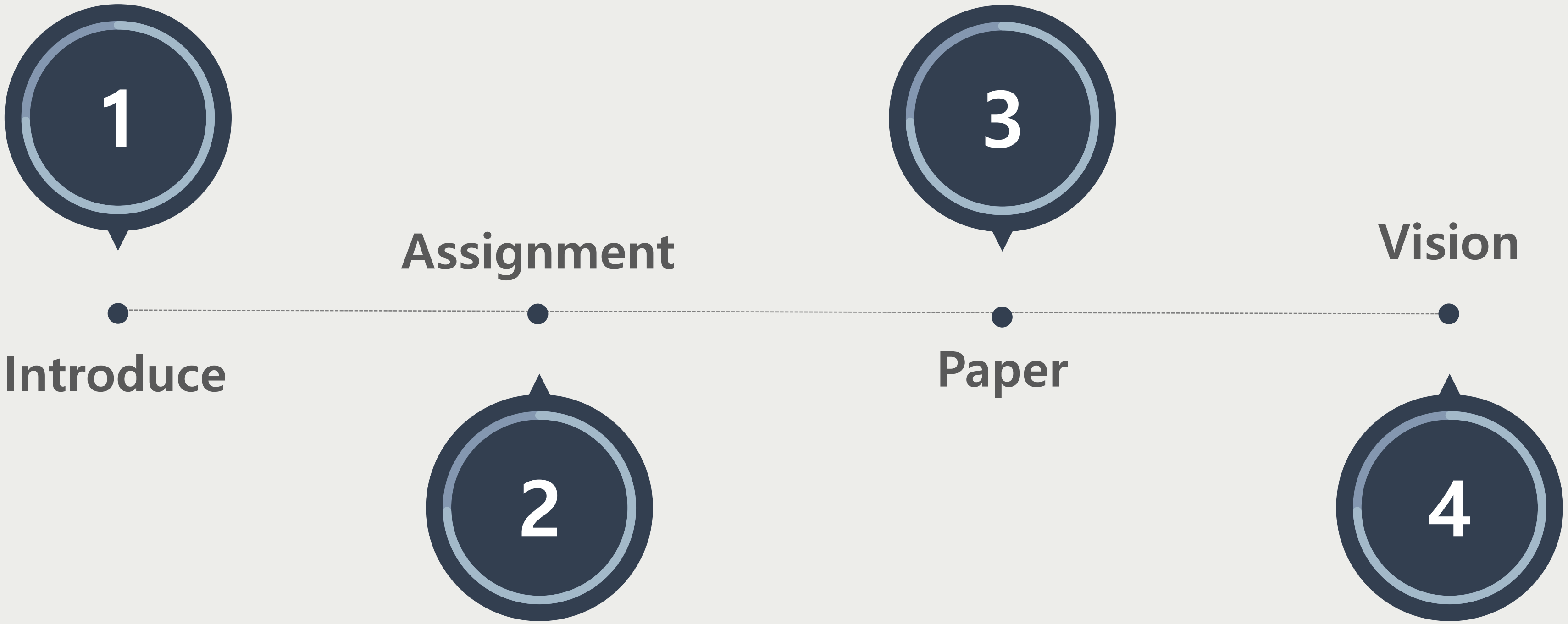
Shin Joo Yeon

2016. 03 ~ 2020. 02

Contexts



1 Introduce

2 Assignment

3 Paper

4 Vision

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Programming Language

- C, C++, Java, Python, JavaScript, CUDA C, Assembly, R

Education

- Ajou University
- Digital Media
- Software and Computer Engineering

Program

OpenGL OpenCV OpenVG

android Firebase aws TensorFlow

node js mongoose Vue.js RaspberryPi

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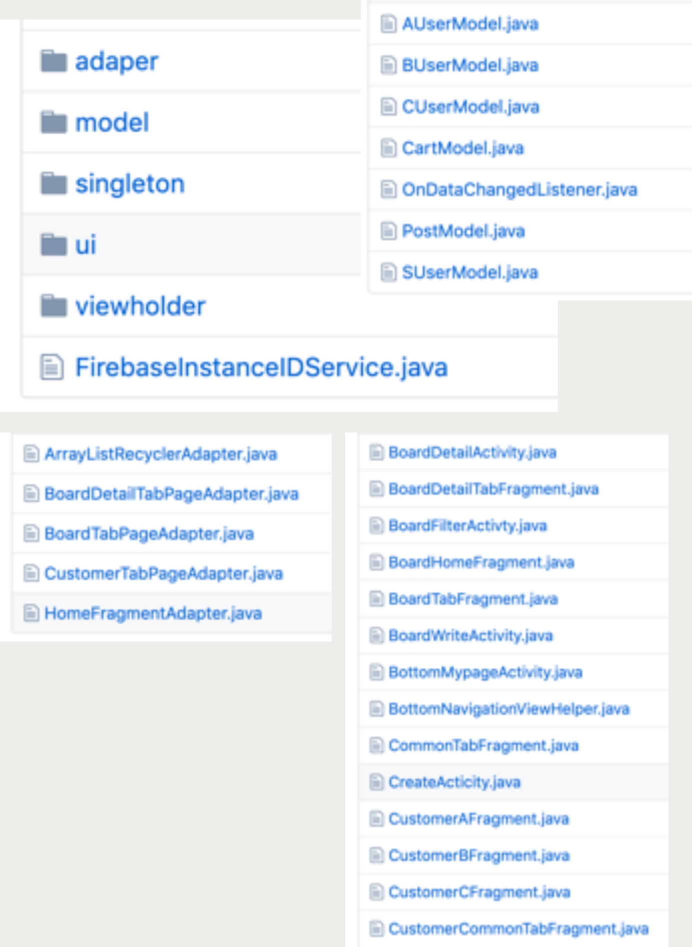
Distributor App

- Firebase
- MVC Design pattern

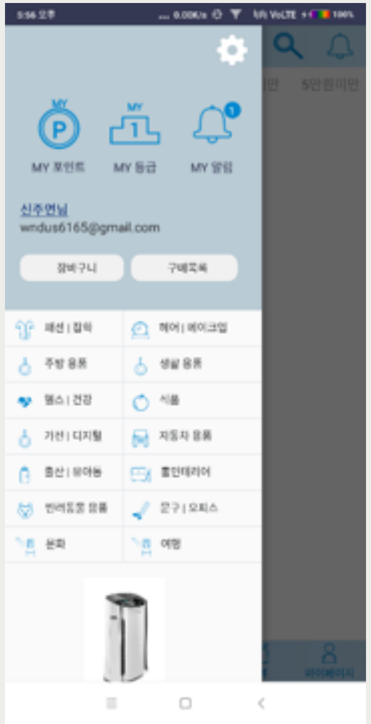


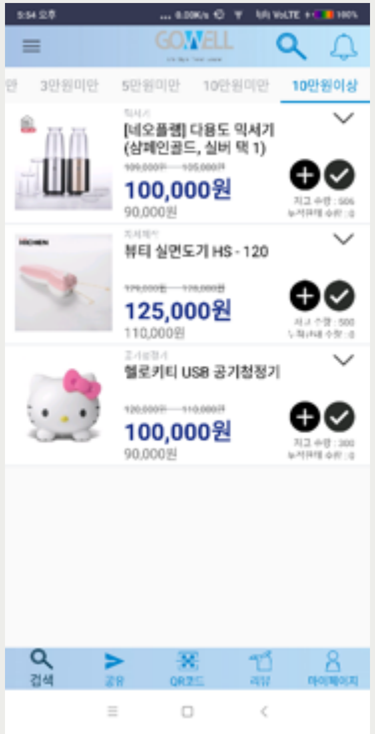
adaper
model
singleton
ui
viewholder
FirebaseInstanceIDService.java

