

SSAKIT

(삼성 전기 연계 프로젝트)

고성진, 김다영, 김영환, 김익한, 김정원

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SSAKIT 개발 배경

머신 러닝 및 Classification

개발 배경

SSAKIT이란?

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기술 스택

SSAKIT 소개

핵심 기능

시연 영상

“Machine Learning”

기계가 학습한다는 건, 프로그램이 특정 작업(T)을 하는 데 있어서
경험(E)를 통해 작업의 성능(P)을 향상 시키는 것이다.

톰 미첼(Tom Mitchell)

SSAKIT 개발 배경

Program

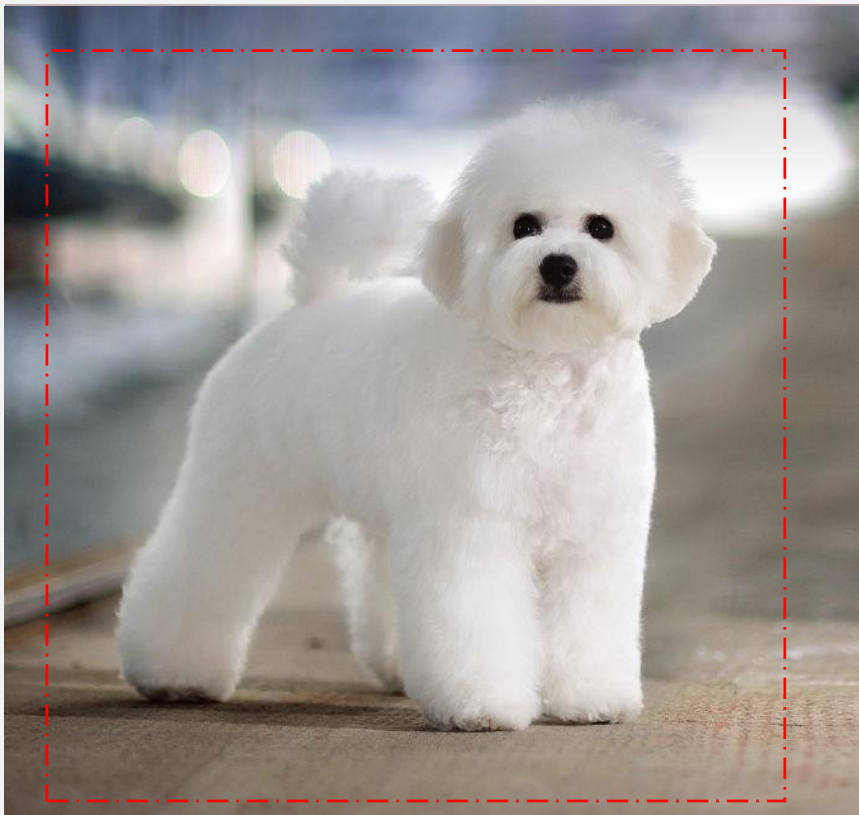


Machine Learning

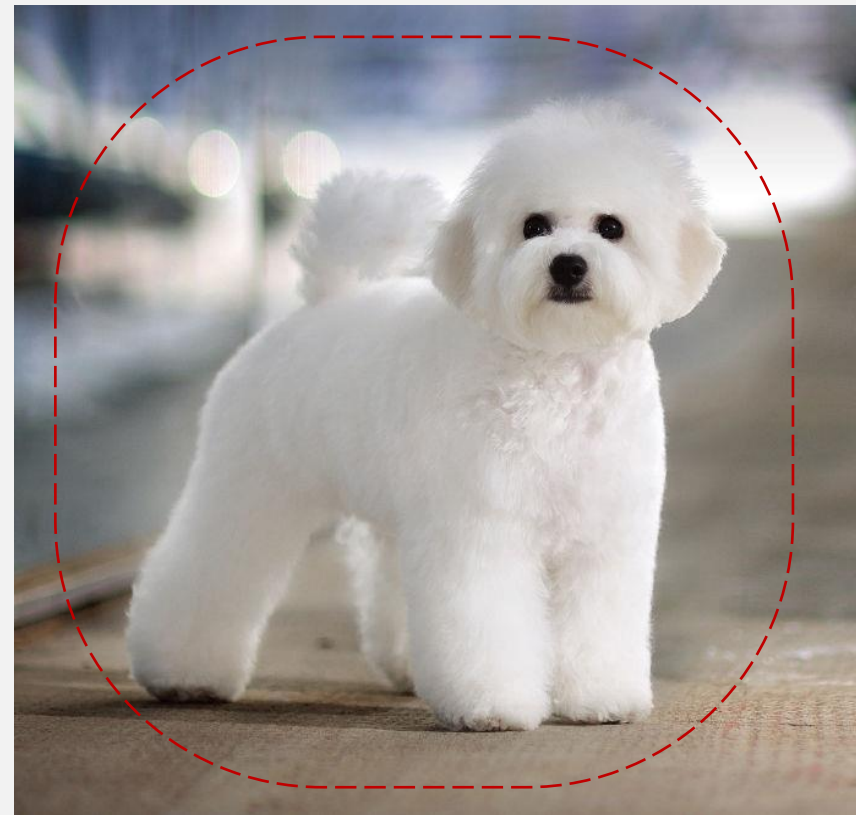


SSAKIT 개발 배경

Program



Machine Learning



SSAKIT 개발 배경

Program



Machine Learning



SSAKIT 개발 배경

Program

‘경험’ 을 통해

‘스스로’

작업 능력 향상!!

