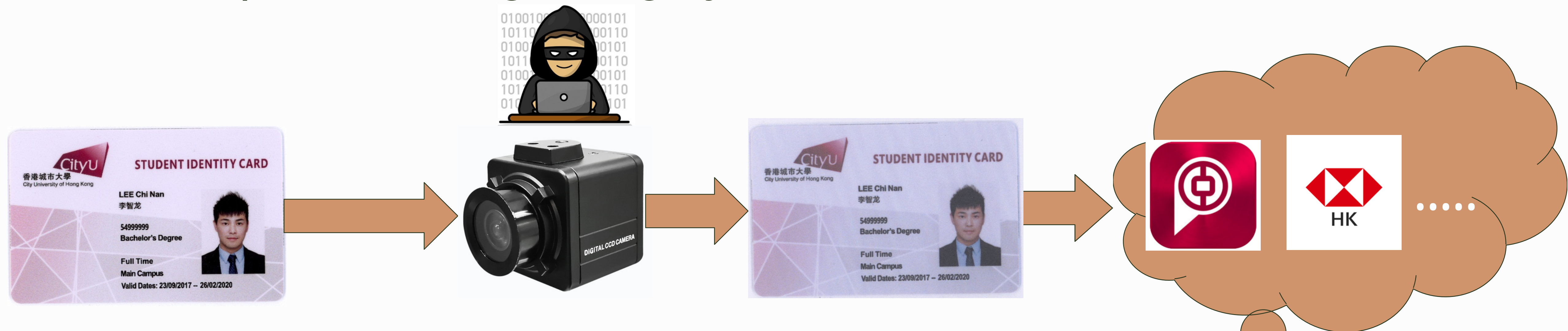


Two-branch multi-scale deep neural network for generalized image recapture attack detection

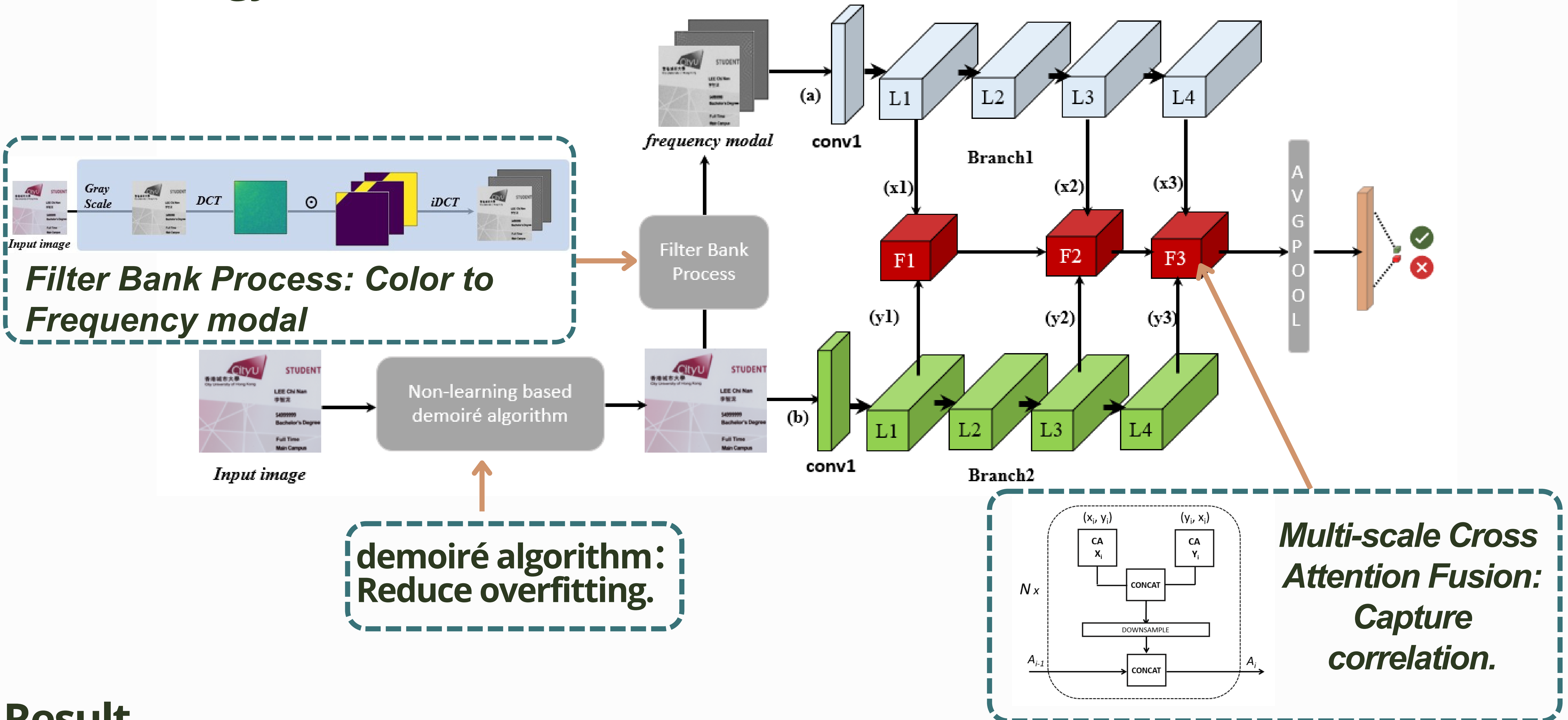
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Supervisor: Dr. Haoliang Li

Objective/Background

- *Background: The image recapture attack is an effective image manipulation method, by recapturing the target image from display or other medium.*
- *Risk: Obtain personal images illegally*



Methodology



Result

Experiment results show that the proposed architecture obtains state-of-the-art performance on different types of recapture scenarios and image datasets attacked by deep learning based demoiré algorithm.

Model	ACC(%) ↑	AUC(%) ↑	EER(%) ↓	AP(%) ↑	HTER(%) ↓
densenet121	72.01	80.00	27.87	88.82	27.07
efficientnetb4	81.82	89.90	18.69	93.27	21.50
resnet50	68.52	80.10	24.58	88.22	26.70
densenet169	69.12	83.92	22.89	91.22	25.28
densenet201	72.20	87.44	20.74	92.39	23.77
resnet101	64.06	74.30	30.23	86.91	29.75
resnet152	72.58	90.86	15.95	93.07	23.02
resnet34	71.57	80.07	27.28	89.90	25.24
resnext50	72.63	81.23	25.58	88.34	23.55
cdc network[12]	77.52	85.90	21.33	91.06	25.19
siamese network[13]	82.20	87.34	17.59	89.92	17.60
branch1	79.84	91.51	15.33	94.87	16.31
proposed(3scale)	84.65	94.12	13.29	96.82	13.31

Model	ACC(%) ↑	AUC(%) ↑	EER(%) ↓	AP(%) ↑	HTER(%) ↓
efficientnetb4	54.62	77.60	28.63	73.93	45.37
densenet121	63.65	88.96	18.01	87.27	36.34
densenet169	68.84	90.26	17.32	89.66	31.15
densenet201	68.34	91.77	15.48	90.29	31.65
resnet50	61.81	88.41	19.94	86.62	38.18
resnet101	63.82	88.27	18.64	87.42	36.17
resnet152	65.35	89.29	18.38	88.70	34.64
resnext50	72.63	81.23	25.58	88.34	23.55
proposed	84.34	90.59	15.14	92.51	15.65

