E-SAN THAILAND
CODING & AI ACADEMY

โครงการวิจัยโมเดลระบบนิเวศการเรียนรู้ที่บูรณาการ CODING & AI สำหรับเยาวชน
Model of Learning Ecosystem Platform integrate with Coding & AI for Youth

โครงการย่อยที่ 6

การพัฒนาเยาวชนเพื่อเข้าสู่วิชาชีพขั้นสูงด้าน Coding & AI
ร่วมกับ Coding **Entrepreneur & Partnership: Personal AI**

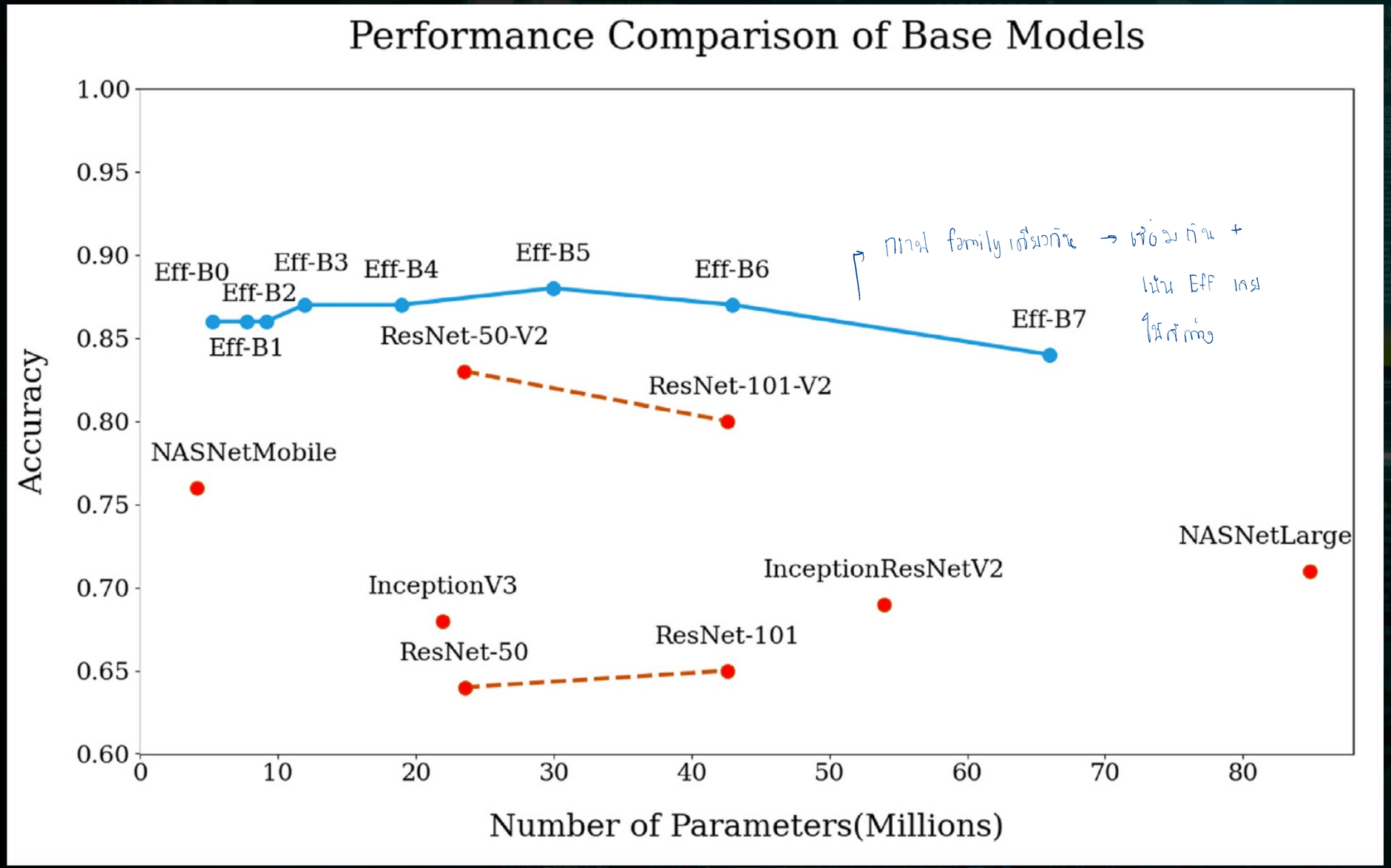
BiTNet: AI for Ultrasound Image Classification

ผศ.ดร.ธนพงศ์ อินทระ
ผู้เชี่ยวชาญด้าน Computer Vision

Add a little bit of body text

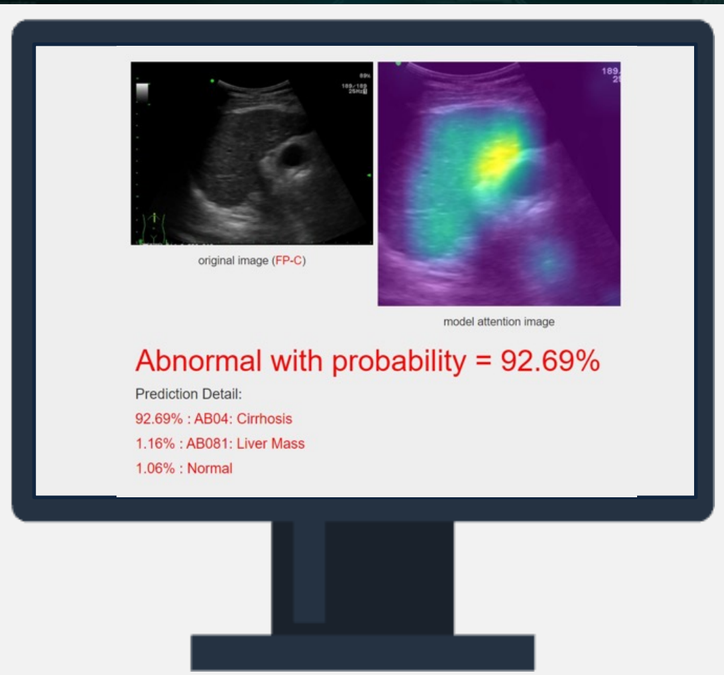
Visualization

Models


Performance Comparison of Base Models
Accuracy
Number of Parameters(Millions)
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0
10
20
30
40
50
60
70
80
Eff-B0
Eff-B1
Eff-B2
Eff-B3
Eff-B4
Eff-B5
Eff-B6
Eff-B7
ResNet-50-V2
ResNet-101-V2
ResNet-50
ResNet-101
NASNetMobile
NASNetLarge
InceptionV3
InceptionResNetV2