Machine Learning



SSAKIT 개발 배경



지도 학습 (Supervised Learning)

맞춰야 하는 “**답**”이 있고 이 답을 맞추는 게 **학습의 목적**

지도 학습



분류(Classification)

회귀(Regression)

Regression은 연속된 값을 예측하는 문제입니다.
주로 어떤 패턴이나 경향을 예측할 때 사용됩니다.
Ex) 공부시간에 따른 시험 점수 확인

SSAKIT 개발 배경

분류(Classification)



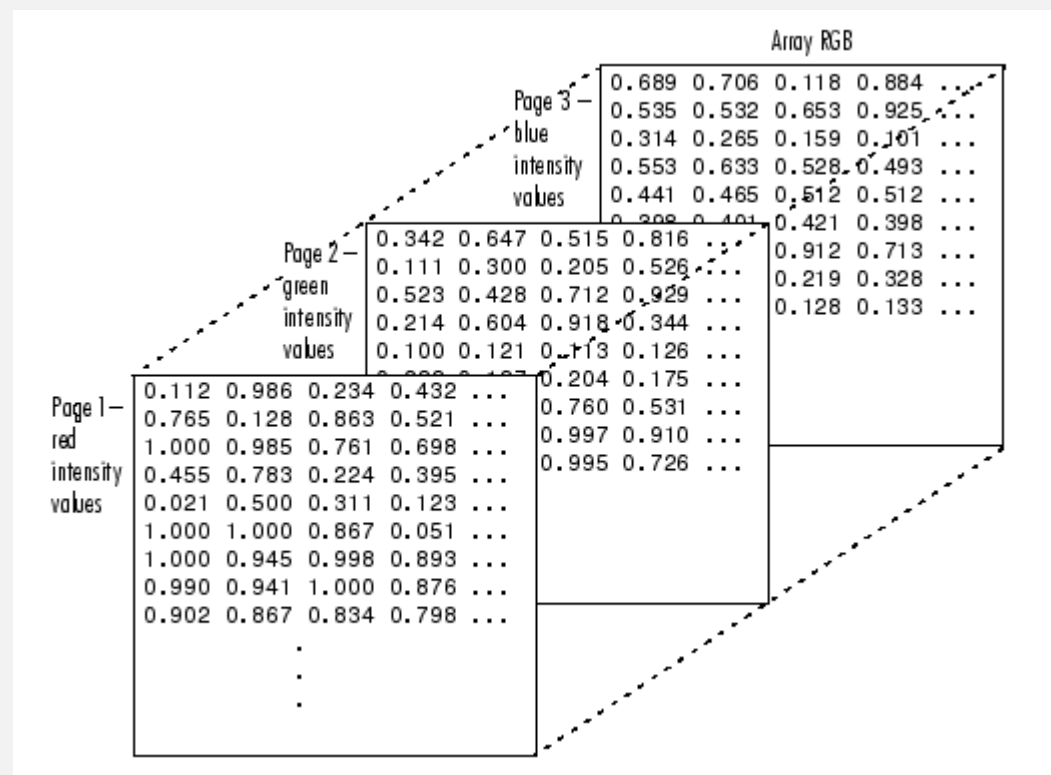
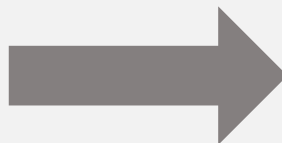
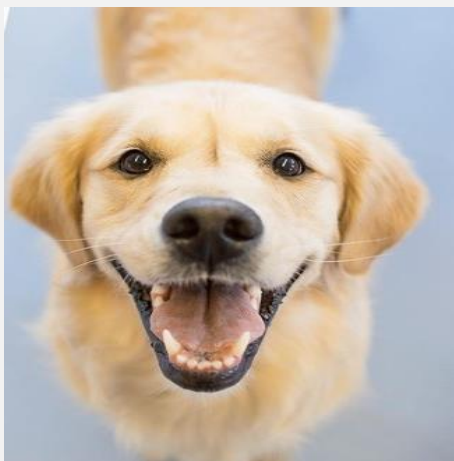
SSAKIT 개발 배경

분류(Classification)



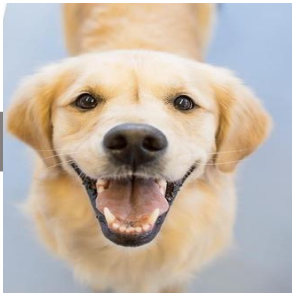
SSAKIT 개발 배경

분류(Classification)

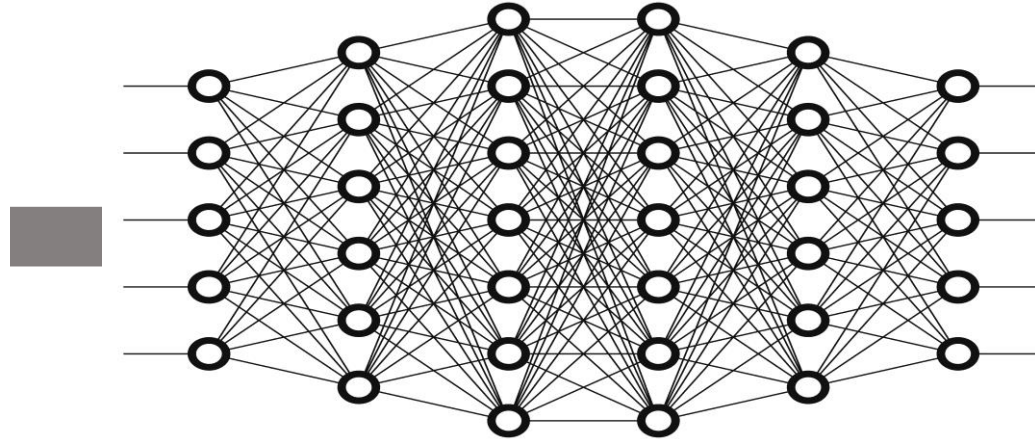


SSAKIT 개발 배경

분류(Classification)