AUserModel.java
BUserModel.java
CUserModel.java
CartModel.java
OnDataChangedListener.java
PostModel.java
SUserModel.java

ArrayListRecyclerAdapter.java
BoardDetailTabPageAdapter.java
BoardTabPageAdapter.java
CustomerTabPageAdapter.java
HomeFragmentAdapter.java

BoardDetailActivity.java
BoardDetailTabFragment.java
BoardFilterActivty.java
BoardHomeFragment.java
BoardTabFragment.java
BoardWriteActivity.java
BottomMypageActivity.java
BottomNavigationViewHelper.java
CommonTabFragment.java
CreateActicity.java
CustomerAFragment.java
CustomerBFragment.java
CustomerCFragment.java
CustomerCommonTabFragment.java

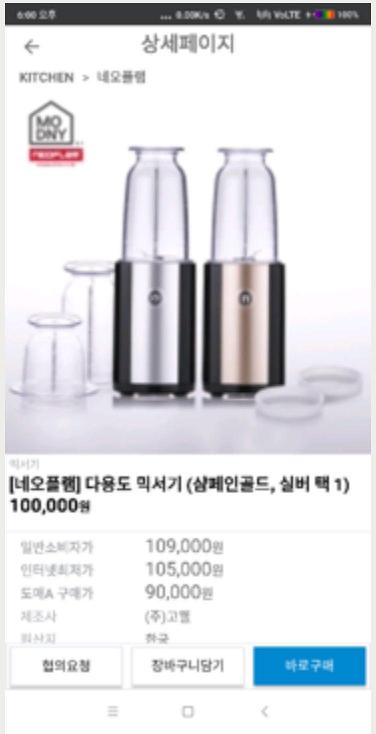




[네오플램] 다용도 믹서기 (샴페인골드, 실버 택 1)
100,000원
90,000원

뷰티 실면도기 HS - 120
125,000원
110,000원

헬로키티 USB 공기청정기
100,000원
90,000원



[네오플램] 다용도 믹서기 (샴페인골드, 실버 택 1)
100,000원

일반소비자가	109,000원
인터넷최저가	105,000원
도매A 구매가	90,000원
제조사	(주)고웰
원산지	한국

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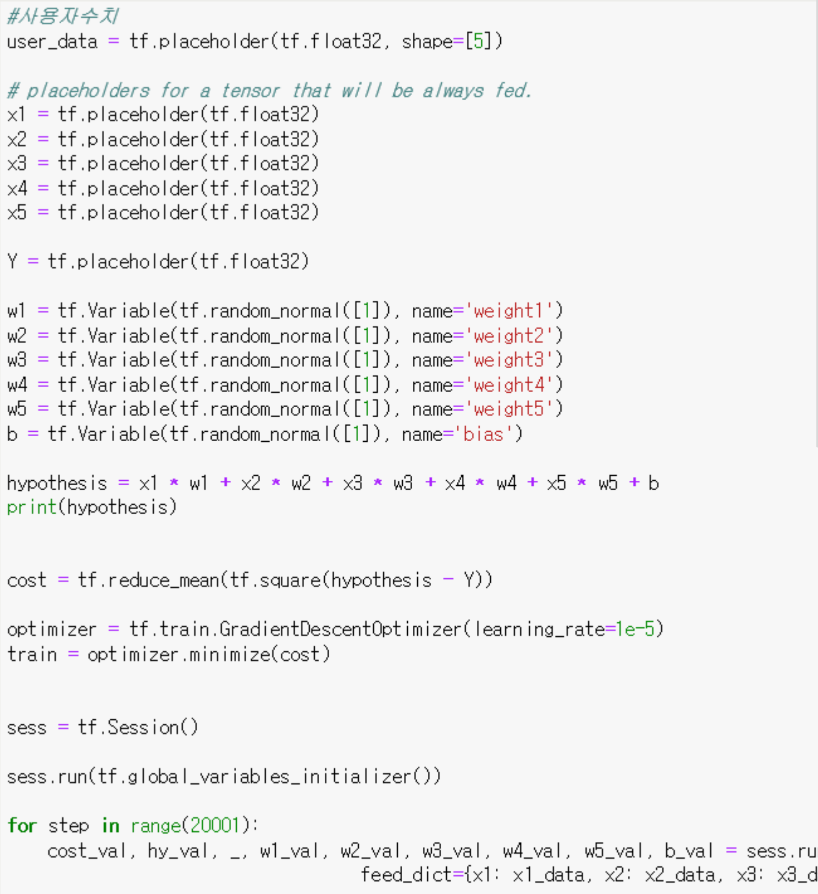
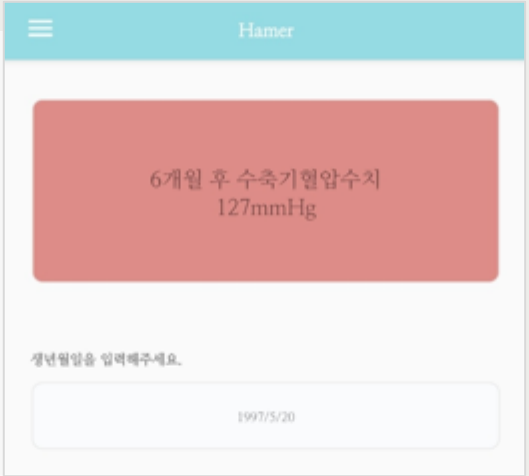
Blood Pressure Prediction App

- Android & TensorFlow lite
- Bluetooth communication with Raspberry Pi
- Crawling