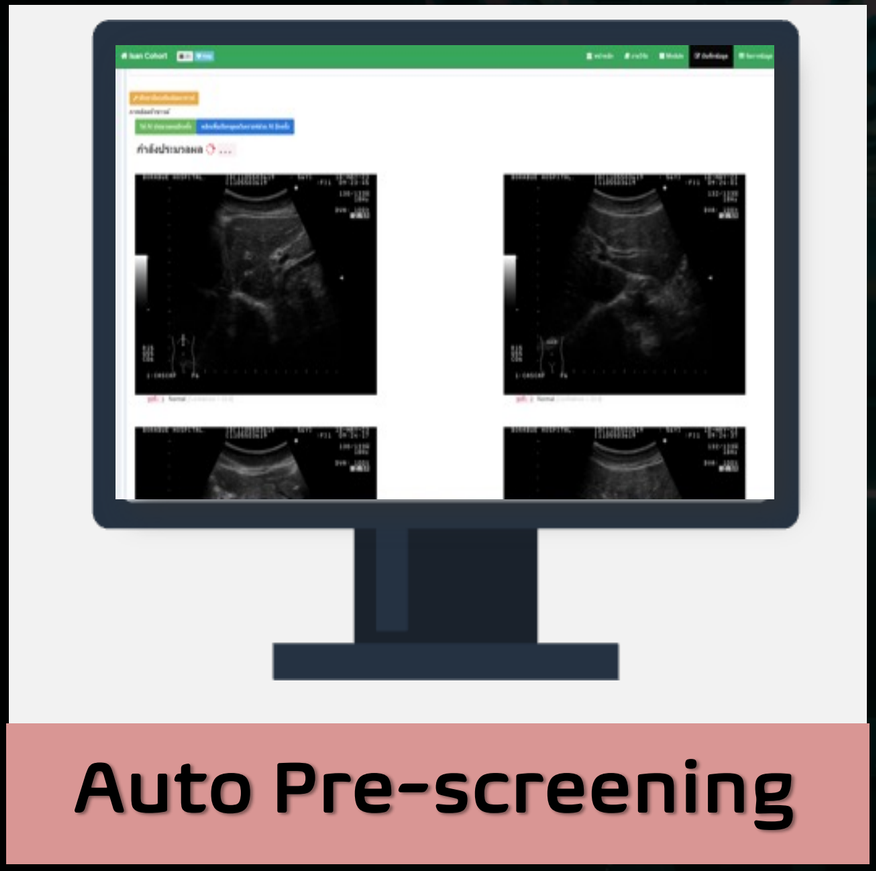
2 Applications

Auto Pre-screening

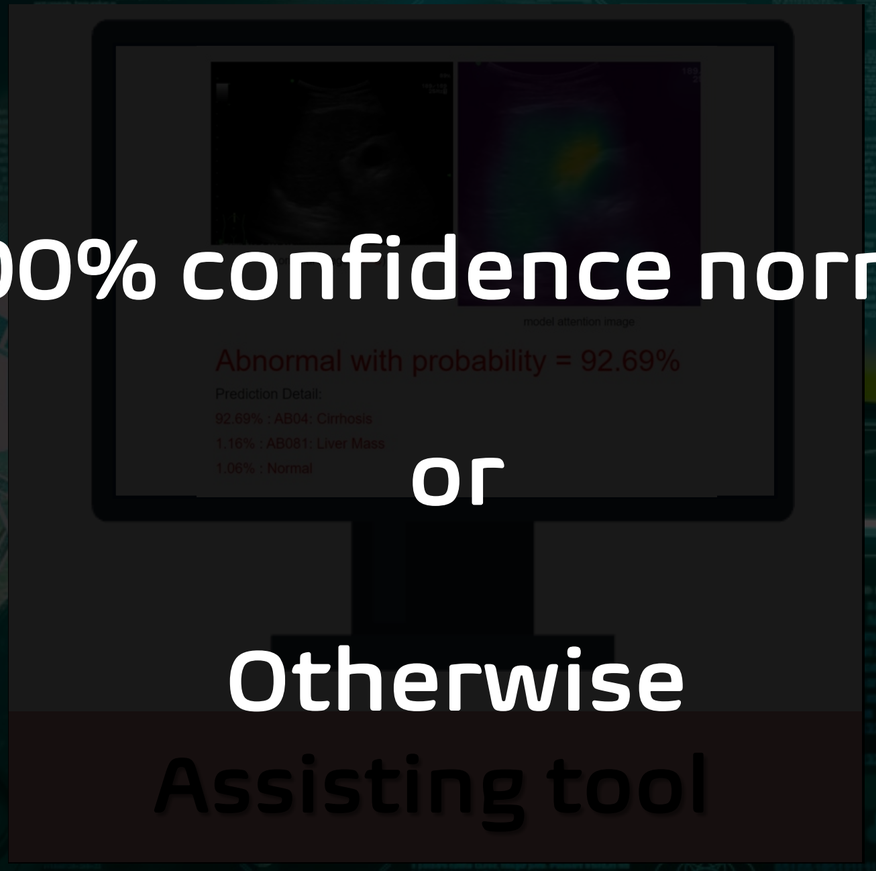


Assisting tool

1st Application



Auto Pre-screening



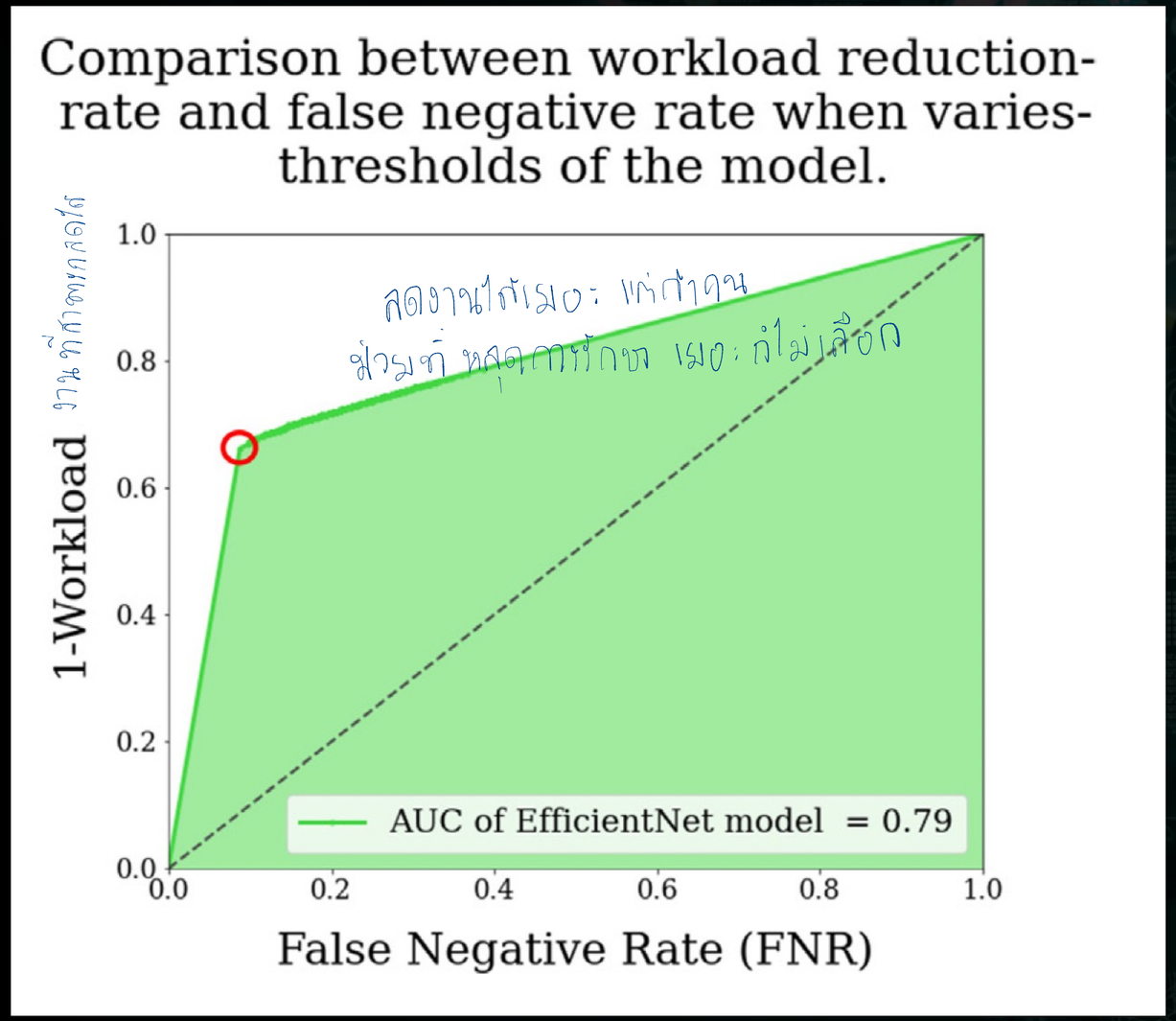
100% confidence normal

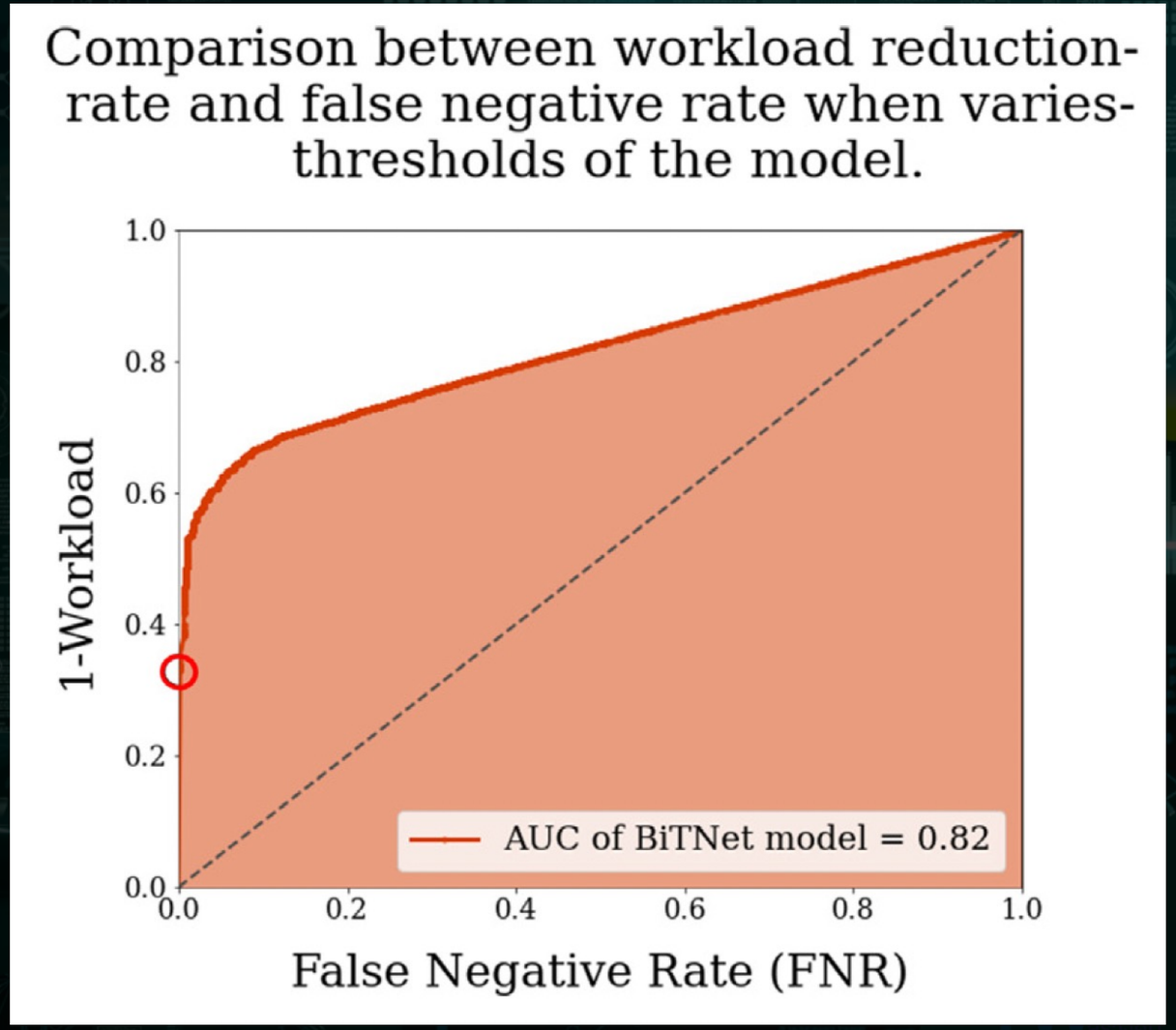
or

Otherwise

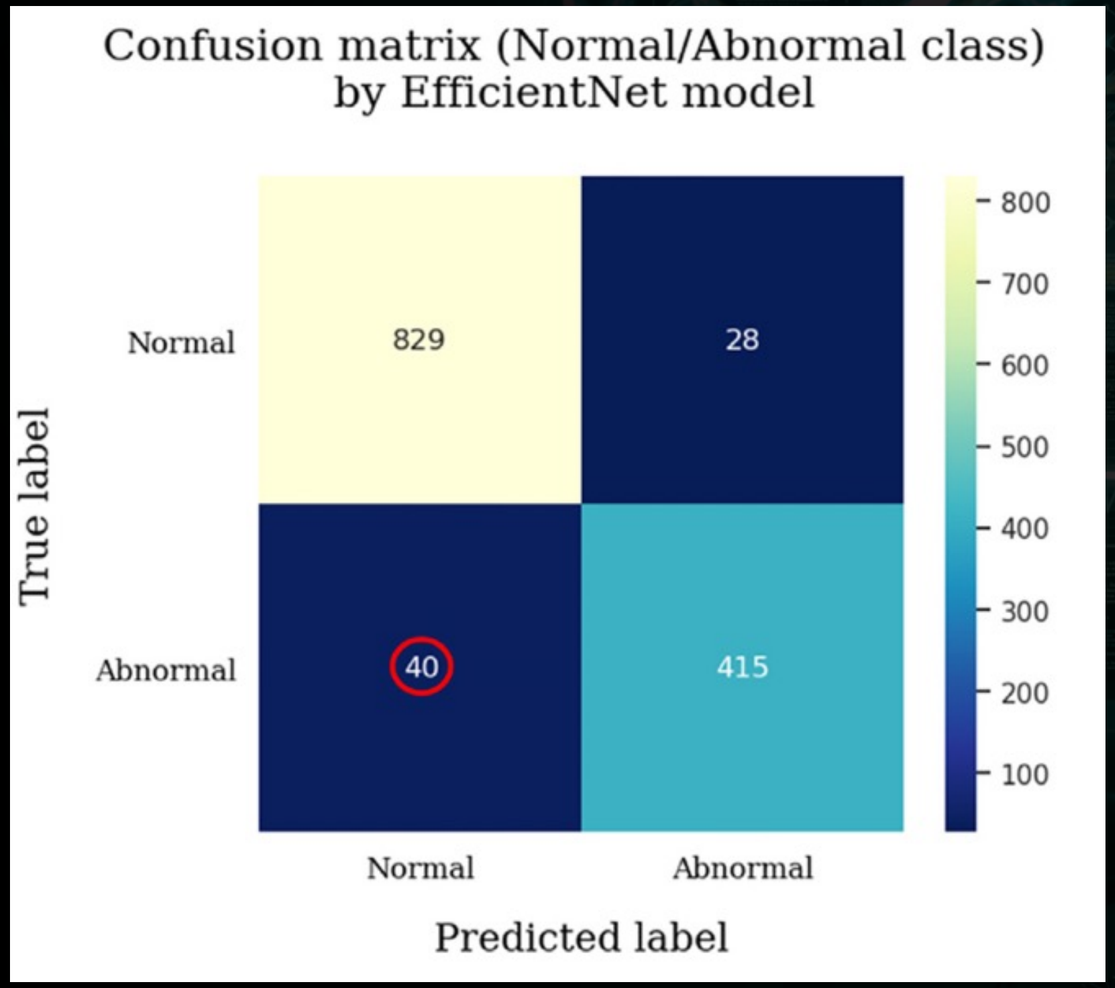
Assisting tool

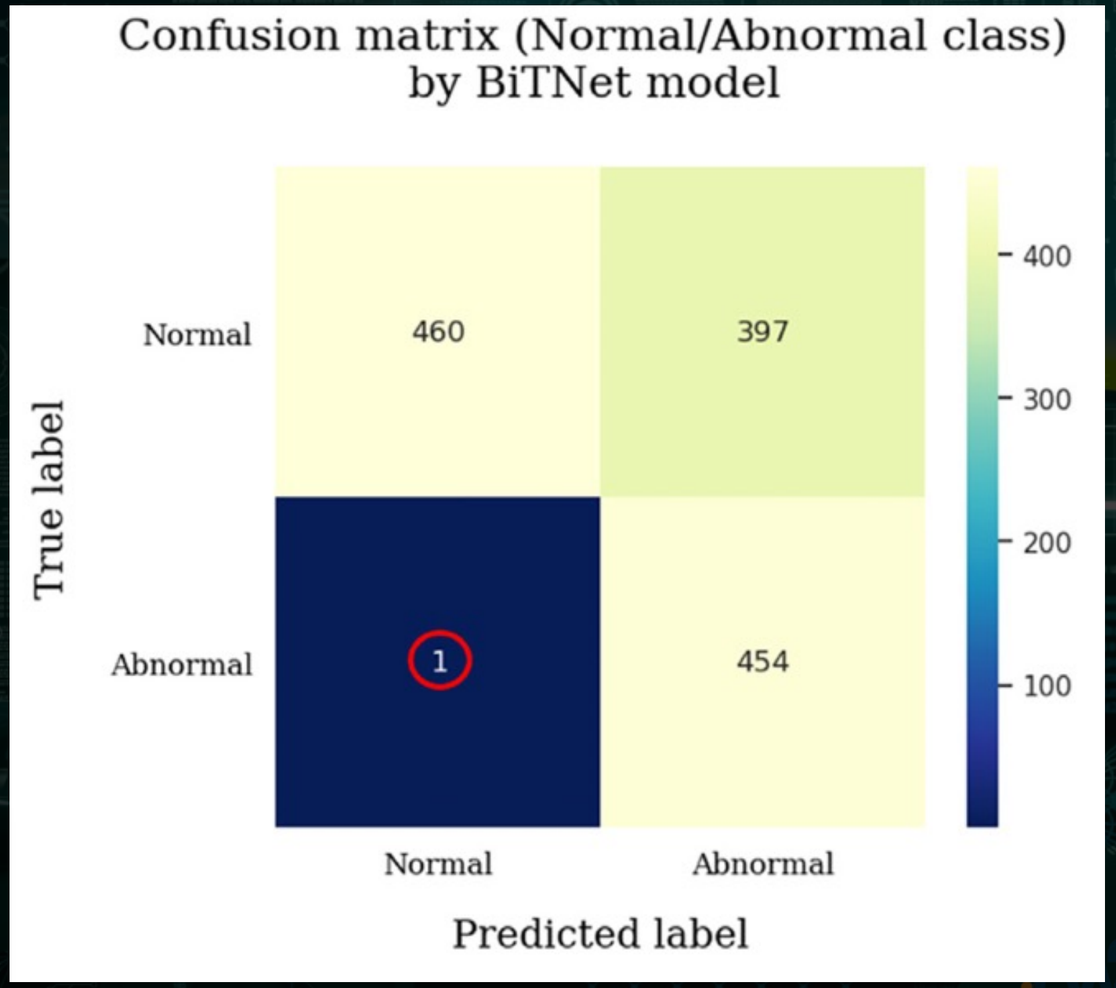
Auto Pre-screening



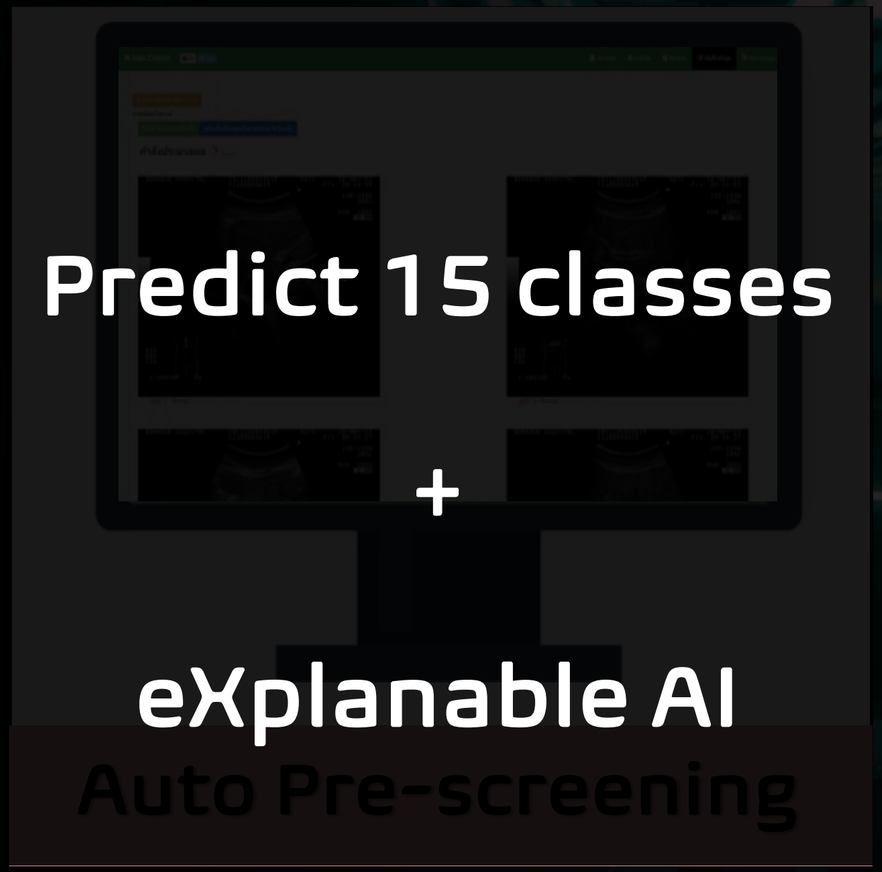