Page 1 - red intensity values				Page 2 - green intensity values				Page 3 - blue intensity values			
0.112	0.986	0.234	0.432	0.342	0.647	0.515	0.816	0.689	0.706	0.118	0.884
0.765	0.128	0.863	0.521	0.111	0.300	0.205	0.525	0.535	0.532	0.653	0.825
1.000	0.985	0.761	0.698	0.523	0.428	0.712	0.925	0.314	0.265	0.159	0.101
0.455	0.783	0.224	0.395	0.214	0.604	0.918	0.344	0.553	0.633	0.528	0.493
0.021	0.500	0.311	0.123	0.100	0.121	0.273	0.126	0.441	0.465	0.612	0.512
1.000	1.000	0.867	0.051	0.204	0.175	0.760	0.531	0.421	0.398	0.912	0.298
1.000	0.945	0.998	0.893	0.997	0.910	0.995	0.726	0.219	0.328	0.912	0.713
0.990	0.941	1.000	0.876	0.128	0.133			0.128	0.133		
0.902	0.867	0.834	0.798								
.	.	.	.								
.	.	.	.								

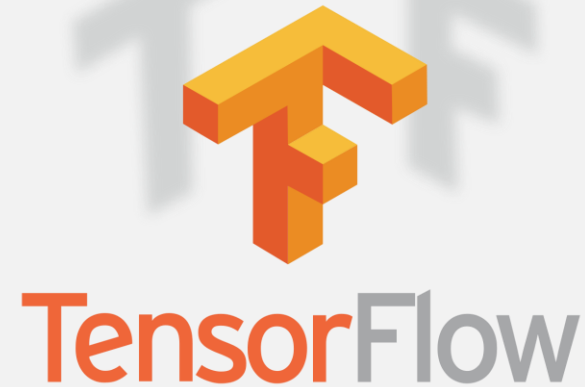


Dog !

SSAKIT이란?

**Dataset 수집, labeling, 학습, 검증, Review 등
공통적으로 수행되는 Deep-Learning 작업을
프로그래밍을 할 줄 모르는 유저들도 쉽게 사용할 수 있는 GUI**

SSAKIT이란?



SSAKIT 핵심기능

SSAKIT 핵심기능

The screenshot shows the 'Train Wizard' window with the following components and callouts:

- 1**: Points to the 'Model Name' input field.
- 2**: Points to the 'Augmentation' section.
- 3**: Points to the 'Continue' button.
- 4**: Points to the 'Continue' button.
- 5**: Points to the 'New' button.
- 6**: Points to the 'New Neural Network' dropdown menu.
- 7**: Points to the 'previous train parameter' table.

The 'Augmentation' section includes checkboxes for [H] Horizontal Flip, [V] Vertical Flip, and [B] Brightness, and radio buttons for [R-90] Rotation 90 and [R-180] Rotation 180.

The 'New Neural Network' section has a dropdown menu with 'VGG' selected.

The 'Learn Settings' section has an 'Epochs' input field with '1' entered.

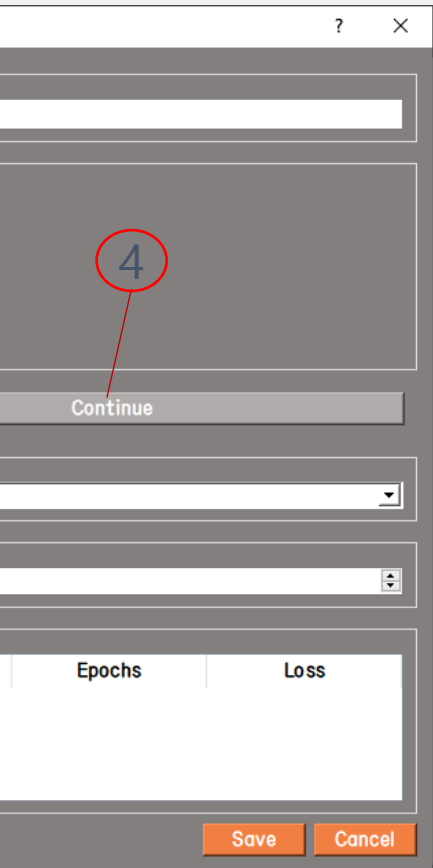
The 'previous train parameter' table has the following columns: Date, Model_Name, Augmentation, Network, Epochs, and Loss.

At the bottom right are 'Save' and 'Cancel' buttons.

Train wizard

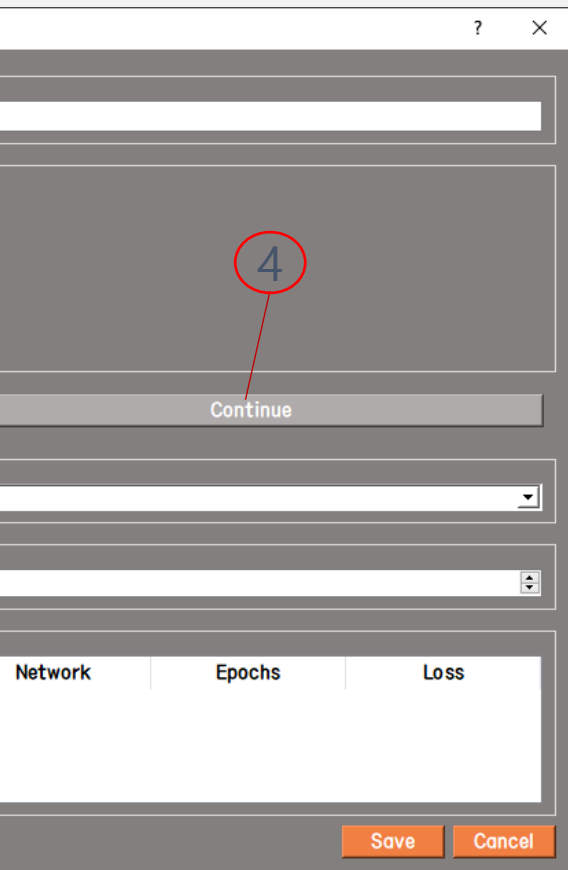
- 1 **모델 이름 설정**
- 2 **Augmentation(데이터 부풀리기)**
- 3 **새로운 모델 학습하기**
- 4 **전이학습**
- 5 **학습할 네트워크 선택하기**
- 6 **Epoch 설정(학습 횟수)**
- 7 **이전 학습 parameter**

