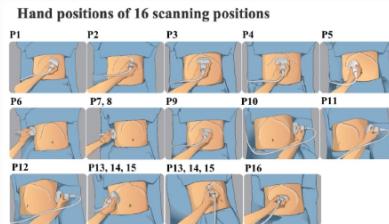


(Biliary Tract Network)

BiTNet : image classification model

Dataset Info

- នាម Ultrasound នៃ 16 អតិថិជន



- Data Collecting flow



- Preprocess រួមទាំងការលើក Bg នៃការការពារ, Augment ដោយទាំង Horizontal shift, Vertical shift, rotate 30°, Bright, shear, zoom

Model (BiTNet)

- Base model ឬ EffcientNet ឬ Classifier layer ឬ RandomForest
- អាជីវកម្មរបស់ខ្លួន ឬ 2 Application យុទ្ធសាស្ត្រ

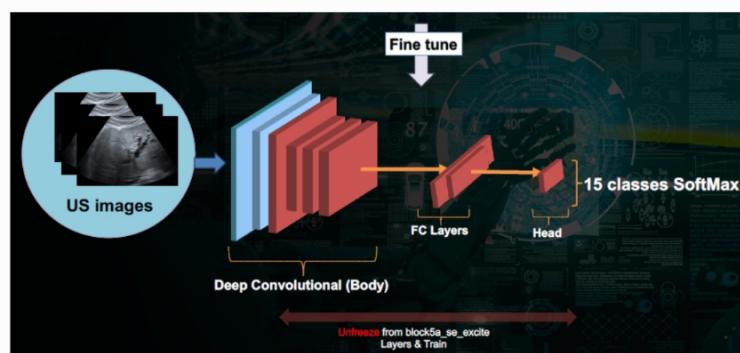
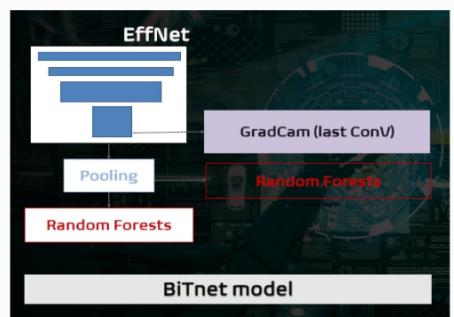
1. Auto Pre-screening : ឱ្យរាយ Normal ឬ Abnormal

2. Assisting tool : ឱ្យរាយរាយ Abnormal ក្នុង 15 classes

- ឥឡូវនេះ សារការណ៍ Pretrained - model យុទ្ធសាស្ត្រ

- Transfer learning

- ផ្ទាំង Classifier layer រួមទាំងការការពារដែលត្រួវការពារ
 - Freeze គ្មានឯង Feature extraction រួមទាំង Optimized Weight
 - UnFreeze & fine-tuning



Model Evaluation

- Auto pre-screening

1. កំណត់ថាអ្នកមាន Normal ឬអ្នកមាន 100%

2. Workload reduction rate

- Assisting Tool

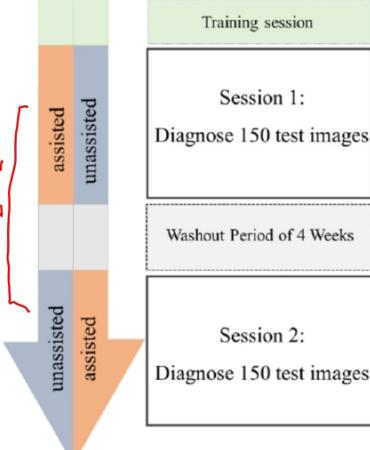
Data distribution (150 test images)					
	FP-A	FP-B	FP-C	FP-D	FP-E
AB01	1	1	1		
AB02	1	1	1		
AB03	1	1	1		
AB04	1	1	1	1	
AB05	1	1	1		
AB06	1	1	1		
AB07	1	1	1		
AB08	1	1	1		
AB09		2	1		
AB10			3		
AB11			1	2	
AB12				3	
Abnormal	11	12	14	6	0
Normal	22	24	28	12	21

Total : 150 images
Abnormal : 43 images
Normal : 107 images

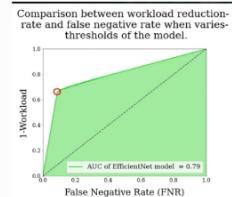


Assisted : នូវ BitNet ឬ

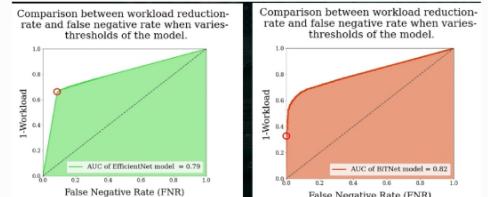
unassisted : នូវ BitNet ឬ



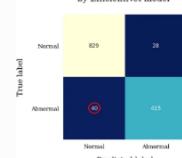
EfficientNet



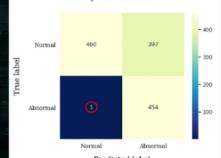
BitNet



Confusion matrix (Normal/Abnormal class) by EfficientNet model



Confusion matrix (Normal/Abnormal class) by BitNet model



1. ផ្តល់ពិនិត្យ EfficientNet នូវ BitNet (Mean Different)

2. ផ្តល់ពិនិត្យ EfficientNet នូវ BitNet (Acc, Precision, Recall)

3. ផ្តល់ពិនិត្យ Assisted នូវ Unassisted ធម្មជាមុន
ស្រង់បញ្ជី AI ការមានការងារ

Table 3

Comparison of mean accuracy, precision, and recall of assisted vs unassisted diagnosis with 99% confidence interval.

Metric	Assisted	Unassisted	p-value
Accuracy	0.74 ± 0.13	0.50 ± 0.23	3.44×10^{-4a}
Precision	0.62 ± 0.15	0.46 ± 0.16	1.58×10^{-4a}
Recall	0.94 ± 0.07	0.85 ± 0.06	0.05

^aindicates p-value < 0.05.