Auto Pre-screening





2nd Application



Predict 15 classes

+

eXplanable AI

Auto Pre-screening

Assisting tool

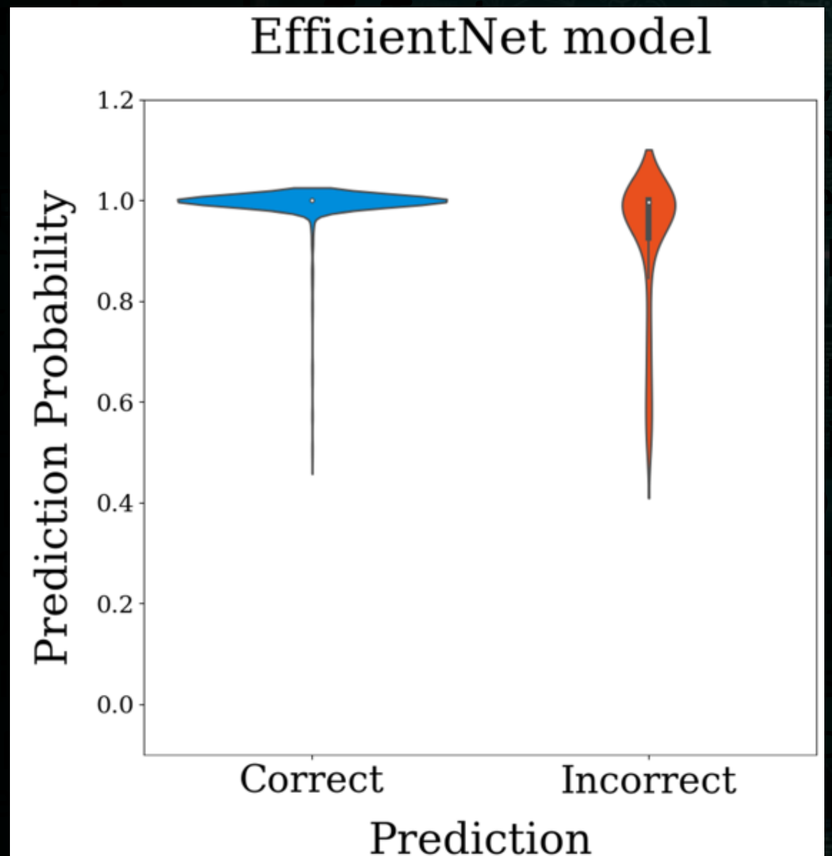
Assisting tool

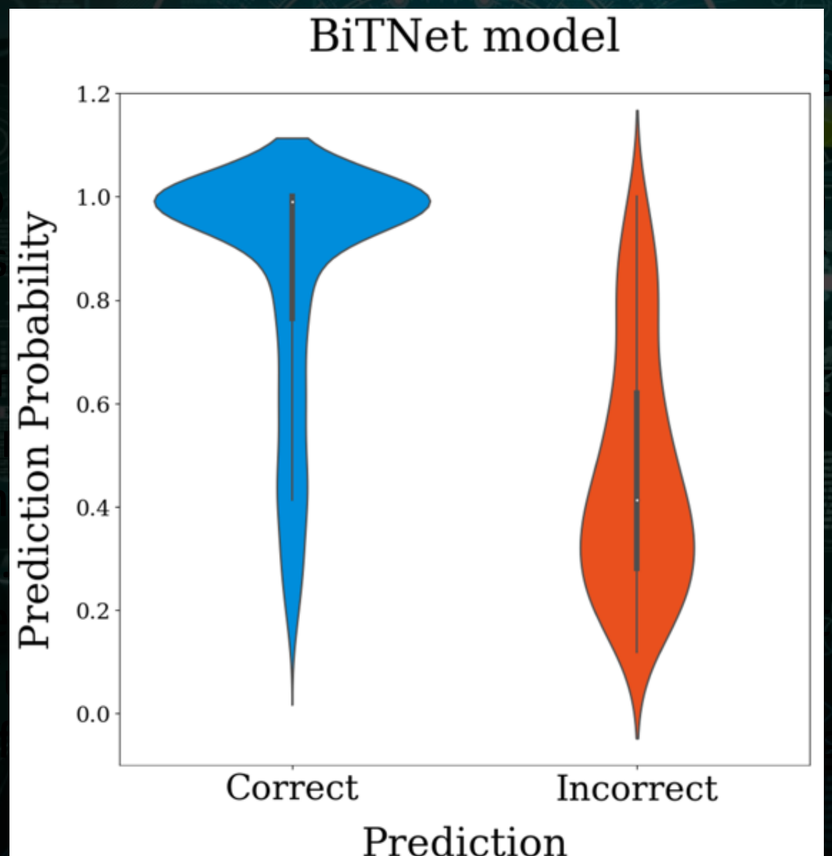
1. The **independent samples T-Test**
   - Compare the means of **mean difference** in prediction confidence of the correct and incorrect groups between the BiTNet model and the EfficientNet model.
     - Hypothesis : The means of mean differences of the BiTNet model were significantly higher than those of EfficientNet.

2. Paired Samples T-Test
   - Compare of mean **accuracy**, **precision**, and **recall** of the diagnostic performance of the participants with and without assistance.
     - Hypothesis : The mean accuracy, precision, and recall scores of the diagnostic performance of the participants with assistance were significantly higher than those without assistance.
   - Compare of mean accuracy between the first round of the experiment and the second round of the experiment with the participants.
     - Hypothesis : The mean accuracy scores no significant difference between the first round and the second round of the experiment.
   - Compare of mean similarity scores between AI suggestion (prediction) and the final decision of the participants when assisted/unassisted.
     - Hypothesis : The mean similarity score of the assisted participants was significantly higher than that of the unassisted participants.

Assisting tool

1. The **independent samples T-Test** ค่าเฉลี่ยของ 2 กลุ่ม
   - Compare the means of **mean difference** in prediction confidence of the correct and incorrect groups between the BiTNet model and the EfficientNet model.
     - Hypothesis : The means of mean differences of the BiTNet model were significantly higher than those of EfficientNet.