SSAKIT 핵심기능



- 1 **모델 이름 설정**
- 2 **Augmentation(데이터 부풀리기)** — Accuracy 향상
Overfitting 방지
- 3 **새로운 모델 학습하기**
- 4 **전이학습**
- 5 **학습할 네트워크 선택하기**
- 6 **Epoch 설정(학습 횟수)**
- 7 **이전 학습 parameter**

SSAKIT 핵심기능



1 **모델 이름 설정**

2 **Augmentation(데이터 부풀리기)**

3 **새로운 모델 학습하기**

4 **전이학습**

5 **학습할 네트워크 선택하기**

VGG16
ResNet50
EfficientNet_B0

6 **Epoch 설정(학습 횟수)**

7 **이전 학습 parameter**

SSAKIT 핵심기능

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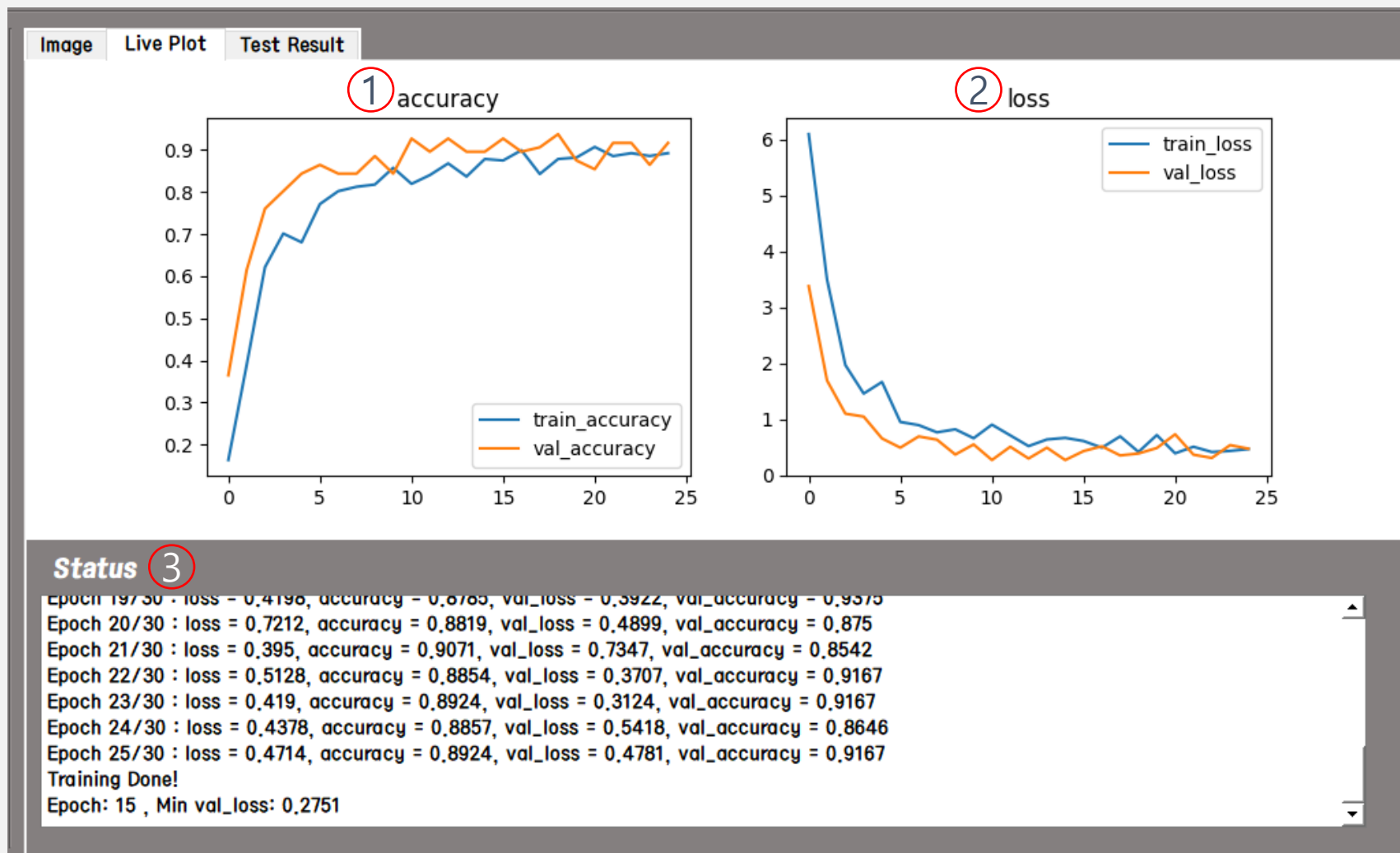
The 'Learn Settings' section has an 'Epochs' input field with '1' entered.

The 'previous train parameter' table has columns: Date, Model_Name, Augmentation, Network, Epochs, and Loss.

At the bottom, there are 'Save' and 'Cancel' buttons.

