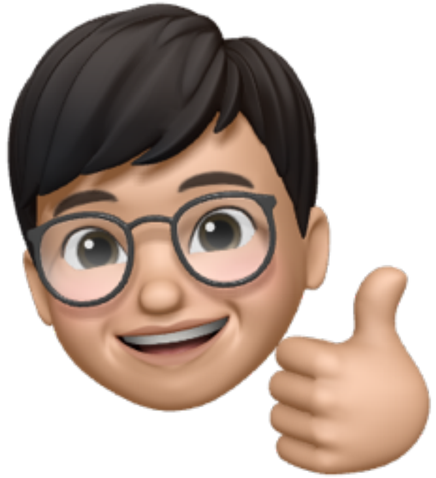
Snap Point

TEAM JitterBug

18기 오중균
18기 김창영

JitterBug



오중균 18기
SW공학전공 3학년

김창영 18기
IoT AI 융합전공 3학년

I. Introduction

II. Applications

III. Implement

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Introduction

Snap Point

핑거스냅 소리를 실시간으로
인식하는 머신러닝 모델

귀엽네~
그래서 그거
구현해서 어디다
써먹을건데 ?

Applications

PPT Control

[프레젠테이션 제어] 를 위한
핑거스냅 기반의 인터페이스

Applications

Play & Stop ctrl

Next **Slide**
Playlist






Applications

IoT

- 열쇠, 리모콘, 에어팟 등과 같이 잃어버리는 쉬운 물건에
  모델을 탑재한 기기를 달아서 손가락을 튕기면 소리가 울리게 하여 위치를 알림.

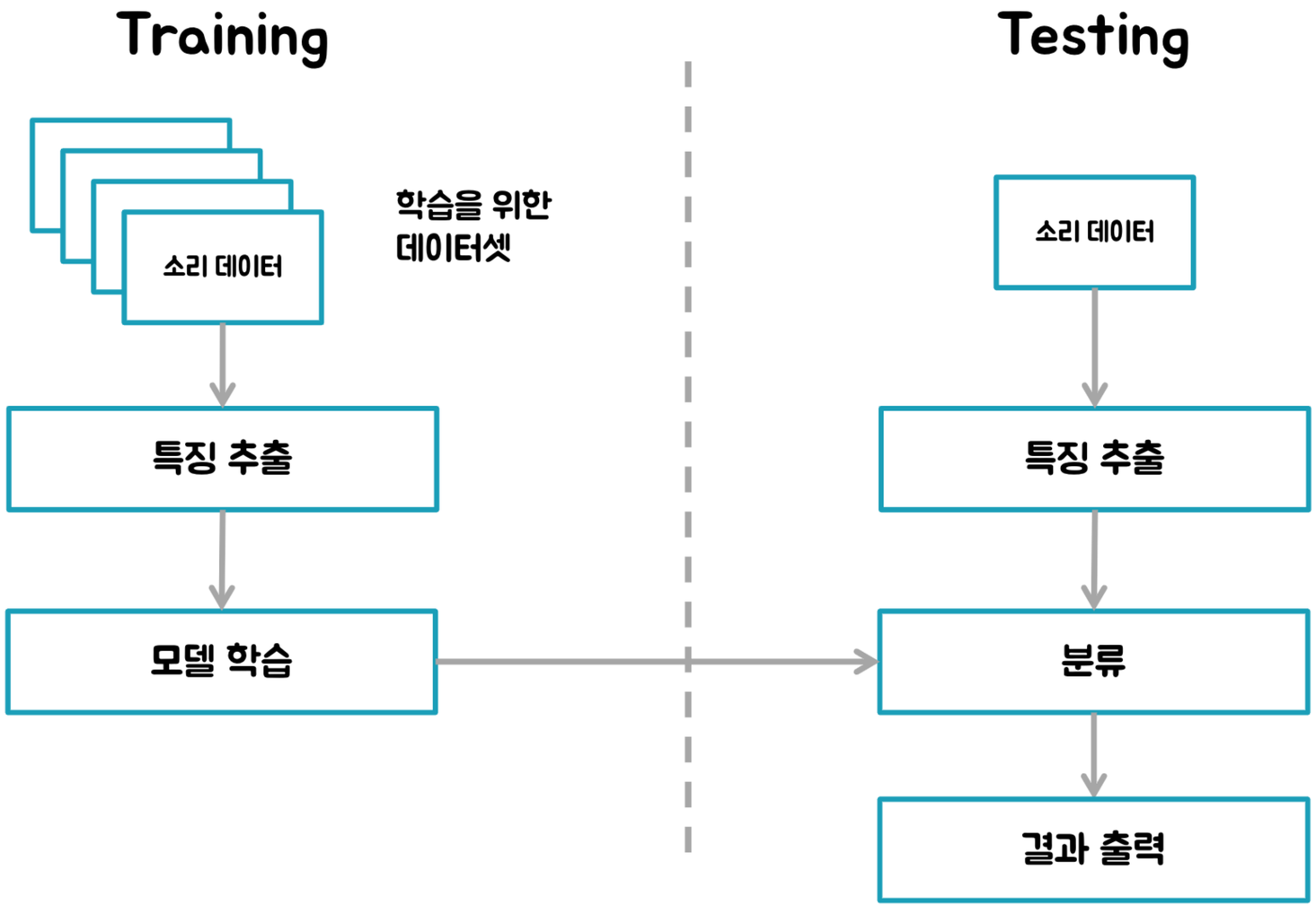
- 알람 같은 경우, 좀만 더 자고 싶을때 손가락을 튕기면 몇분동안 Snooze 되게 함.

