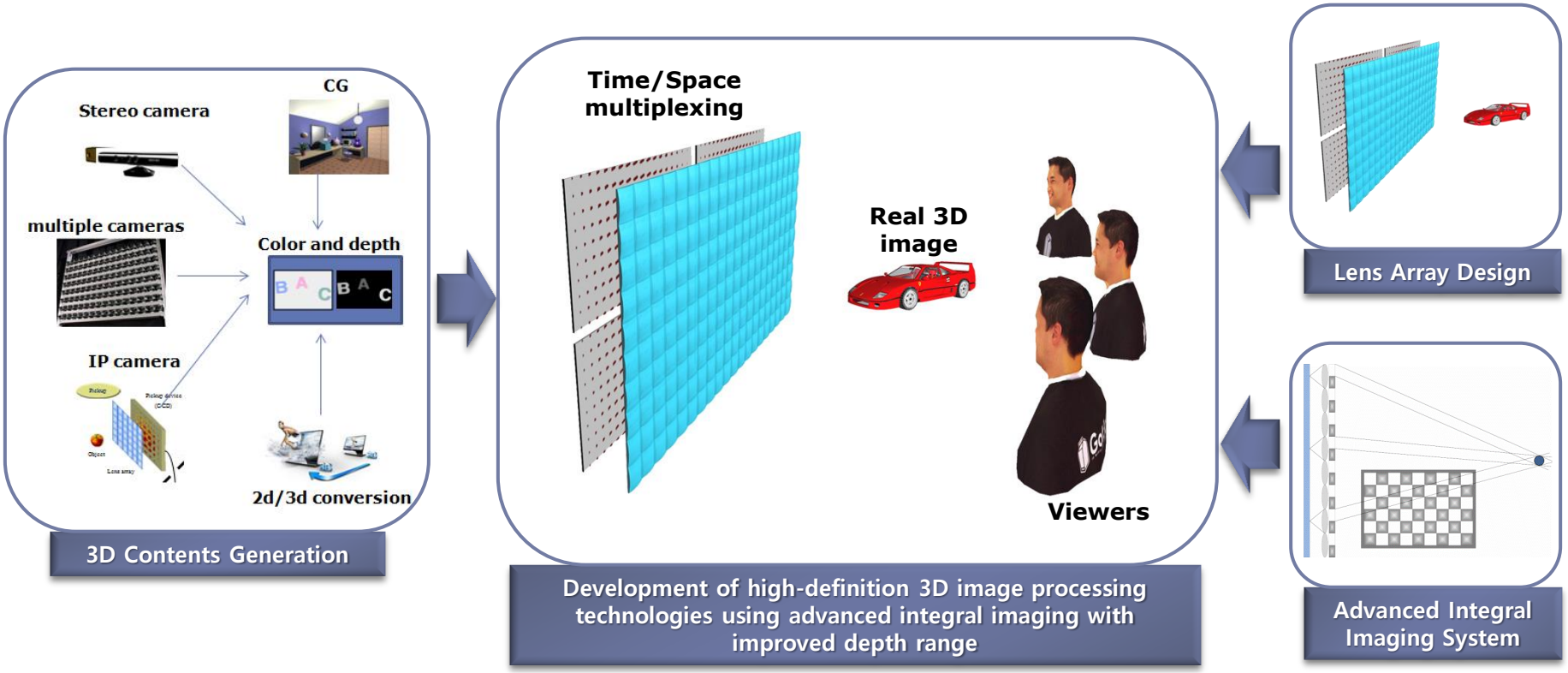
한편 슈퍼앱 코리아 대회는 스마트콘텐츠 산업에 대한 관심과 공감대를 확산하고, 우수한 실력을 갖춘 대한민국 최고의 앱 개발팀을 발굴하기 위해 개최되는 대회이다. 국내외 시장을 타깃으로 모바일 서비스 및 앱을 개발하는 팀을 발굴, 경쟁력 있는 서비스와 창업을 지원하고자 하는 대회다.

임원철 기자 wclim@busan.com

Thanks you!!