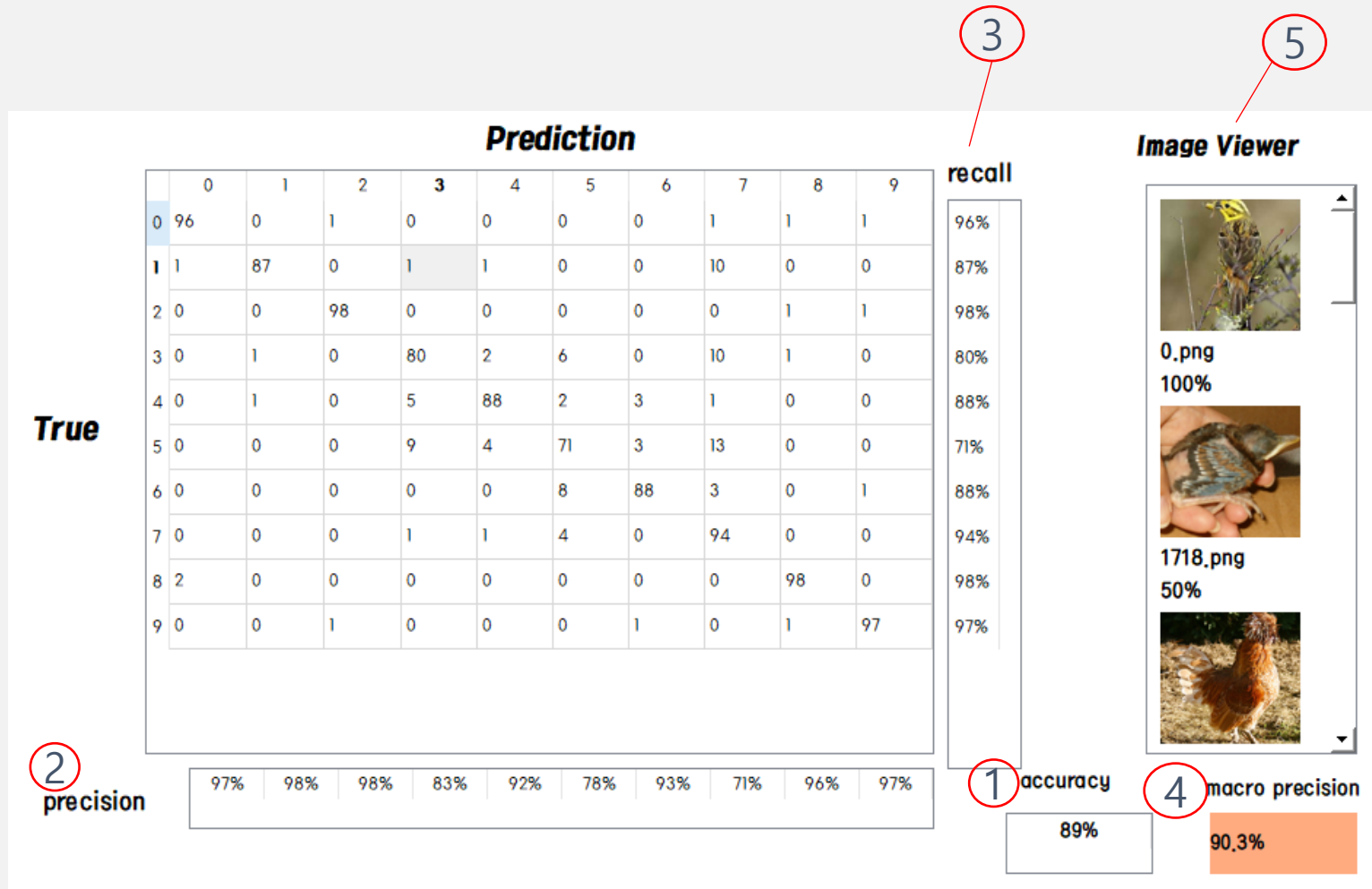
Train wizard

- 1 **모델 이름 설정**
- 2 **Augmentation(데이터 부풀리기)**
- 3 **새로운 모델 학습하기**
- 4 **전이학습**
- 5 **학습할 네트워크 선택하기**
- 6 **Epoch 설정(학습 횟수)**
- 7 **이전 학습 parameter**