Implement

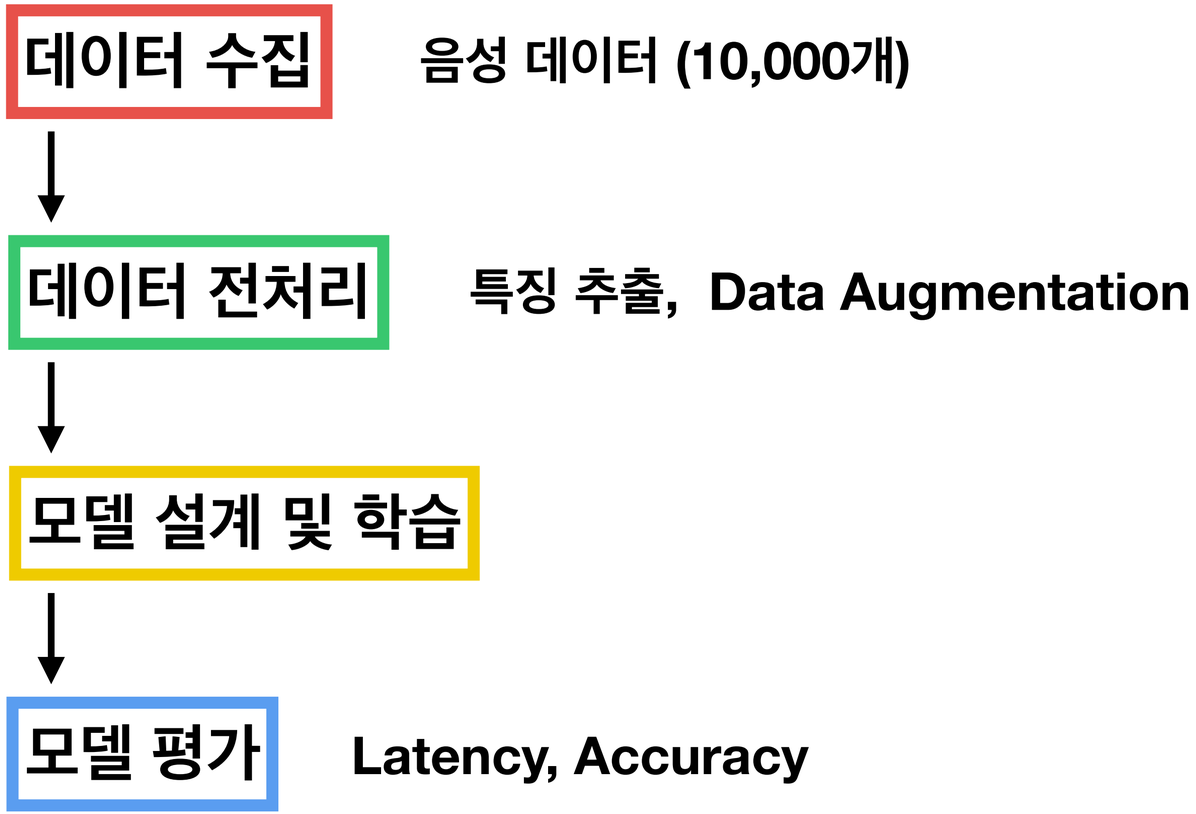
```
# Hypothesis:
# - Problem:    스냅소리를 분류하자! 핑거스냅인지, 노이즈인지
# - Language:   Python
# - Library:    Librosa (음성 분석 lib), TF (ML)
# - Data:       스냅소리와 노이즈 샘플 6000개 정도
# - Label:      스냅(1 - Odd), 노이즈(0 - Even)
# Feature Extraction + Classifier
```

```
# Supervised Learning
# - Binary Classification
# - Input X = Sound Matrix
# - Output Y = Target [0,1]
# - Classifier = Sigmoid
# - Model = Logistic Regression
# - Loss f(x) = Binary Cross-Entropy
```