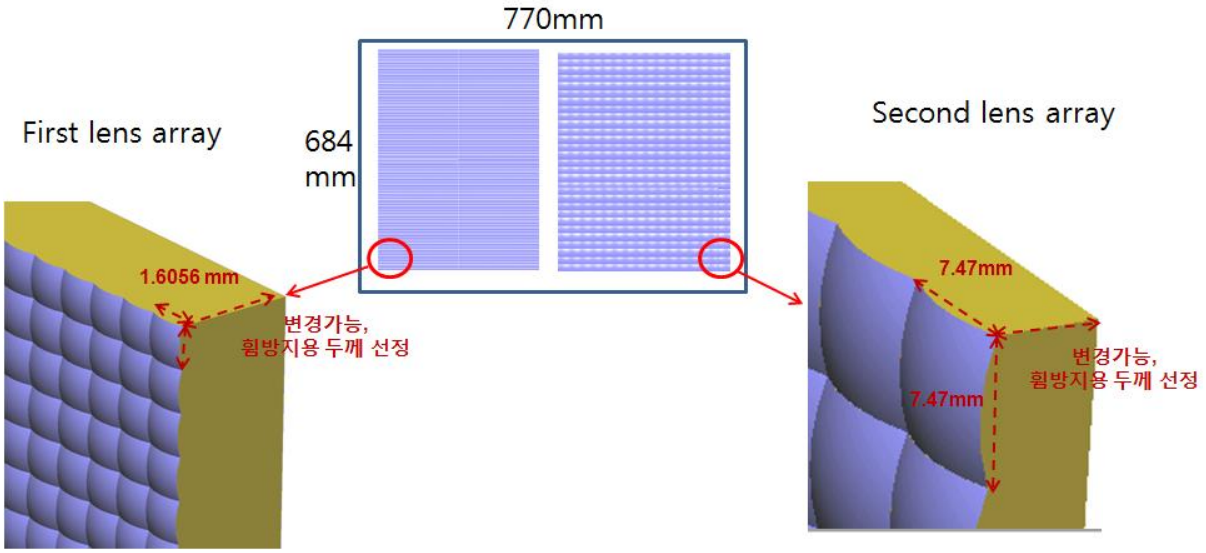
lbg@dongseo.ac.kr
http://kowon.dongseo.ac.kr/~lbg/

Real 3D Display System



2012 지식경제부 및 한국산업기술평가관리원 KEIT의 산업융합원천기술개발사업(정보통신) , 미래창조과학부 및 정보통신기술진흥센터 IITP의 정보통신미디어산업원천기술개발사업 - 집적영상(IP) 깊이 표현 범위를 개선한 고선명 3D 영상 처리 기술