Assisting tool

1. The independent samples T-Test
   - Compare the means of **mean difference** in prediction confidence of the correct and incorrect groups between the BiTNet model and the EfficientNet model.
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2. The **Paired Samples T-Test**
   - Compare of mean **accuracy precision**, and **recall** of the diagnostic performance of the participants with and without assistance.
     - Hypothesis : The mean accuracy, precision, and recall scores of the diagnostic performance of the participants with assistance were significantly higher than those without assistance.
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   - Compare of mean similarity scores between AI suggestion (prediction) and the final decision of the participants when assisted/unassisted.
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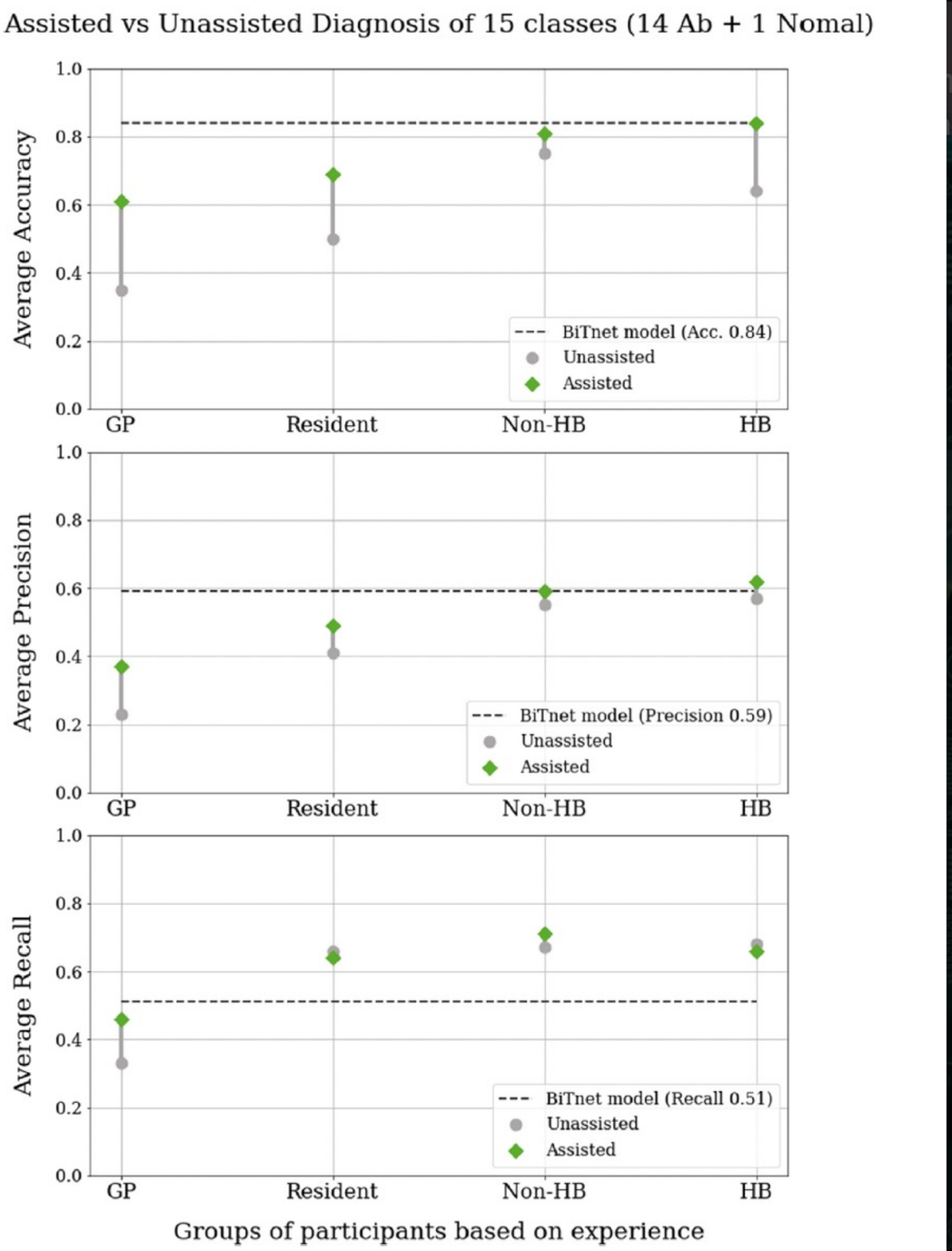
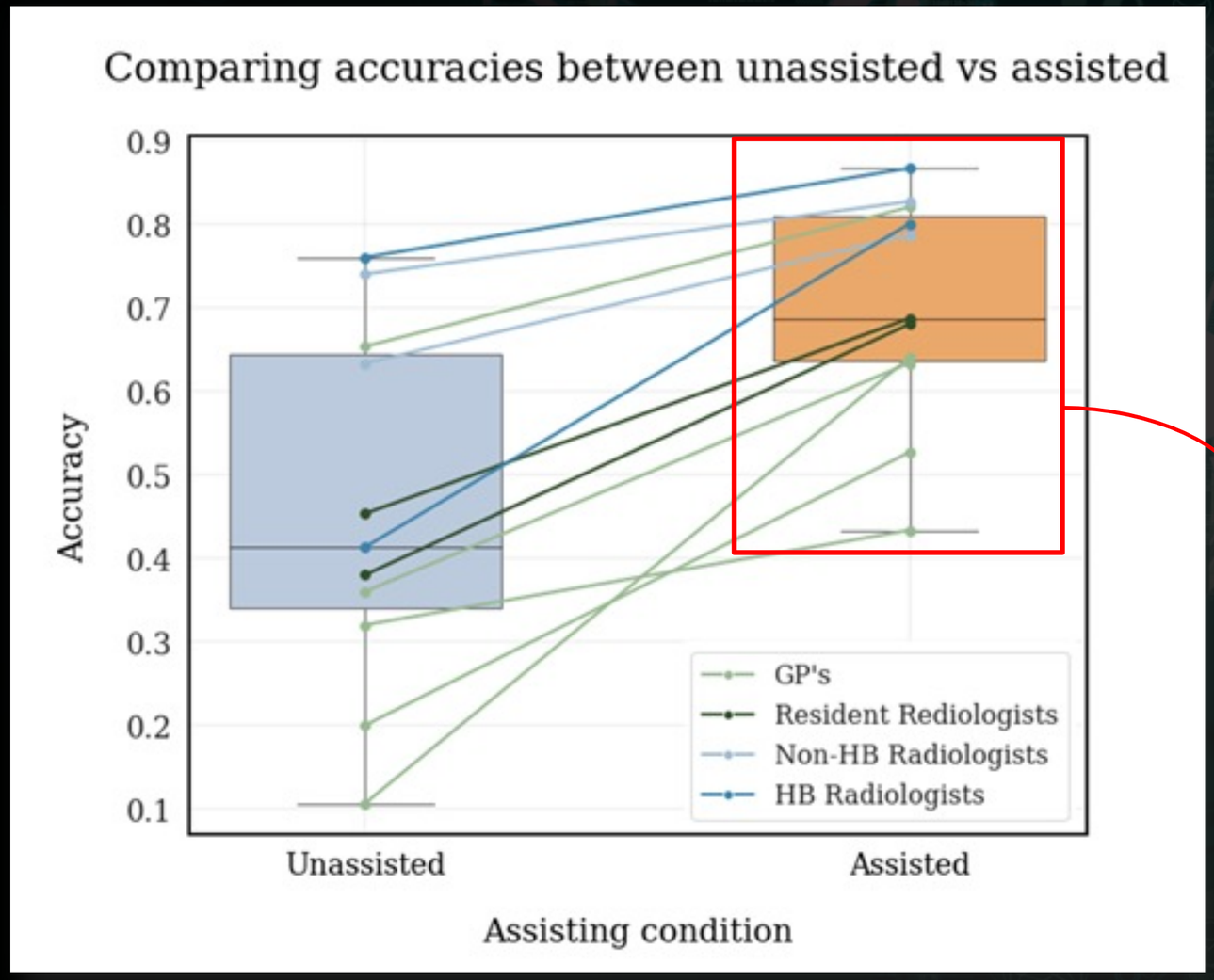