Sound Recognition



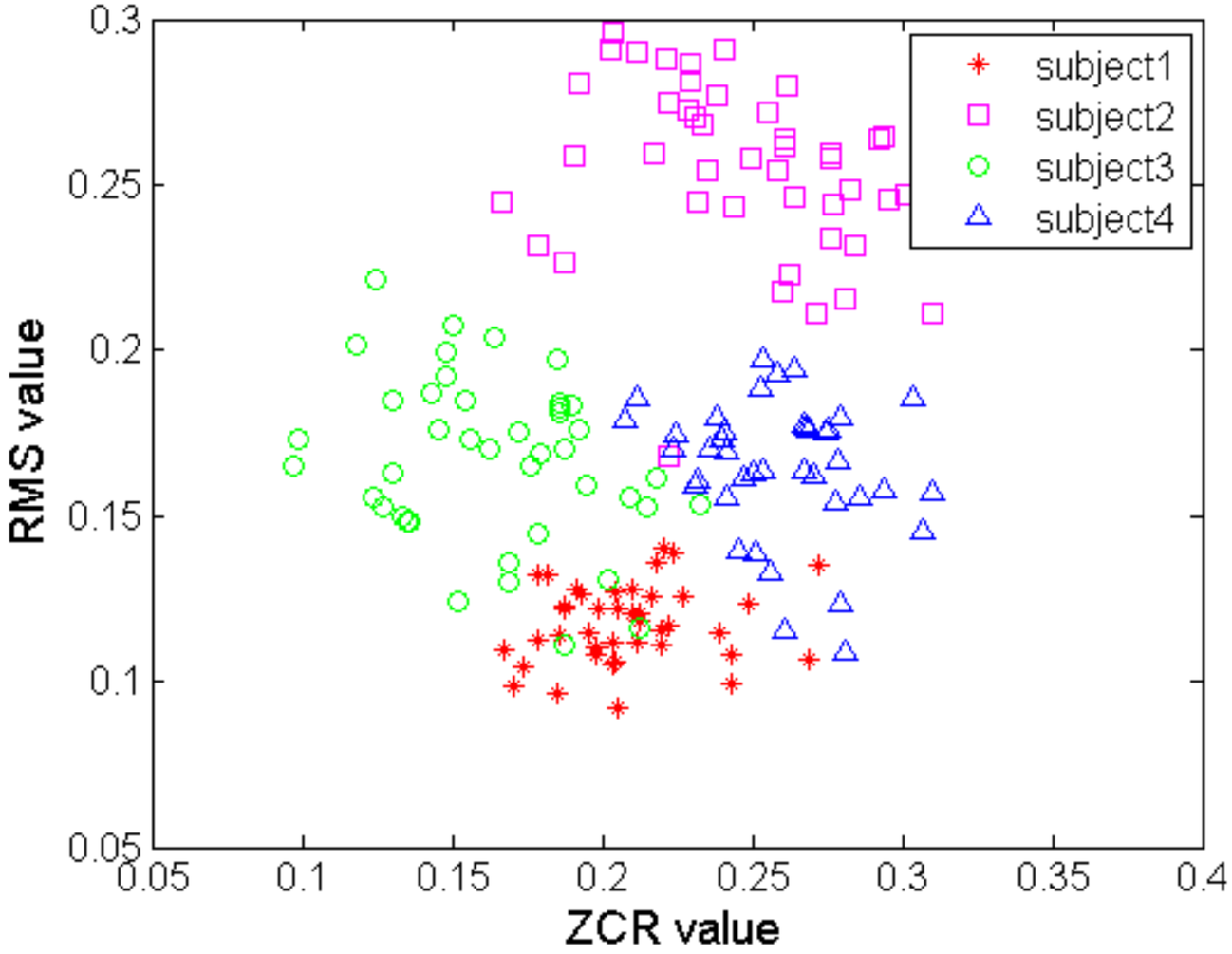
Workflow


데이터 수집
음성 데이터 (10,000개)
데이터 전처리
특징 추출, Data Augmentation
모델 설계 및 학습
모델 평가
Latency, Accuracy

Why ML?