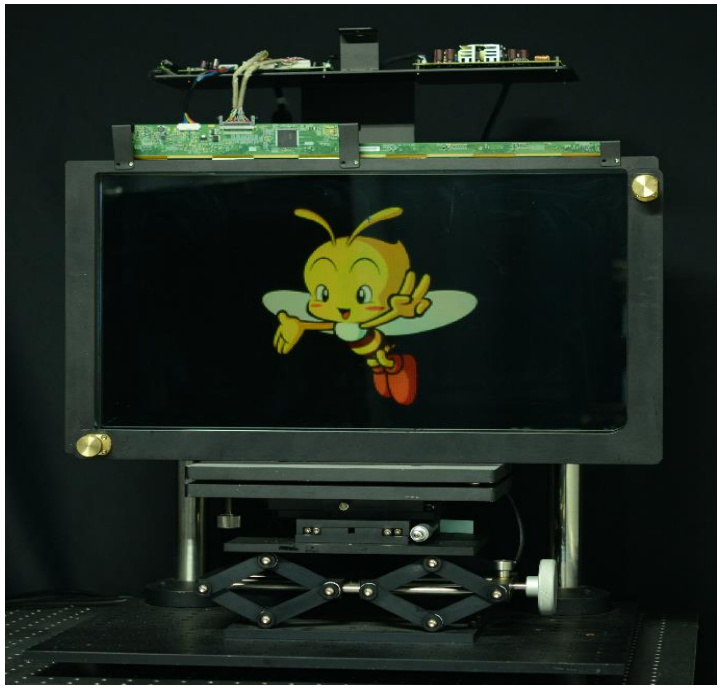
Lens Array

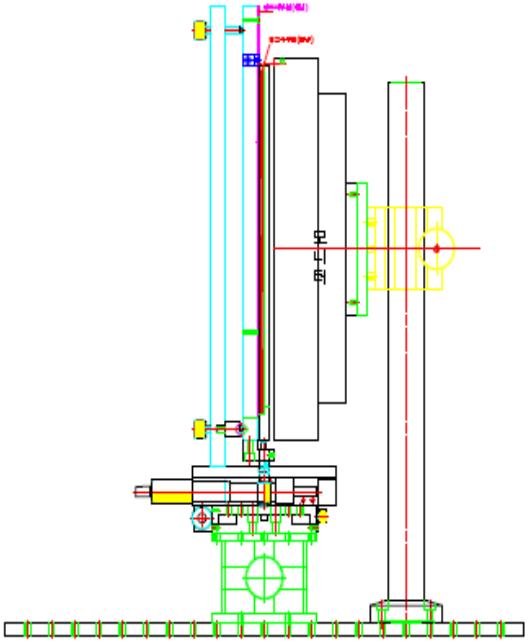


- Display Device : Barco3420
- Resolution 2048 x 1536
- Pixel Size : 0.207 mm
- Dimension : 684mm x 385.3440 mm
- Number of Lens Array : 426x240
- Focal Length : 8.028 mm
- Radius : 1.6056 mm

- Display Device : IBM t221
- Resolution : 3840 x 2400
- Pixel Size : 0.1245 mm
- Dimension : 679.77 x 380.97 mm
- Number of Lens Array : 91x51
- Focal Length : 29.88mm
- Radius : 7.47 mm