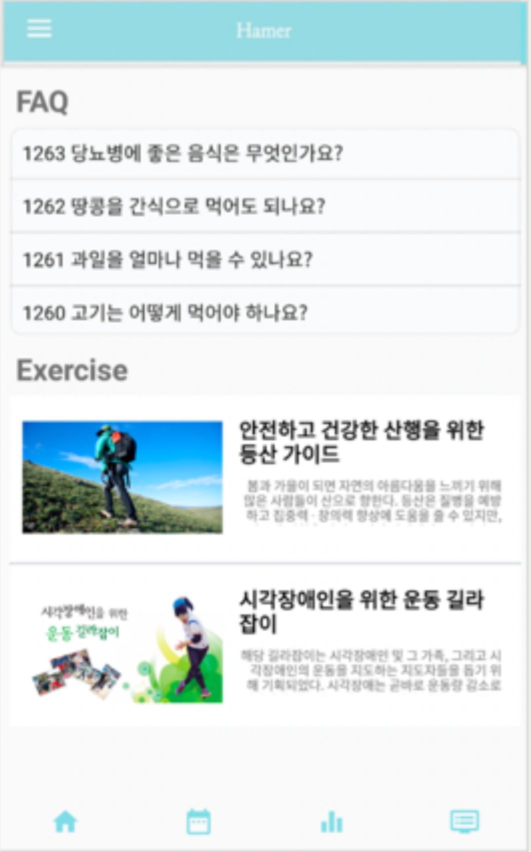
```
#사용자수치
user_data = tf.placeholder(tf.float32, shape=[5])

# placeholders for a tensor that will be always fed.
x1 = tf.placeholder(tf.float32)
x2 = tf.placeholder(tf.float32)
x3 = tf.placeholder(tf.float32)
x4 = tf.placeholder(tf.float32)
x5 = tf.placeholder(tf.float32)

Y = tf.placeholder(tf.float32)

w1 = tf.Variable(tf.random_normal([1]), name='weight1')
w2 = tf.Variable(tf.random_normal([1]), name='weight2')
w3 = tf.Variable(tf.random_normal([1]), name='weight3')
w4 = tf.Variable(tf.random_normal([1]), name='weight4')
w5 = tf.Variable(tf.random_normal([1]), name='weight5')
b = tf.Variable(tf.random_normal([1]), name='bias')

hypothesis = x1 * w1 + x2 * w2 + x3 * w3 + x4 * w4 + x5 * w5 + b
print(hypothesis)


cost = tf.reduce_mean(tf.square(hypothesis - Y))

optimizer = tf.train.GradientDescentOptimizer(learning_rate=1e-5)
train = optimizer.minimize(cost)


sess = tf.Session()

sess.run(tf.global_variables_initializer())

for step in range(20001):
    cost_val, hy_val, _, w1_val, w2_val, w3_val, w4_val, w5_val, b_val = sess.run([cost, hypothesis, train, w1, w2, w3, w4, w5, b],
                                                 feed_dict={x1: x1_data, x2: x2_data, x3: x3_data, x4: x4_data, x5: x5_data, Y: y_data})
```



6개월 후 수축기혈압수치
127mmHg

생년월일을 입력해주세요.

1997/5/20



FAQ

1263 당뇨병에 좋은 음식은 무엇인가요?

1262 땅콩을 간식으로 먹어도 되나요?

1261 과일을 얼마나 먹을 수 있나요?

1260 고기는 어떻게 먹어야 하나요?

Exercise

안전하고 건강한 산행을 위한 등산 가이드

봄과 가을이 되면 자연의 아름다움을 느끼기 위해 많은 사람들이 산으로 향한다. 등산은 질병을 예방하고 집중력 · 창의력 향상에 도움을 줄 수 있지만,

시각장애인을 위한 운동 길라잡이

해당 길라잡이는 시각장애인 및 그 가족, 그리고 시각장애인의 운동을 지도하는 지도자들을 돕기 위해 기획되었다. 시각장애는 곧바로 운동량 감소로

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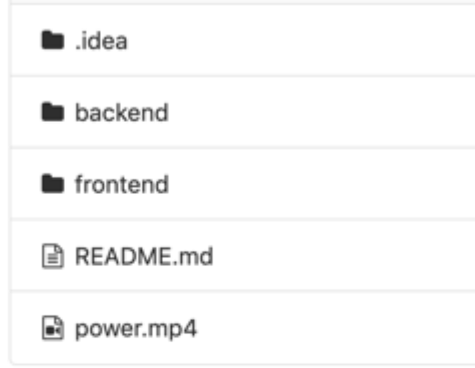
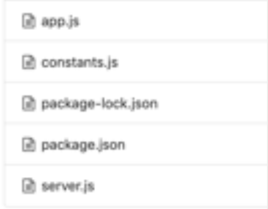
Video Streaming Web

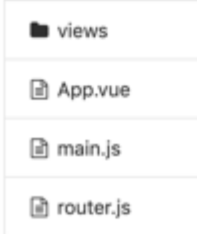
- HTML
- Vue framework
- Mongoose
- Grid FS



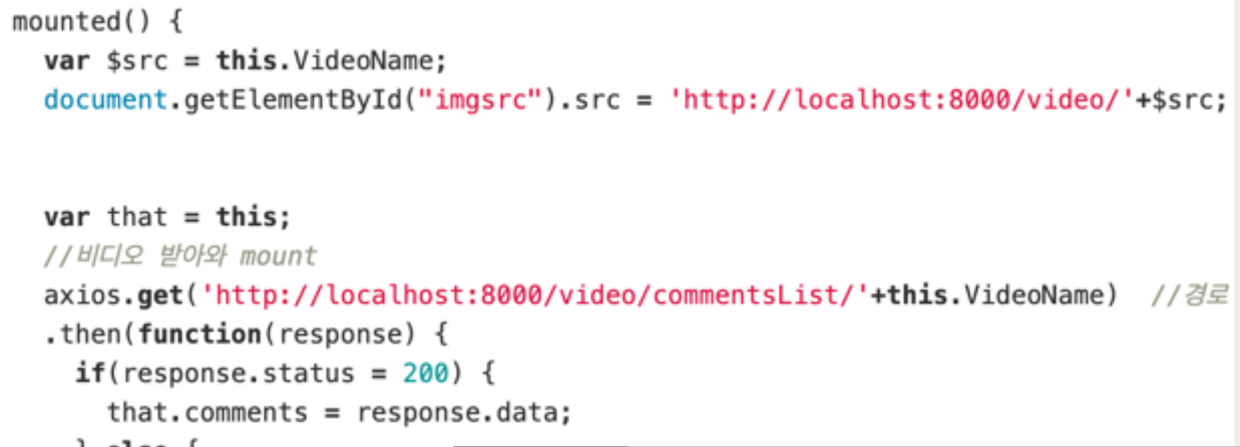
```
.idea
backend
frontend
README.md
power.mp4
```



```
app.js
constants.js
package-lock.json
package.json
server.js
```

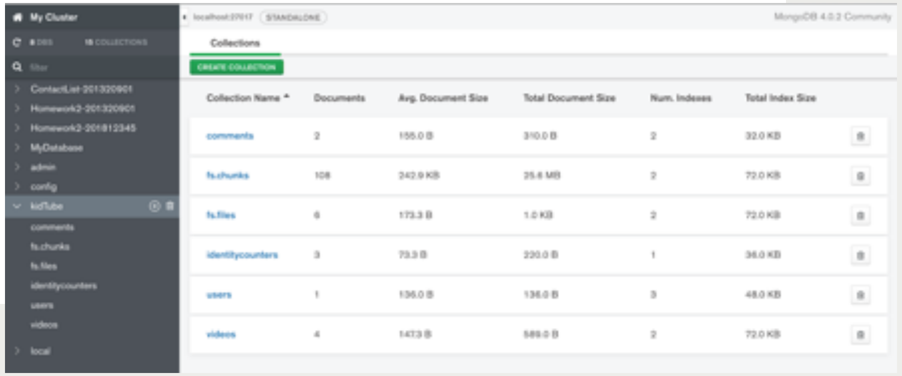


```
views
App.vue
main.js
router.js
```



```
mounted() {
  var $src = this.VideoName;
  document.getElementById("imgsrc").src = 'http://localhost:8000/video/'+$src;


  var that = this;
  //비디오 받아와 mount
  axios.get('http://localhost:8000/video/commentsList/'+this.VideoName)  //경로
  .then(function(response) {
    if(response.status = 200) {
      that.comments = response.data;
    } else {
      console.log('error');
    }
  })
  .catch(function(error) {
    console.log(error);
  })
},
```