- ① **Live accuracy plot**
- ② **Live loss plot**
- ③ **Status**

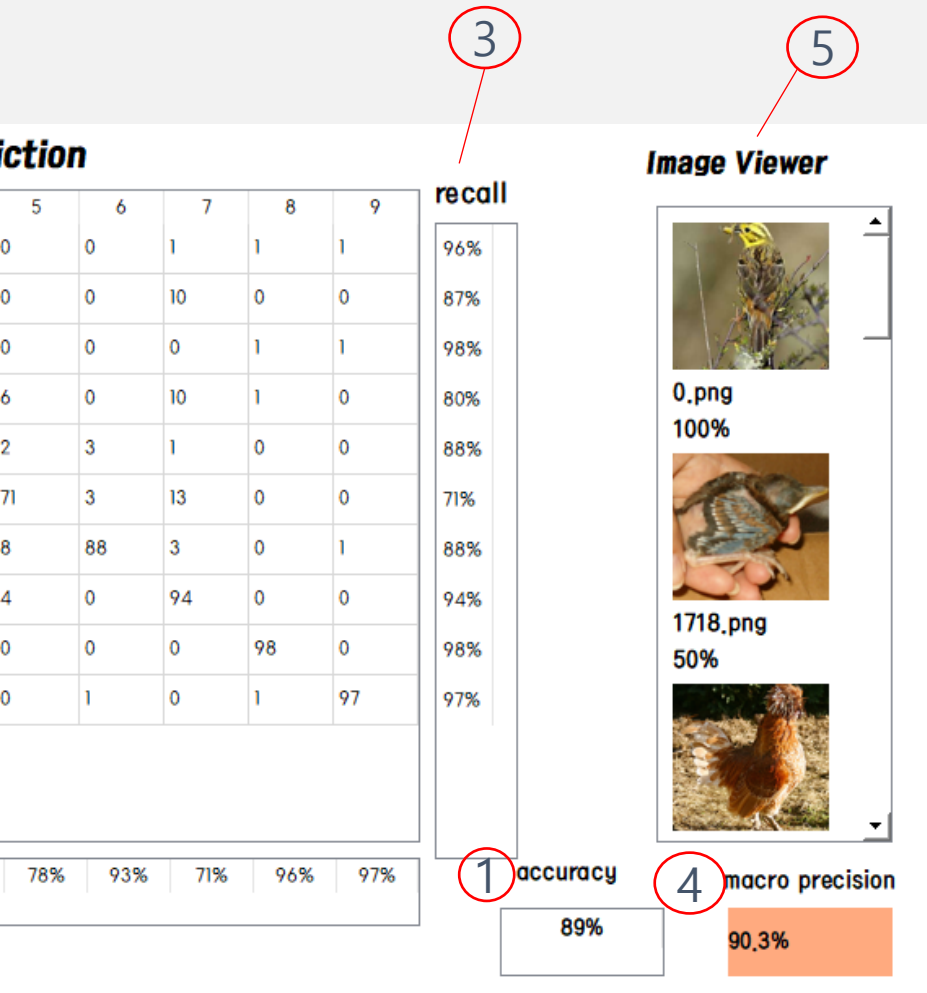
SSAKIT 핵심기능



- 1 **Accuracy**
- 2 **Precision**
- 3 **Recall**
- 4 **Macro precision**
- 5 **Image Viewer**

Confusion Matrix

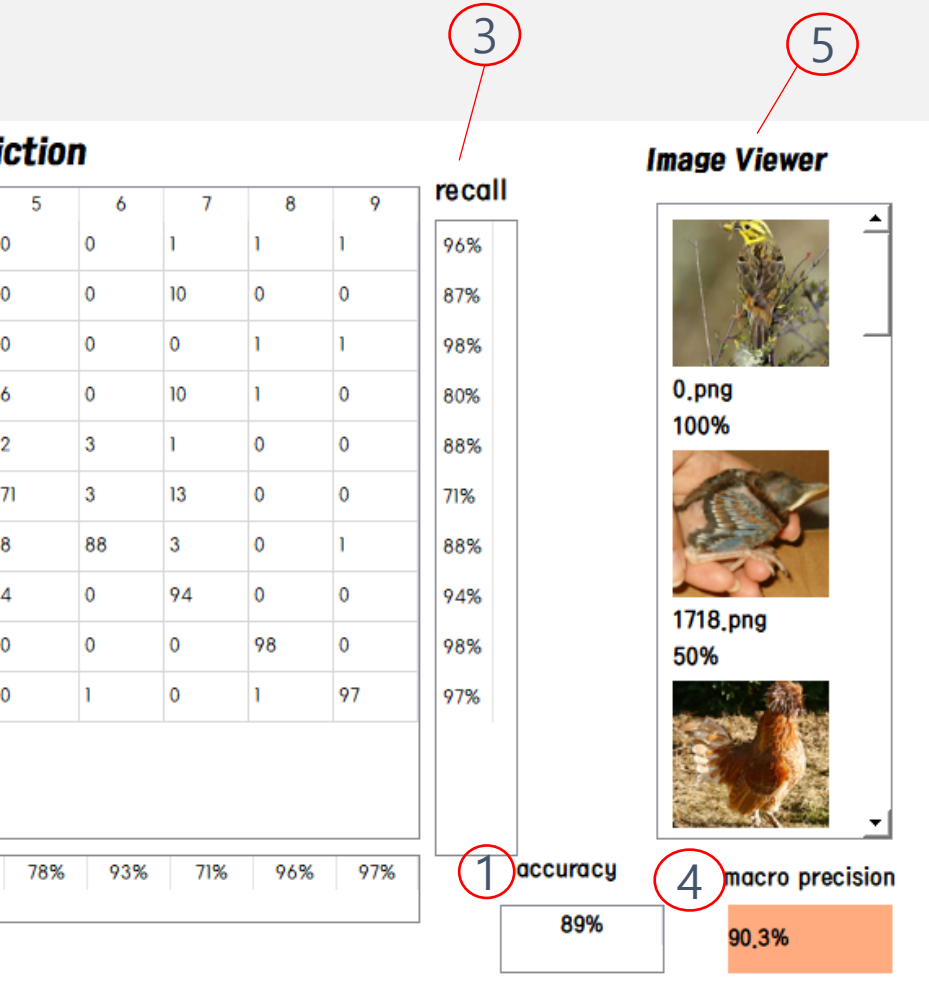
SSAKIT 핵심기능



- 1 **Accuracy** — 전체 개수 중 정답을 맞춘 개수
- 2 **Precision**
- 3 **Recall**
- 4 **Macro precision**
- 5 **Image Viewer**