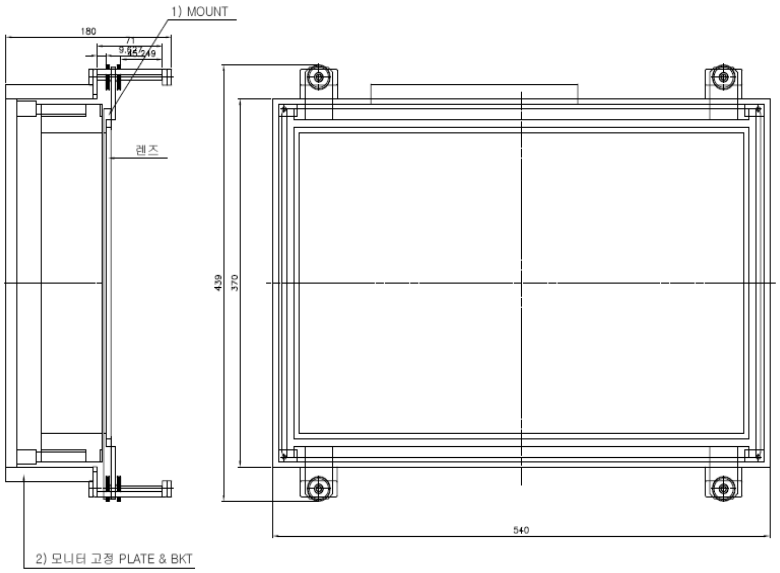
DPII 3D Display System



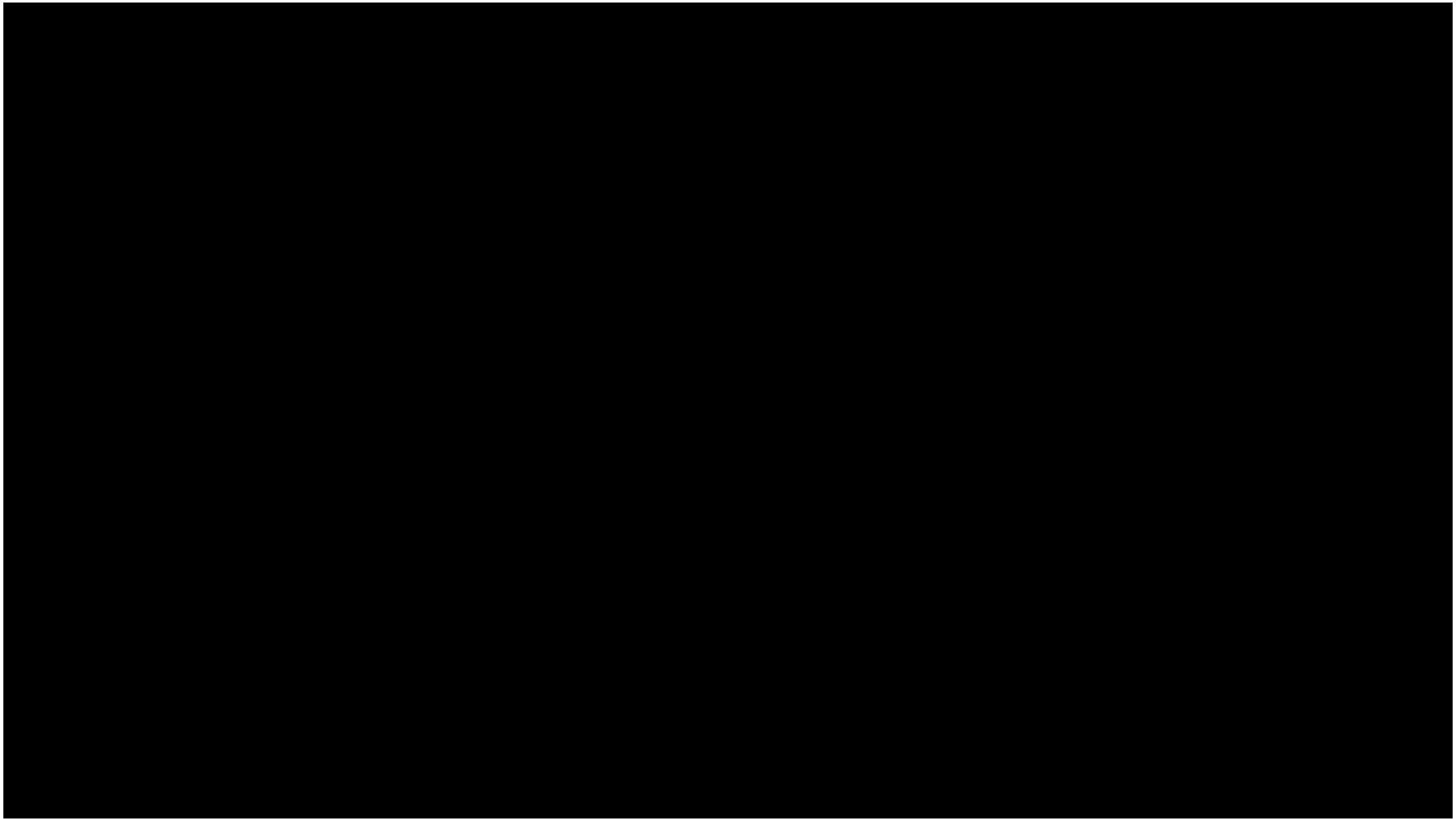


- Time Multiplexing Display Device Panel BenQ XL-2411T 24” 1920x1080 pixel pitch 0.276 mm
- Lens array 330x186 24" focal length 8.028 mm radius 1.6056 mm
- DPII System : Viewing Angle 1.974 Depth Range 50 cm