Collection Name ^	Documents	Avg. Document Size	Total Document Size	Num. Indexes	Total Index Size
comments	2	155.0 B	310.0 B	2	32.0 KB
fs.chunks	108	242.9 KB	25.6 MB	2	72.0 KB
fs.files	6	173.3 B	1.0 KB	2	72.0 KB
identitycounters	3	73.3 B	220.0 B	1	36.0 KB
users	1	136.0 B	136.0 B	3	48.0 KB
videos	4	147.3 B	589.0 B	2	72.0 KB

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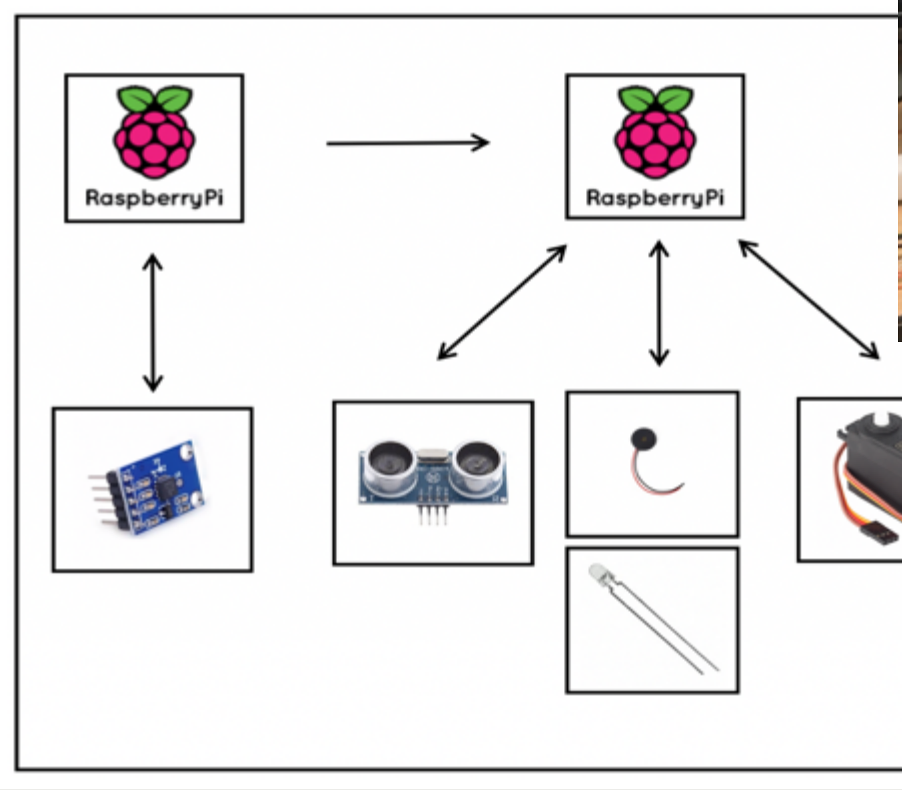
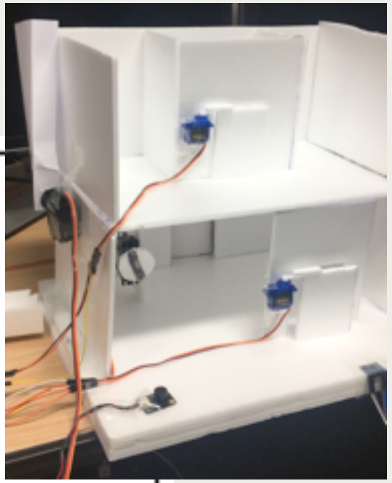
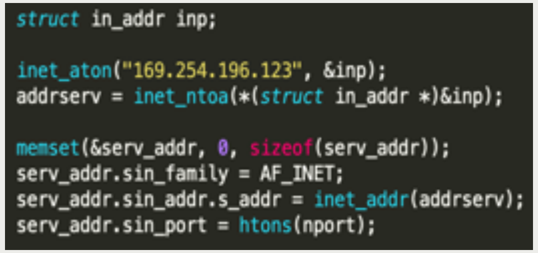
Earthquake detection system

- Linux
- Device driver
- Socket Communication



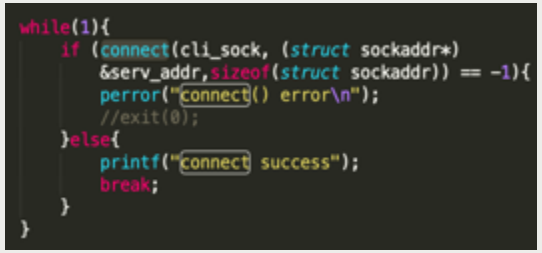




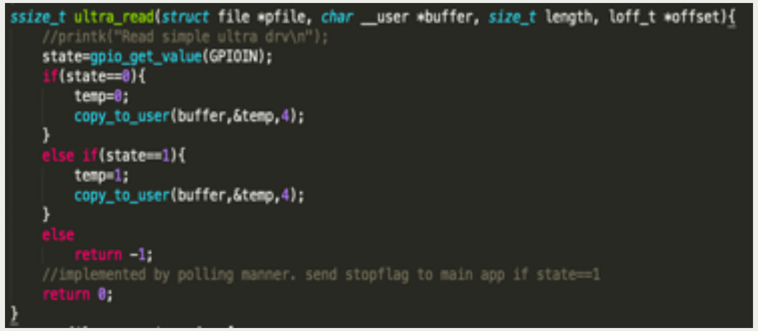
```
struct in_addr inp;

inet_aton("169.254.196.123", &inp);
addrserv = inet_ntoa(*(struct in_addr *)&inp);

memset(&serv_addr, 0, sizeof(serv_addr));
serv_addr.sin_family = AF_INET;
serv_addr.sin_addr.s_addr = inet_addr(addrserv);
serv_addr.sin_port = htons(nport);
```



```
while(1){
    if (connect(cli_sock, (struct sockaddr*)
        &serv_addr,sizeof(struct sockaddr)) == -1){
        perror("connect() error\n");
        //exit(0);
    }else{
        printf("connect success");
        break;
    }
}
```



```
ssize_t ultra_read(struct file *pfile, char __user *buffer, size_t length, loff_t *offset){
    //printk("Read simple ultra drv\n");
    state=gpio_get_value(GPIOIN);
    if(state==0){
        temp=0;
        copy_to_user(buffer,&temp,4);
    }
    else if(state==1){
        temp=1;
        copy_to_user(buffer,&temp,4);
    }
    else
        return -1;
    //implemented by polling manner. send stopflag to main app if state==1
    return 0;
}
```