Confusion Matrix

SSAKIT 핵심기능



1 **Accuracy**

2 **Precision**

3 **Recall**

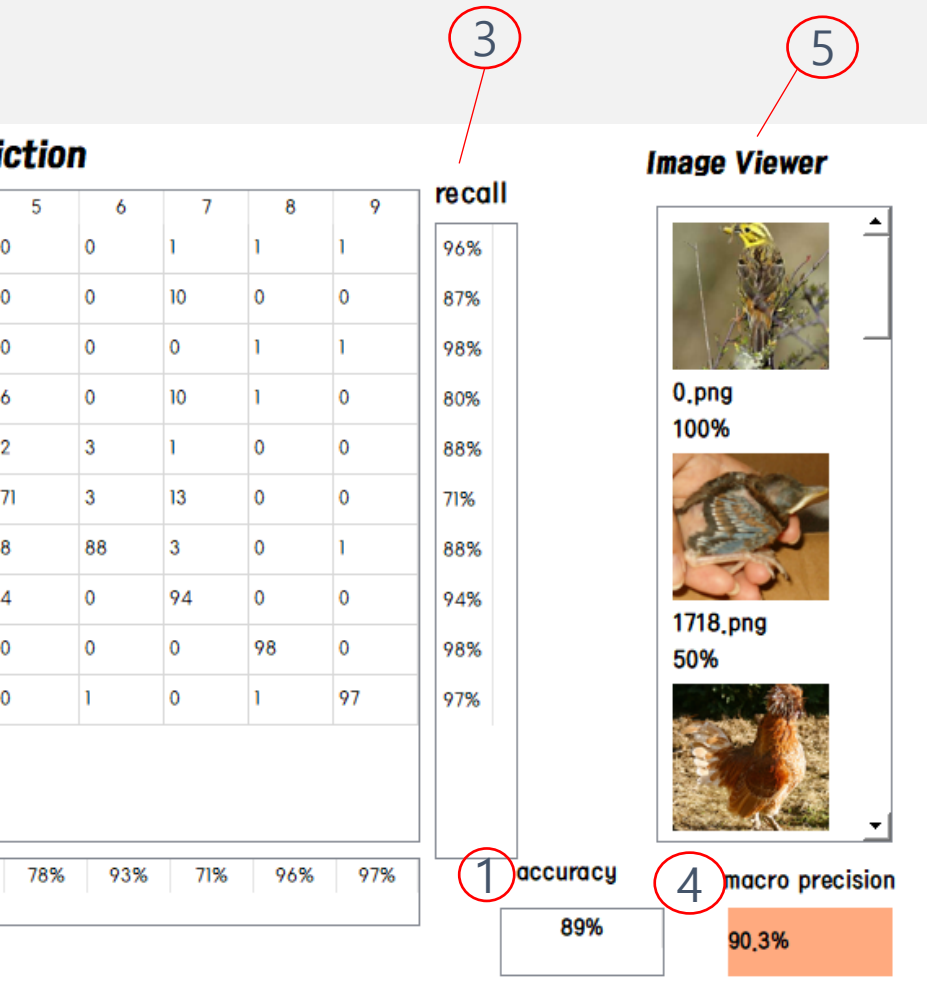
4 **Macro precision**

5 **Image Viewer**

고양이 8마리
고양이라고 한 10마리

Confusion Matrix

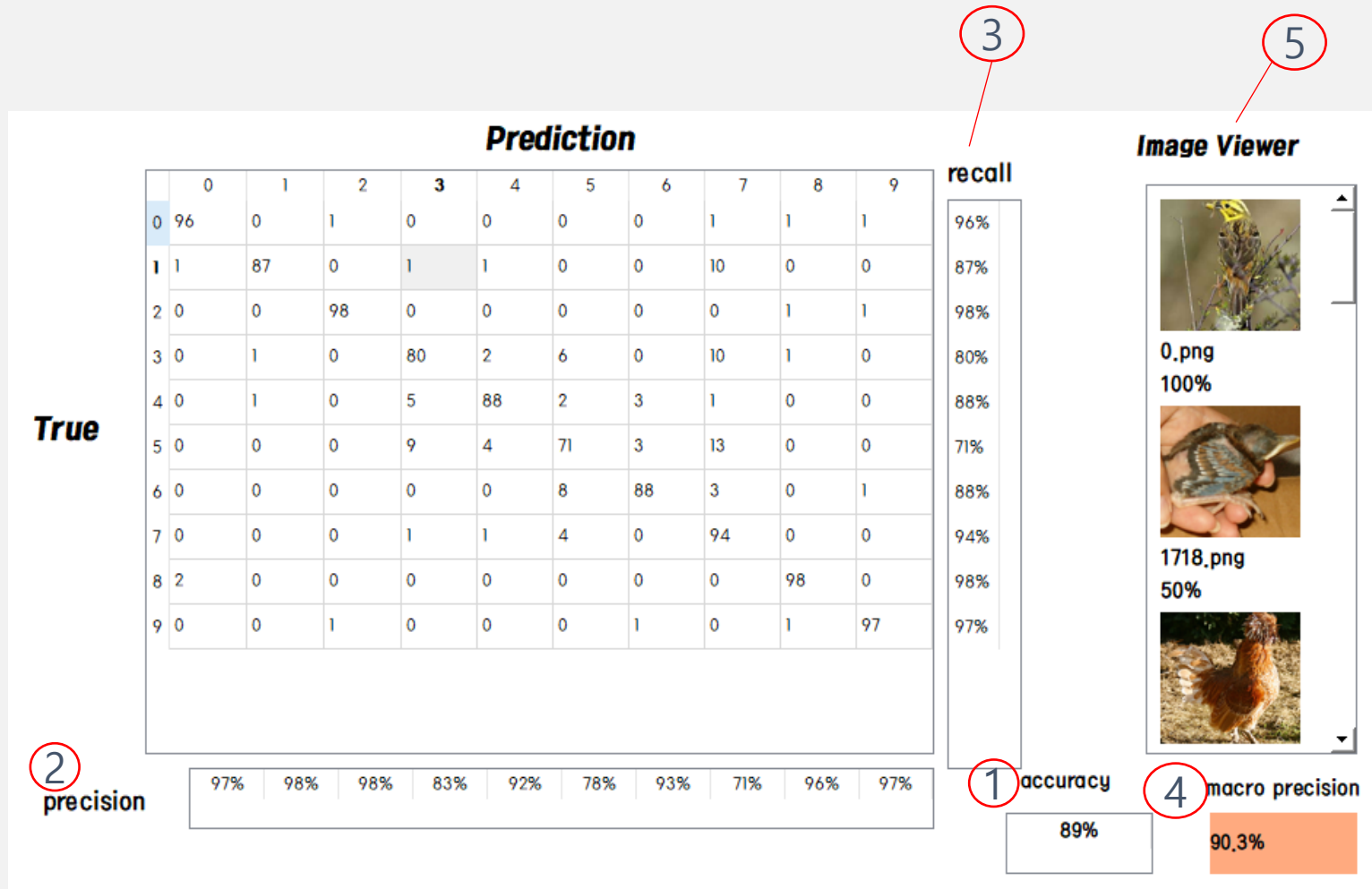
SSAKIT 핵심기능



- 1 Accuracy
- 2 Precision
- 3 Recall
- 4 Macro precision