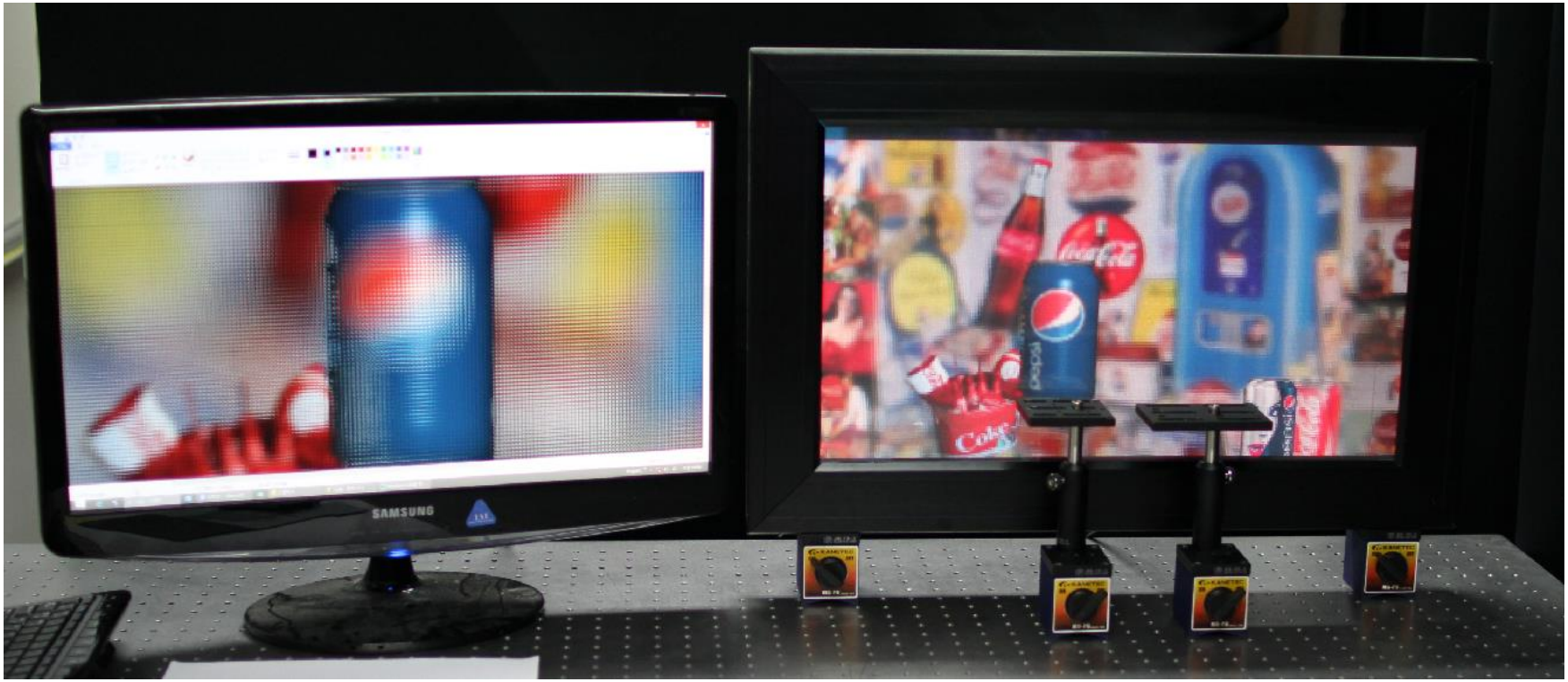
RPII 3D Display System



- IBM T221 22" 3840x2400 Pixel Pitch 0.1245 mm
- Lens Array 69x39 22” Focal Length 29.88 mm Radius 7.47 mm



DPII 3D Display System



- Display Panel : Dell UP2414Q 24” 3840x2160 Pixel Pitch 0.137mm
- Lens Array 330x186 24” Focal Length 8.028 mm Radius 1.6056mm

Eye Tracking with Kinect Calibration

This work was supported by the IT R&D program of MKE/KEIT. [10041682, Development of high-definition 3D image processing technologies using advanced integral imaging with improved depth range]
본 연구는 지식경제부 및 한국산업기술평가관리원의 산업융합원천기술 개발사업(정보통신)의 일환으로 수행하였음. [10041682, 집적영상(IP) 깊이 표현 범위를 개선한 고선명 3D 영상 처리 기술]

- 정부출연금 : 8억/년
- 대학 현금대응 : 0.5억/년
- 기업 현금대응 : 0.5억/년

총 연구재원 : 11.5억/년

IP 기반의 고선명 실시간 3D 영상 디스플레이 시스템 핵심 원천기술 개발 및 시제품 제작

- 50”급 해상도우선 IP 기반의 고선명 3D display 시스템
- 30”급 깊이우선 IP 기반의 고선명 3D display 시스템
- IP용 실시간급 3D content 생성 알고리즘 및 핵심 신호처리 기술
- 다중광선 공간 매칭 원리를 통한 단일 렌즈어레이 최적 설계 알고리즘

- Univ. of Connecticut, USA
- Univ. of Valencia, Spain
- Kobe University, Japan
- Jilin University, China
- INI Graphics Center, Germany
- Tyloo 3D Lte. China
- Titius-Justus Lte, USA

- 서울대학교
- 이화여자대학교
- 상명대학교
- 계명대학교
- 부경대학교

(1) 산학연컨소시엄 (2) 국제협력연구 인프라
(3) 전문인력초빙 (4) 혁신적 신기술 개발
(5) 핵심부품 및 시스템화 (6) 우수연구인력 양성

- LG 전자
- 삼성전자
- 넷웨이브
- 프라이스머스코즈
- 인펙비전
- 오션락
- 굿지앤글러벌
- 부와진

- KIST
- ETRI
- 입체영상 문화기술 공동연구센터
- 디지털콘텐츠센터

동서대학교 | 광운대학교 | ㈜씨케이그루브 | 세종대학교

최종성과	국내특허 (출원/등록)	국제특허 (출원/등록)	시제품	S/W 등록 앱개발	SCI 논문	기술이전	성과홍보	인력채용
	18 건/10 건	6건/2 건	4 건	6 건	15 편	1 건	3 건	7 명

2012년
산업융합원천사업(정보통신)
신규평가 백서

2012. 9.