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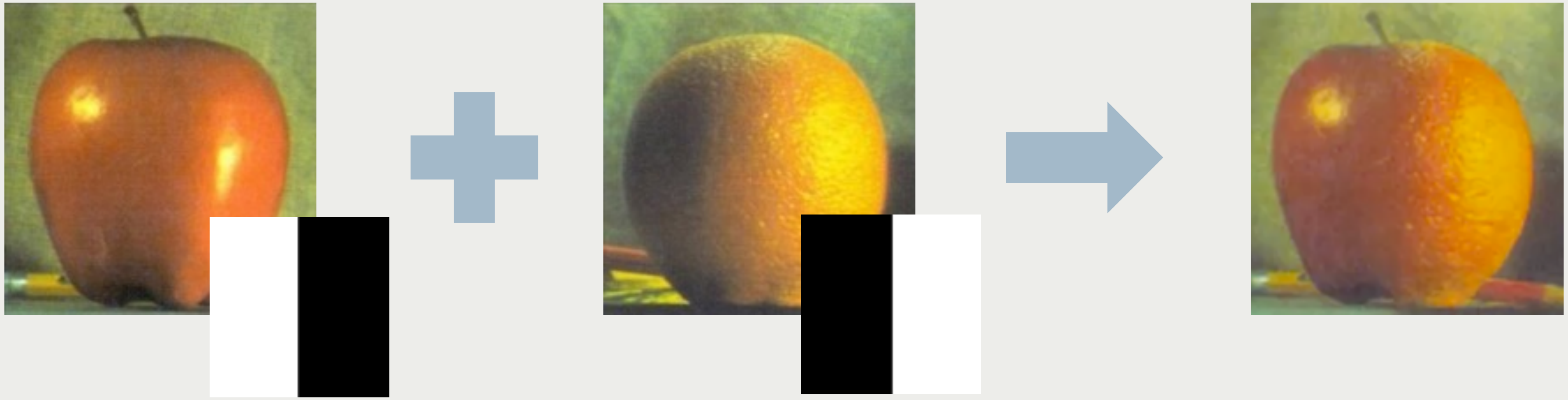
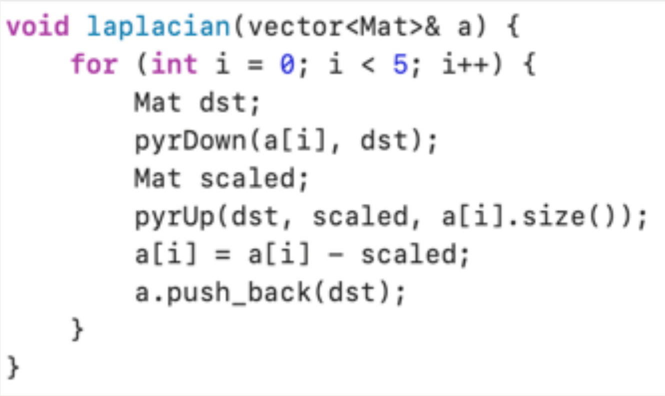
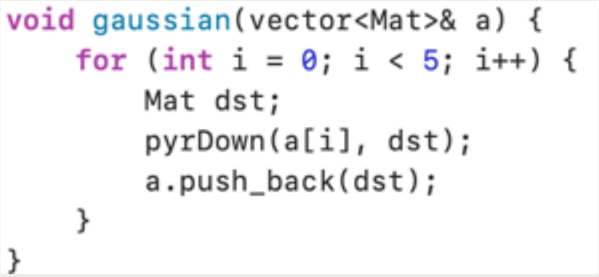
Laplacian Image Fusion

- Multi-band blending





```
void laplacian(vector<Mat>& a) {
    for (int i = 0; i < 5; i++) {
        Mat dst;
        pyrDown(a[i], dst);
        Mat scaled;
        pyrUp(dst, scaled, a[i].size());
        a[i] = a[i] - scaled;
        a.push_back(dst);
    }
}
```



```
void gaussian(vector<Mat>& a) {
    for (int i = 0; i < 5; i++) {
        Mat dst;
        pyrDown(a[i], dst);
        a.push_back(dst);
    }
}
```

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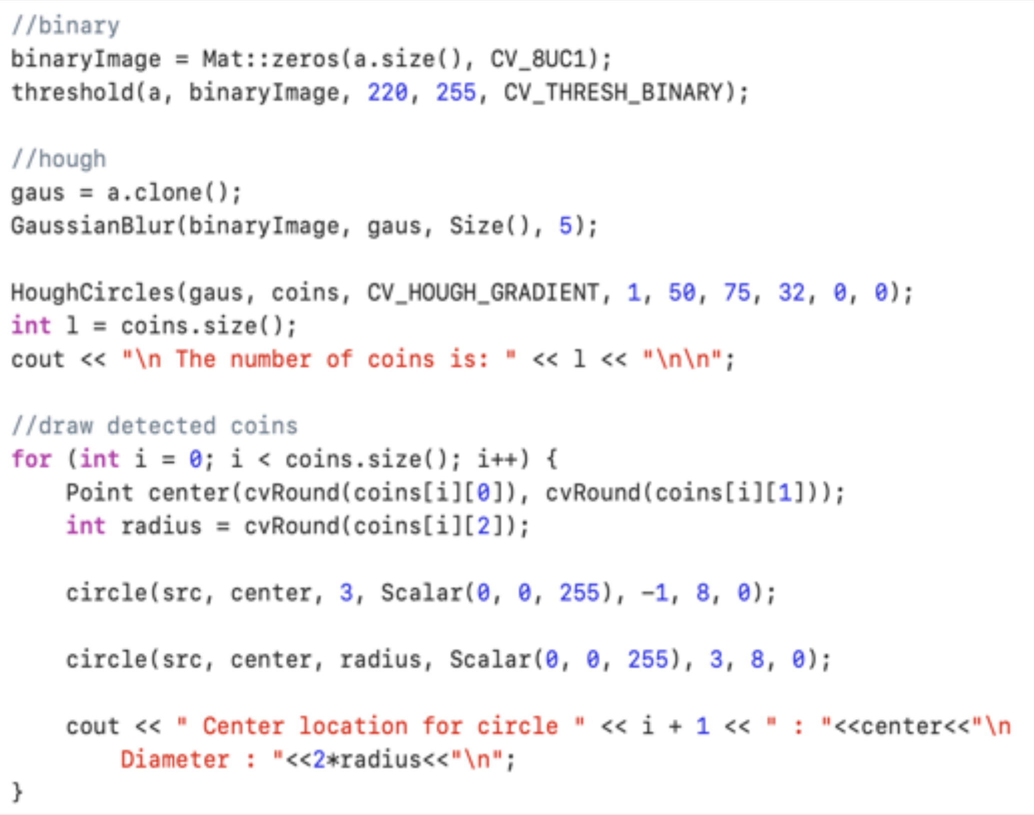
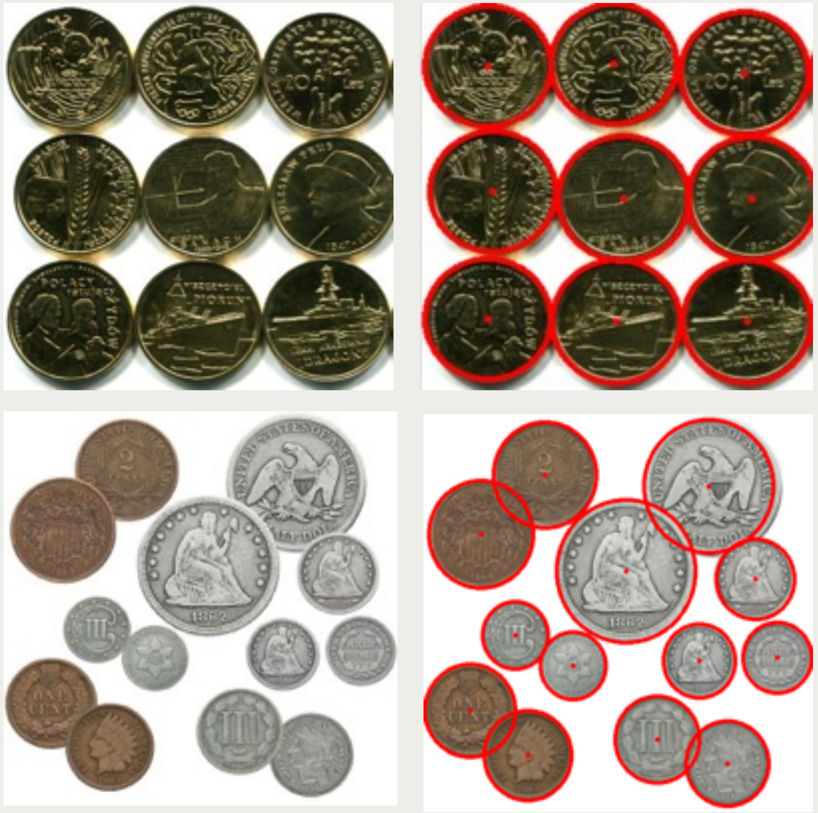
Circle Hough Transform