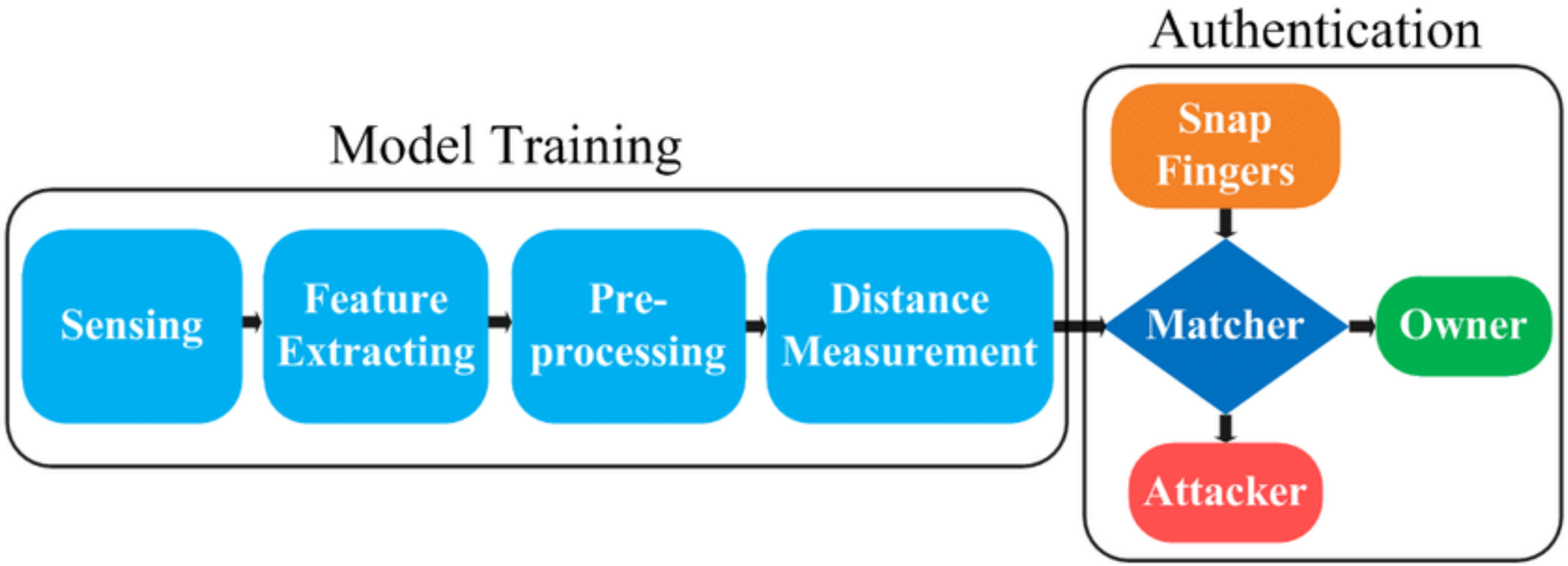

굳이?

Person Authentication Using Finger Snapping



src - Hong, Feng, et al. "Person Authentication Using Finger Snapping — A New Biometric Trait." in Biometric Recognition Oct 2016

Person Authentication Using Finger Snapping



src - Hong, Feng, et al. "Person Authentication Using Finger Snapping — A New Biometric Trait." in Biometric Recognition Oct 2016

```
# Supervised Learning
# - Logistic Regression
# - Input X = Sound Matrix
# - Output Y = Target [0,1]
# - Classifier = ReLU
# - Model = Logistic Regression
# - Loss f(x) = Binary Cross-Entropy
```

```
# Supervised Learning
# - Multi-Label Classification
# - Input X = Sound Matrix
# - Output Y = Integer
# - Classifier = Softmax
# - Model = Softmax Classification
# - Loss f(x) = Categorical Cross-Entropy
```

Furthermore

- 사용자가 부르기 쉽고 재밌음
- 새로운 컨셉 기능을 통해
  제품 시장 점유율을 높일 수 있음
- 개개인의 핑거스냅의 인식키로
  개인별 맞춤 서비스 제공 가능

Finger Snap Detection

인공지능 스피커에
'핑거스냅' 호출음 속성 추가


100%
4:21 PM
BELL
What's up? Snapp Dogg.
Try snap your finger now!
SnapApp by OneLogin

Phases

Phase 1

ML
Model Implementation

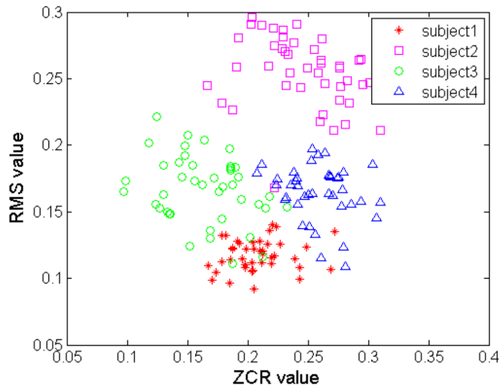
Phase 2

Application

Phase 3

DL
Advanced Model

Person Authentication Using Finger Snapping



src - Hong, Feng, et al. "Person Authentication Using Finger Snapping — A New Biometric Trait." in Biometric Recognition Oct 2016

Q&A

Study

Mathematics for DL

Thank You