정보통신산업평가단
KEIT 한국산업기술평가관리원
Korea Evaluation Institute of Industrial Technology

사업목적
국가 성장전략에 기반한 전략기술 분야의 핵심. 원천기술개발에 대한 집중 지원을 통해 미래 신산업을 육성하고 세계 최고 수준의 정보통신 원천기술을 확보하여 미래 신성장 동력을 창출

지원대상 분야
산업융합원천기술(신산업, 정보통신산업) 분야 중 향후 10년 이내에 기술적 파급효과가 크고 산업 기술 경쟁력을 획기적으로 제고 할 수 있는 부가가치가 높은 핵심기술, 원천기술 및 엔지니어링 기술

II. 신규과제 접수 현황 및 분석

접수 현황

○ 유효접수 과제수 : 144개(공고과제수 66개)

○ 과제유형별 경쟁률

- 일반형 과제는 2.3:1, 통합형 과제는 1:1, 병렬형 과제는 5:1

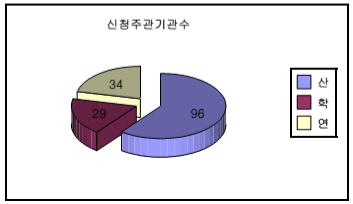
분야	유형	일반형	일반·통합	통합형	병렬형	합계
정보통신	공고과제수	60	-	5	1	**66**
	접수과제수	134	-	5	5	**144**
	12년 경쟁률	2.23:1	-	1:1	5:1	**2.18:1**
	11년 경쟁률	-	-	-	-	**2.17:1**
신산업	공고과제수	28	4	-	1	**33**
	접수과제수	78	11	-	4	**93**
	12년 경쟁률	2.78:1	2.75:1	-	4:1	**2.82:1**
	11년 경쟁률	-	-	-	-	**2.18:1**

접수 현황 분석

○ 학계/연구계의 지원과제수는 '11년 대비 변동이 없으나, 산업체의 지원과제 수는 '11년 49개에서 96개로 51%p 증가하였음

- 이는 지식경제부의 2단계 R&D혁신제도(기업체 주관과제 신설)를 반영한 과제기획과 프로세스 개선(정보교류회 개최) 및 공고기간 확대(30일→70일)의 효과가 반영된 것으로 판단됨

구분	2012년 신청주관기관수	2012년 비율(%)	2011년 신청주관기관수	2011년 비율(%)
산	96	60.4	49	42.6
학	29	18.2	32	27.8
연	34	21.4	34	29.6
소계	159	100	115	100



III. 신규과제 평가 현황 및 분석

☐ 신규평가 결과

○ 사전검토

- 총 66개 공모과제에 대한 144 신청기관의 사전검토 결과 신청기관 사전지원제외 대상 없음

※ 신청주관기관수는 일반/총괄 기준임(일반/총괄/세부과제 기준 159건)

○ 평가위원회 평가

- 총 66개 지정공모 과제 중 61개 과제, 70개 사업자 선정
- 5개 과제 미선정 : 점수미달(60점미만) 5개

☐ 선정지역 분석

○ 서울·경기·인천 지역의 선정주관기관수가 '11년 대비 17.1%p 증가한 47개로 전체 선정주관기관수의 67.1%에 달함

○ 대전·충청 지역의 선정주관기관수는 '11년 대비 14.7%p 감소한 18개로 전체 선정주관기관수의 25.7%임

○ 영·호남 지역의 선정주관기관수는 '11년 1개, '12년 3개로 전체 선정기관수의 4.3% 이내로 미비함

○ 충북·전남지역은 각 1곳 신청했으나, 미선정됨

연도	지역	서울	경기	인천	대전	충남	충북	광주	전남	전북	대구	부산	경남	경북	합계
2012년	신청주관기관수	78	40	3	25	2	1	4	1	-	2	2	1	-	159
	선정주관기관수	29	16	2	16	2	-	2	-	-	1	1	1	-	70
	비율	41.3	22.9	2.9	22.9	2.9	-	2.9	-	-	1.4	1.4	1.4	-	100
2011년	신청주관기관수	37	30	5	26	3	2	7	-	2	-	2	-	1	115
	선정주관기관수	17	8	1	19	1	1	3	-	1	-	-	-	1	52
	비율	32.7	15.4	2.0	36.5	1.9	1.9	5.8	-	1.9	-	-	-	1.9	100

Computer Graphics, Image Processing and Computer Vision Research Group — CGIV

CGIV Members

Professor
byung-gook lee, joon-jae lee, hwang-kyu yang, suk-ho lee, tae-gyoung yoo

Ph.D. Students : nam-seok choi

M.S. Students : jeong-seok moon, ki-young sung, sung-jin kim, rishu gupta, gi-bong kim, jong-duk son, jong-pil yoon, wang feiyan, liu peng xin, wang ping, han cheng si

B.S. Students : jae hyuk yeon, myung-soo kim, ho-hwan shin, nam-yong jeon, min-sun park, ji-young moon, kyung-min lee, tae-ryang hwang, joon-hyung hong, kwan-ho kim, min-girl kum

Internship Students ▼(More...)