Fig. 10. Comparing assisted versus unassisted diagnosis among four different groups of participants on accuracy, precision, and recall.

Assisted

Assisting tool



increase overall's accuracy by 18%

increase GP's accuracy by 26%

Assisting tool

1. The **Independent samples T-Test**
   - To compare the means of **mean difference** in prediction confidence of the correct and incorrect groups between the BiTNet model and the EfficientNet model.
   - Hypothesis : The means of mean differences of the BiTNet model were significantly higher than those of EfficientNet.

2. The **Paired Samples T-Test**
   - To compare of mean **accuracy**, **precision**, and **recall** of the diagnostic performance of the participants with and without assistance.
   - Hypothesis : The mean accuracy, precision, and recall scores of the diagnostic performance of the participants with assistance were significantly higher than those without assistance.
   - To compare of mean accuracy between the first round of the experiment and the second round of the experiment with the participants.
   - Hypothesis : The mean accuracy scores no significant difference between the first round and the second round of the experiment.

- Compare of mean **similarity scores** between AI suggestion (prediction) and the final decision of the participants when assisted/unassisted
  - Hypothesis : The mean similarity score of the assisted participants was significantly greater than that of the unassisted participants.

Assisting tool

2. The **Paired Samples T-Test**

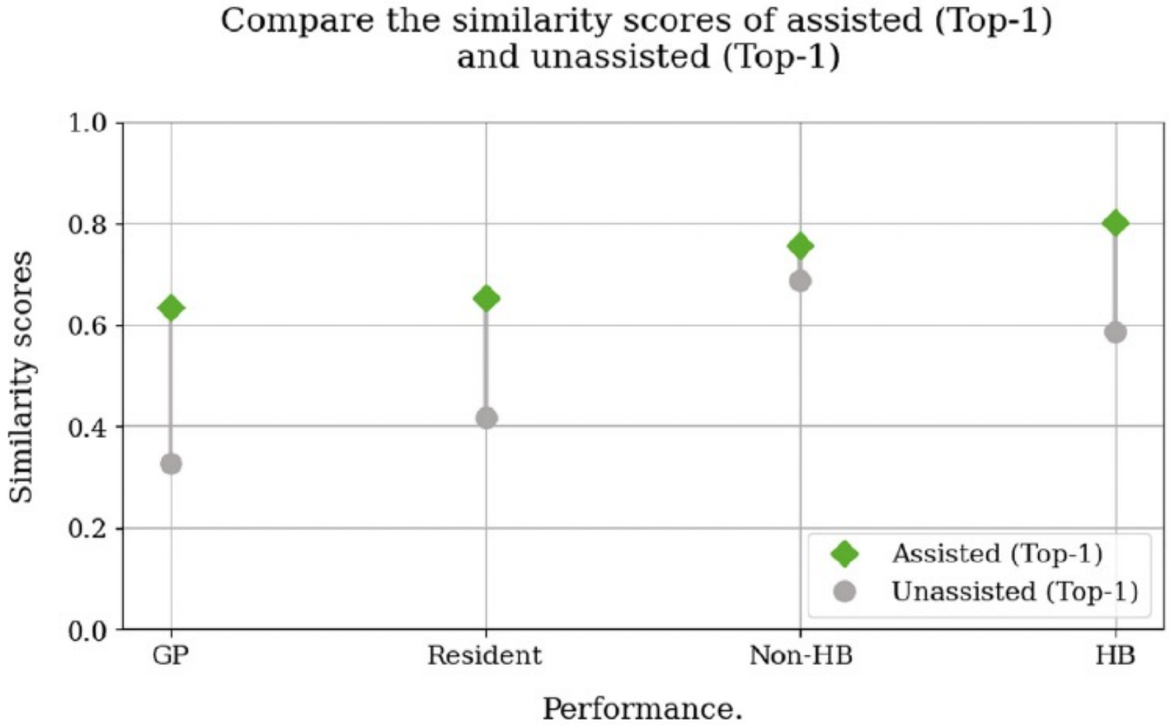


Fig. 11. Similarity score between the answer suggested by the assisting tool and the participant's final decisions, assisted vs. unassisted.

- Compare of mean **similarity scores** between AI suggestion (prediction) and the final decision of the participants when assisted/unassisted
  - Hypothesis : The mean similarity score of the assisted participants was significantly greater than that of the unassisted participants.








สร้างคน
ข้ามพรมแดน

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ESAN
Thailand Coding & AI
Academy

คณะศึกษาศาสตร์ มหาวิทยาลัยขอนแก่น
FACULTY OF EDUCATION KHON KAEN UNIVERSITY
1968

มหาวิทยาลัยขอนแก่น

สอวช
สำนักงานสภานโยบายการอุดมศึกษา
วิทยาศาสตร์ วิจัย
และนวัตกรรมแห่งชาติ

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THAI
PROGRAMMER

SST
SUN SMART TECH

The Asia Foundation

EVER

BOTNOI
GROUP

CODE COMBAT

ClusterKit

DOMECLOUD

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DMAP
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ARENA