- 5 Image Viewer

내가 찾은 9마리
실제 고양이 10마리

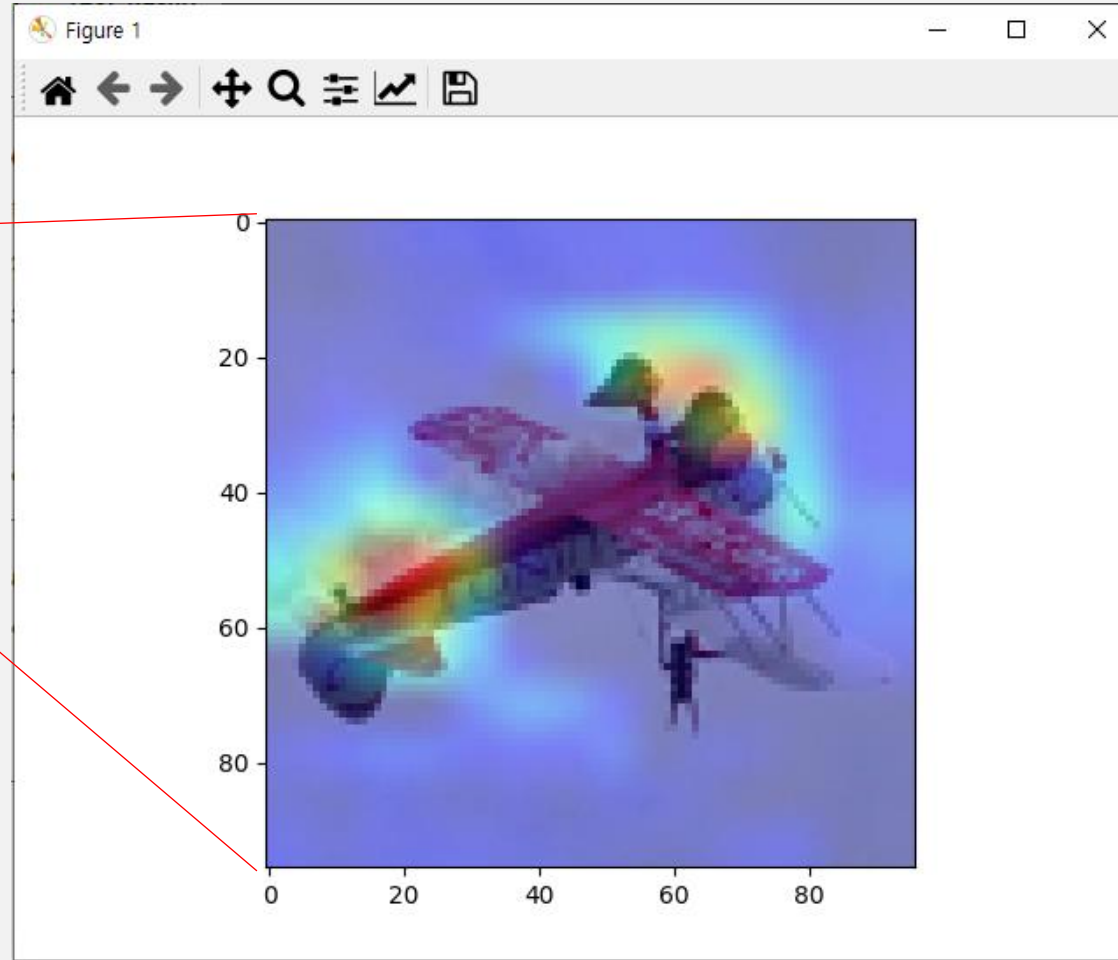
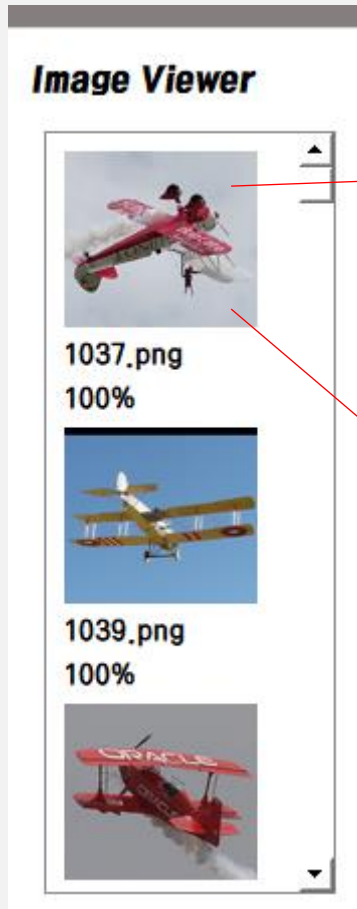
SSAKIT 핵심기능



- 1 **Accuracy**
- 2 **Precision**
- 3 **Recall**
- 4 **Macro precision**
- 5 **Image Viewer**

Confusion Matrix

SSAKIT 핵심기능



Class Activation Map(CAM)

SSAKIT **시연 영상**

Question

Thank you