- Detect edges of coins
- Coin counting



```
//binary
binaryImage = Mat::zeros(a.size(), CV_8UC1);
threshold(a, binaryImage, 220, 255, CV_THRESH_BINARY);

//hough
gaus = a.clone();
GaussianBlur(binaryImage, gaus, Size(), 5);

HoughCircles(gaus, coins, CV_HOUGH_GRADIENT, 1, 50, 75, 32, 0, 0);
int l = coins.size();
cout << "\n The number of coins is: " << l << "\n\n";

//draw detected coins
for (int i = 0; i < coins.size(); i++) {
    Point center(cvRound(coins[i][0]), cvRound(coins[i][1]));
    int radius = cvRound(coins[i][2]);

    circle(src, center, 3, Scalar(0, 0, 255), -1, 8, 0);

    circle(src, center, radius, Scalar(0, 0, 255), 3, 8, 0);

    cout << " Center location for circle " << i + 1 << " : "<<center<<"\n
        Diameter : "<<2*radius<<"\n";
}
```



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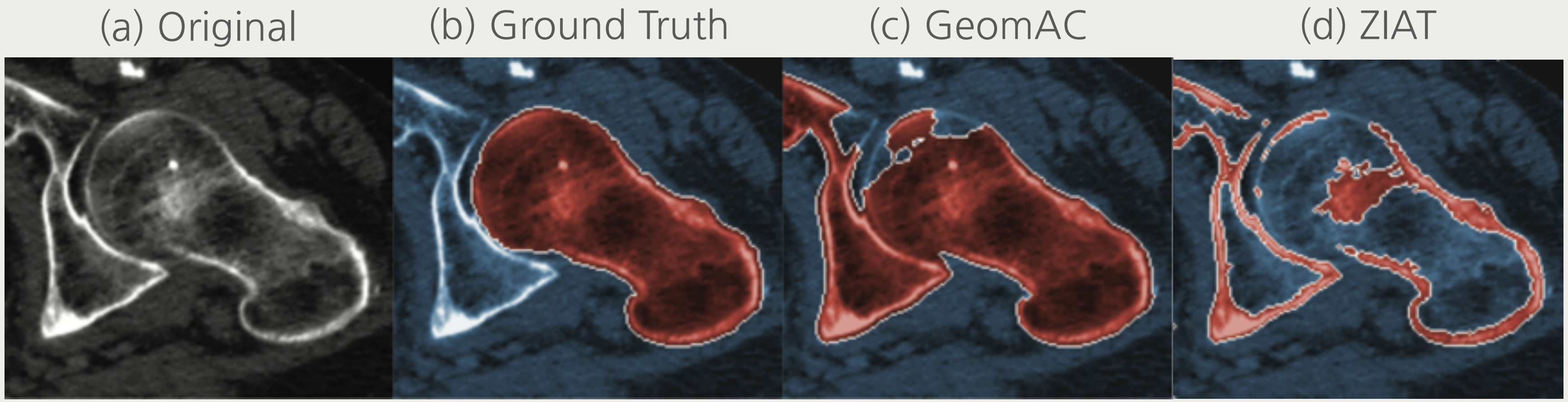
Data Augmentation

- For deep learning
- Based medical image segmentation model

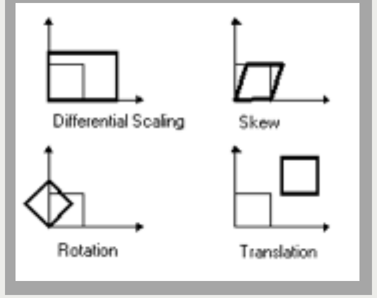


(a) Original (b) Ground Truth (c) GeomAC (d) ZIAT

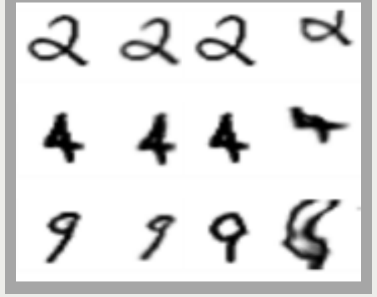
[Marcel Krcah, 2011]

Paper	# of dataset
[Hideki Kakeya, 2018]	47 (volume)
[Francesco Ciompi et al, 2017]	1,805 (2d patch)
[Patrick Ferdinand Christa et al, 2017]	38 (volume)
[Robin Wolz et al, 2012]	100 (volume)