Alumni ▼(More...)

NOTICE Board

Schedule, Conference 2008, 2009

N CGIV Seminar Nov 11 T...	2010.11.09
CGIV Seminar Nov 04 Thu....	2010.11.02
CGIV Seminar Oct 28 Thu....	2010.10.28
게시판 글 수정시 패스워드 ...	2010.10.26
CGIV Seminar Mar 18 Thu....	2010.03.15
CGIV Seminar Mar 11 Thu....	2010.03.10
CGIV Seminar Nov 11 Wed...	2009.11.11
CGIV Seminar Nov 04 Wed...	2009.11.04
CGIV Seminar Sep 30 Wed...	2009.09.30
CGIV Seminar Sep 23 Wed...	2009.09.23

CGIV Projects

- The Second BK21 : Advanced Technology for Visual Contents Production (06.03~13.02)
- NRF10 : Digital Image Processing and Synthesis for Clear Vision (10.05~13.04)
- SMBA10 : 2D영상의 3D 입체 영상 변환에 최적화된 멀티 레이어 생성 및 보정 솔루션 개발 with AZWorks (10.06~12.05)
- IAI : Institute of Ambient Intelligence - Aml assisted Maritime Ecomonitoring System (08.04~11.03)
- NRF09 : Korea-EU Co-operation Research Project Planning for Aml assisted Maritime Eco-Monitoring System (09.12~10.11) ▼(More...)

RESEARCH Fields

- Eco Monitoring : jeong-gyu hwang,jeong-seok moonsun-hye cho
- Super Resolution : dong-jin kim
- Background Modeling : nam-seok choi,tingting li
- Motion Estimation : tae-kyung ryu
- 3D Hand Tracking : nam-seok choi
- USB Camera Hand Tracking : sung-il han
- Automatic Photo Popup : ki-young sung
- Wafer Calibration : jung-woo lee
- Multi Touch Screen : nam-seok choi
- ARToolkit : dong-jin kim,eun-kyung jung
- DIT Conversions : hyo-sung myung
- Processing : ki-young sung
- PTZ Camera Control : ki-young sung
- ActionScript 3.0 : jeong-seok moon, sung-jin kim
- Polygonal Simplification : nam-woo kim
- FPD Mura Detection :
- Etc : nam-seok choi
- 3D Deformation : nam-seok choi,tingting li
- Integral Image : dong-hak shin,

CGIV Workshop

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17			
18	19	20	21	22	23	24			

BK21 Fostering A World Class Talent

IAI 엠비언트 인텔리전스 연구소 Institute of Ambient Intelligence

NRF 한국연구재단

중소기업청 Small & Medium Business Administration

UNIVERSITAS KRISTEN PETRA A CARING AND GLOBAL UNIVERSITY

上海工程技术大学 Shanghai University of Engineering Science

UTAR

THE UNIVERSITY OF TOKYO

THE HONG KONG POLYTECHNIC UNIVERSITY

Korea Mathematical Methods for Curves and Surfaces Dongseo 2007 Level Set and Its Applications

July 4~6, 2007, Dongseo Univ., u-IT관 702호, Busan, Korea
Dongseo Univ. supported by
KOSEF : 3D Range Image Processing and Semiconductor Package Inspection Based on Optimal Approximation Functions,
KOTEF07 : Multi-User Interaction Technology for Ubiquitous Smart Space.

Korea Mathematical Methods for Curves and Surfaces Ewha 2006

August 25~26, 2006, Ewha Univ., 이화-신세계관 (map) 213호, Seoul, Korea
with financial support from Ewha Univ. 수리과학연구소
Dongseo Univ. KOTEF06:유비쿼터스 스마트 공간 개발을 위한 멀티유저 인터랙션 기술 개발
*이화-신세계관은 map에서 삼성교육문화관 앞 건물

Schedule(tentat

July 4. Se
- 09:00-12:
- 14:00-16:

July 5. Se
- 14:00-16:
- 16:00-17:

July 6. Se
- 10:00-12:
- 14:00-16:
- 16:00-18:
- 18:00-20:

Program(ten

Augus
- 14:00- Ewha U
- 14:30- Dongs
- 15:00- Chosu
- 15:30-
- 16:00- Hoon Y
- 16:30- Dongs
- 18:00-

Augus
- 09:00- Univ.
- 09:30- Wavel
- 10:00-

Korea Mathematical Methods for Curves and Surfaces Dongseo 2006

January 9~11, 2006, Dongseo Univ. Graduate School of Software,
u-IT 6th floor, International Conference Room, 702, Korea
supported by Information Center for Mathematical Sciences, KAIST

Internatioal Workshps Organizing Committee :
Byung-Gook Lee, Joon-Jae Lee, KwanPyo Ko, Dongseo Univ.
Jungho Yoon, Ewha W. Univ.
Jaechil Yoo, Dongeui Univ.
Choi, U Jin, KAIST.