Affine Transformation

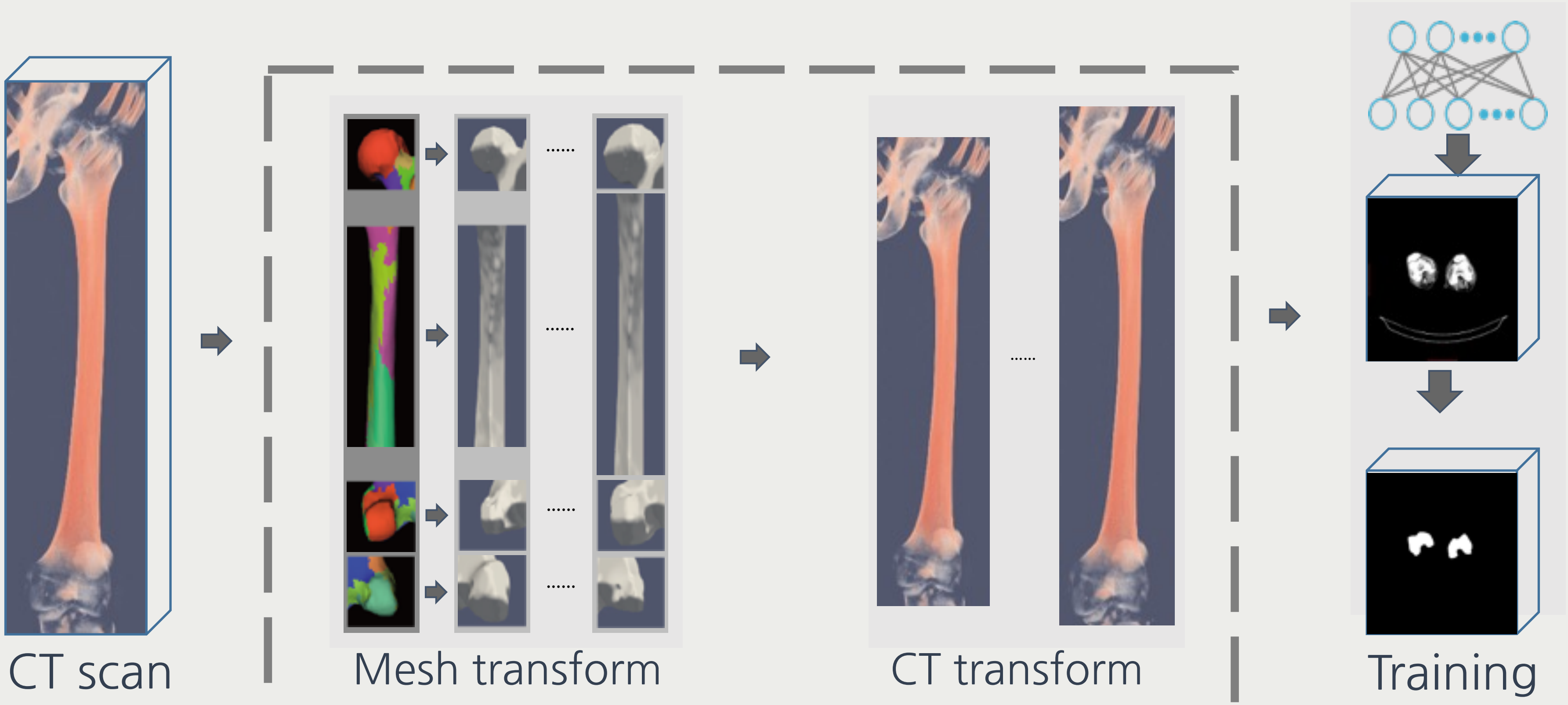


Random Warping



Data Augmentation

- Overall process



[Patrick Ferdinand Christa et al, 2017], [Holger R. Roth et al, 2015], [Arnaud Arindra Adiyoso Setio, 2016]

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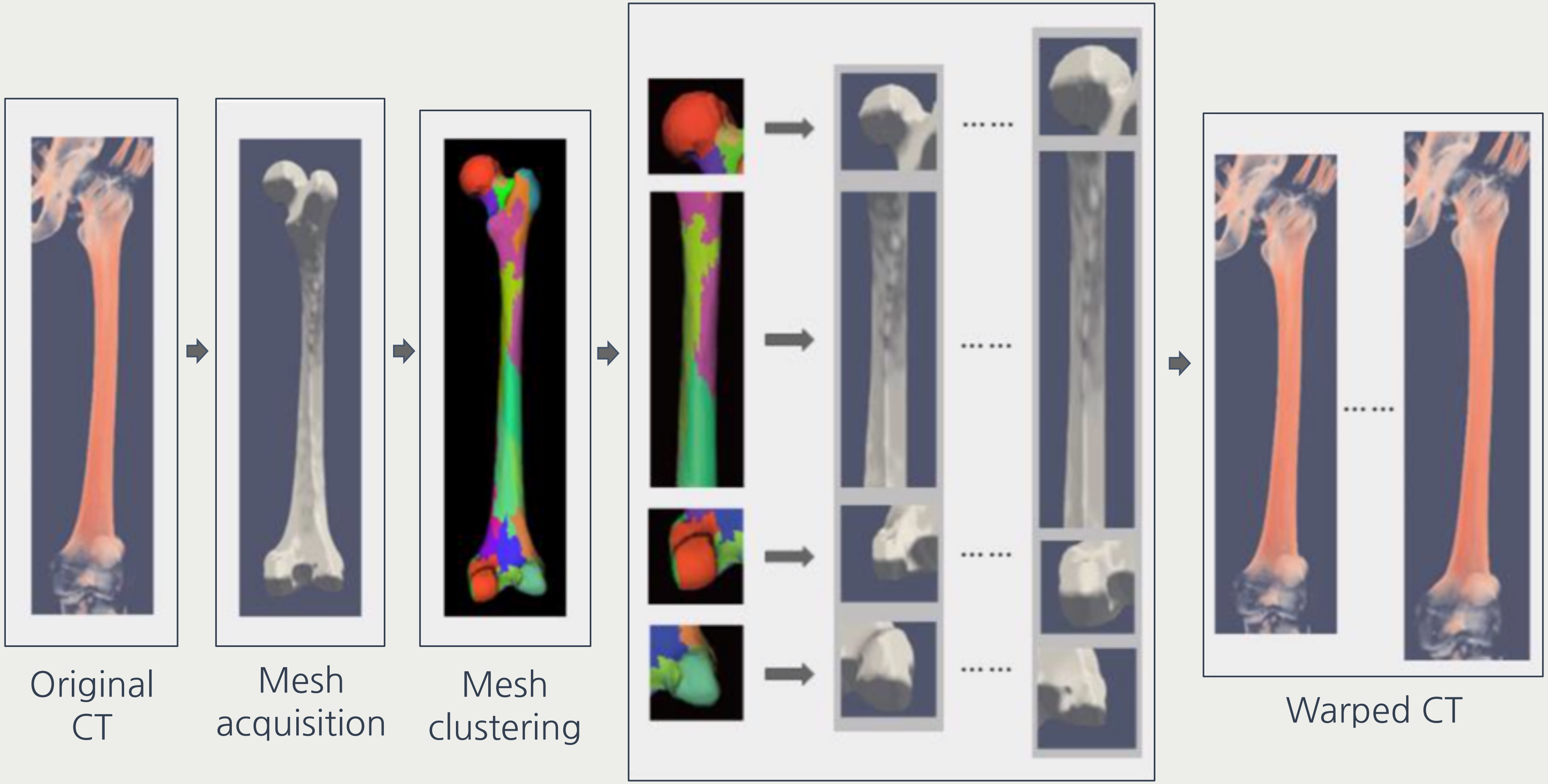
Data Augmentation

- Overall process



Original CT

Mesh acquisition

Mesh clustering

Mesh transform

Warped CT

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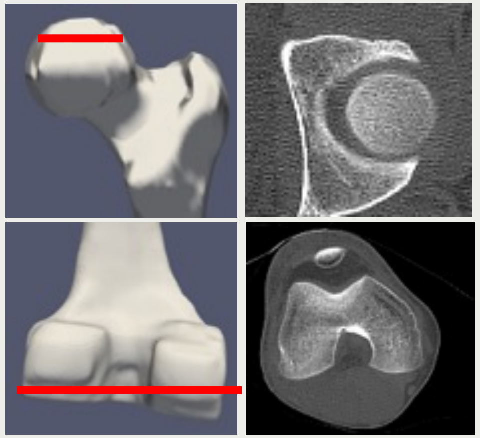
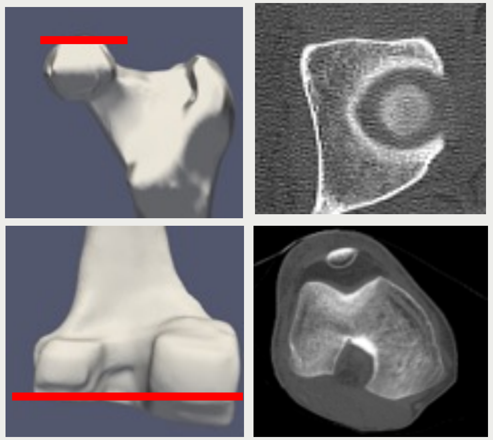
Data Augmentation

- results

Original mesh/ CT



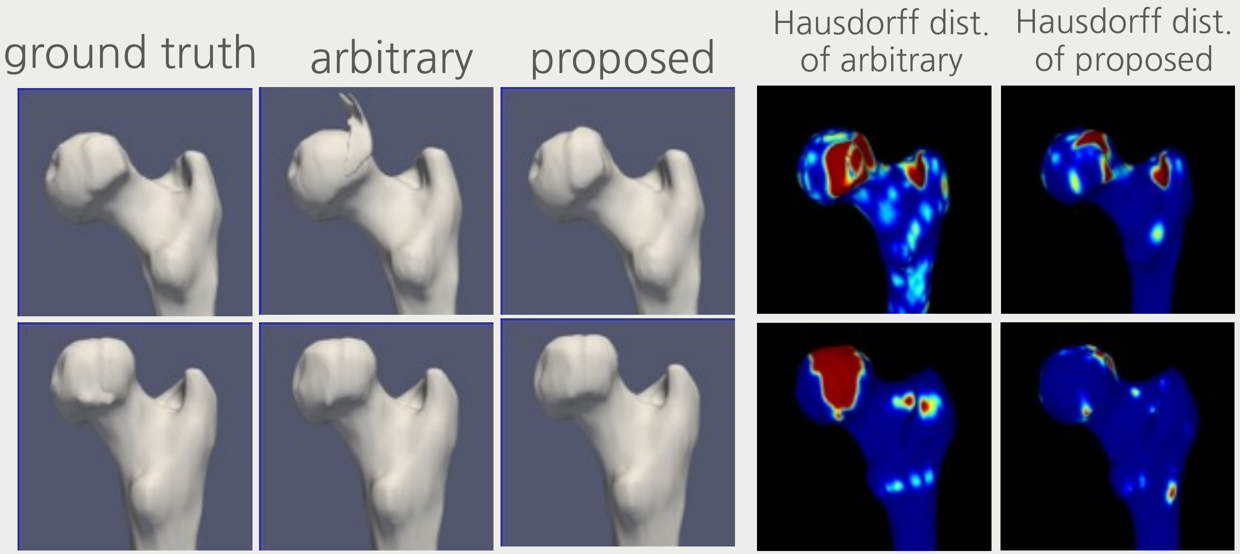
Deformed mesh / Warped CT



Segmentation Performance

CT no.	Proposed (IoU)	Arbitrary (IoU)
1	0.98	0.96
2	0.98	0.98
3	0.97	0.92

$$IoU(Intersection\ over\ Union) = \frac{true\ positive}{true\ positive + false\ positive + false\ negative}$$



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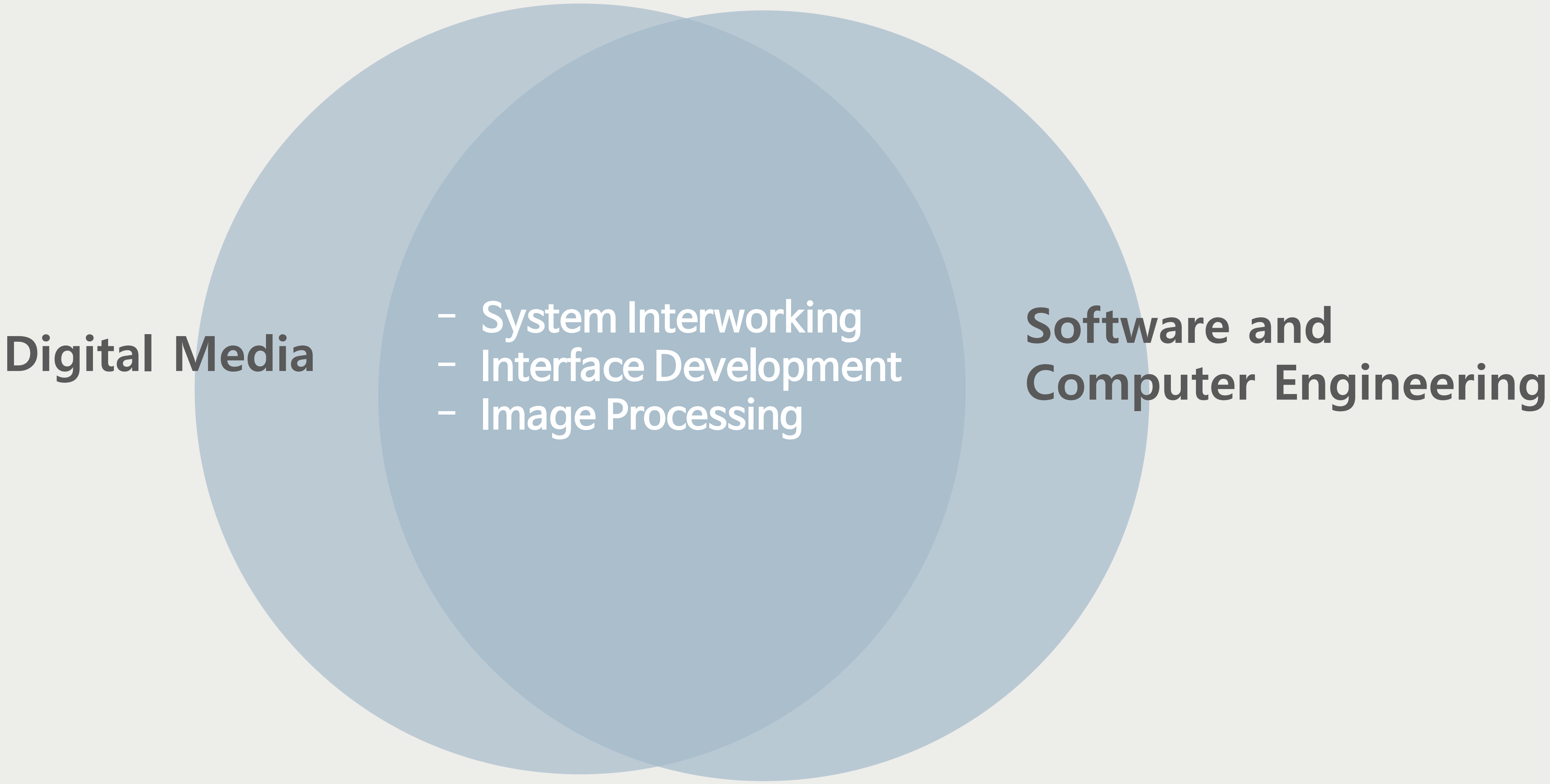

Digital Media

- System Interworking
- Interface Development
- Image Processing

Software and Computer Engineering

Thank You