Gangahn Bridge, Busan, Korea

Program(tentative):

January 9 Section 1 : u-IT 6th floor : ByungGook Lee
- 10:00-10:50 Tutorial-Subdivision:from Stationary to Non-stationary scheme, Jungho Yoon, Ewha Univ.
- 11:10-12:00 Invited-Nonuniform and local variational subdivision, Scott N. Kersey, Georgia Southern Univ.
- 12:00-14:00 break
- 14:00-14:50 Invited-Bivariate orthogonal polynomials on triangular domains, Abedallah Rababah, Jordan Univ.
- 15:10-16:00 Invited-Fast Multipole Method for Global Illumination, Sharat Chandran, Indian Institute of Technology-Bombay.
- 18:00-20:00 reception : 대도 buffet

January 10 Section 2 : u-IT 702 : Jungho Yoon
- 10:00-10:50 Tutorial-Subdivision Zoo, KwanPyo Ko, Dongseo Univ.
- 11:00-11:30 Introduction to Lifting Scheme, yoo hoon, Dongseo Univ.
- 11:30-12:00 Wavelets, Sangsu Park, Ewha Univ.
- 12:00-14:00 break
- 14:00-15:00 New Year's Concert

Korea Mathematical Methods for Curves and Surfaces Dongseo 2005

June 23~25, 2005, Dongseo Univ. Graduate School of Software, Design Hall, Korea

The figures a
Biomedical Ir

June 2
- 09:00-
- 13:00-
- 14:30-
- 16:00-

June 2
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- 11:00-
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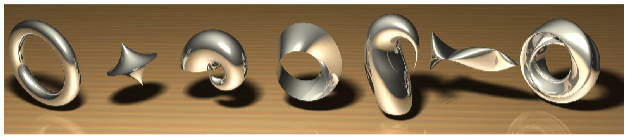
- 16:20- Univ.

June 2
- 09:00-
- 13:00- Dongse

Korea Mathematical Methods for Curves and Surfaces Dongseo 2005

February 3~6, 2005, Dongseo Univ. Graduate School of Software, Design Hall, Korea
with support from Dongseo Univ.



The figures are from the Exact Reconstruction of Arbitrary Surfaces by Interpolatory Subdivision,

Febru
- 14:00
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Febru
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- 10:30 Univ.
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- 16:30

Febru
- 10:00

List of Parti
Dongseo Un
Ewha Univ.
Konkuk Univ
Kyungwon U
Sogang Univ
Dongeui Uni
KIAS : sung

Korea Mathematical Methods for Curves and Surfaces Dongseo 2004

August 9~13, 2004, Dongseo Univ. Graduate School of Software, Design Hall, Korea

August 9
- 10:00-12:00 Polygonal Simplification Methods, byung gook lee, Dongseo Univ.
- 14:00-16:00 D-D:10 years after, jungho yoon, Ewha Univ.
- 16:00-18:00 Error estimates for the web-spline method, chang-ho kim, Konkuk Univ.

August 10
- 10:00-11:00 Polynomial generation and quasi-interpolation in stationary non-uniform subdivision, yeon ju lee, Ewha Univ.
- 11:00-12:00 Analysis of non-uniform subdivision scheme, sung-woo choi, KIAS
- 14:00-16:00 Point-wise convergence of polynomials, gang jun yoon, KAIST
- 16:00-18:00 LCD Blemish Detection, joon jae lee, Dongseo Univ.

August 12
- 10:00-12:00 Analysis of non-uniform subdivision scheme, sung-woo choi, KIAS
- 14:00-17:00 Web-spline methods, jaechil yoo, Dongeui Univ.

August 13
- 10:00-12:00 Multilevel B-spline approximation, byung gook lee, Dongseo Univ.
- 14:00-17:00 Polynomial Fitting for Edge Detection in Irregularly Samples Signals and Images, jungho yoon, Ewha Univ.