

Relationship Between Doctors' Knowledge And Our Method

Doctors

Our network

Zoom step

Lesion Area Attention Module

Observe step

Feature Extraction Module

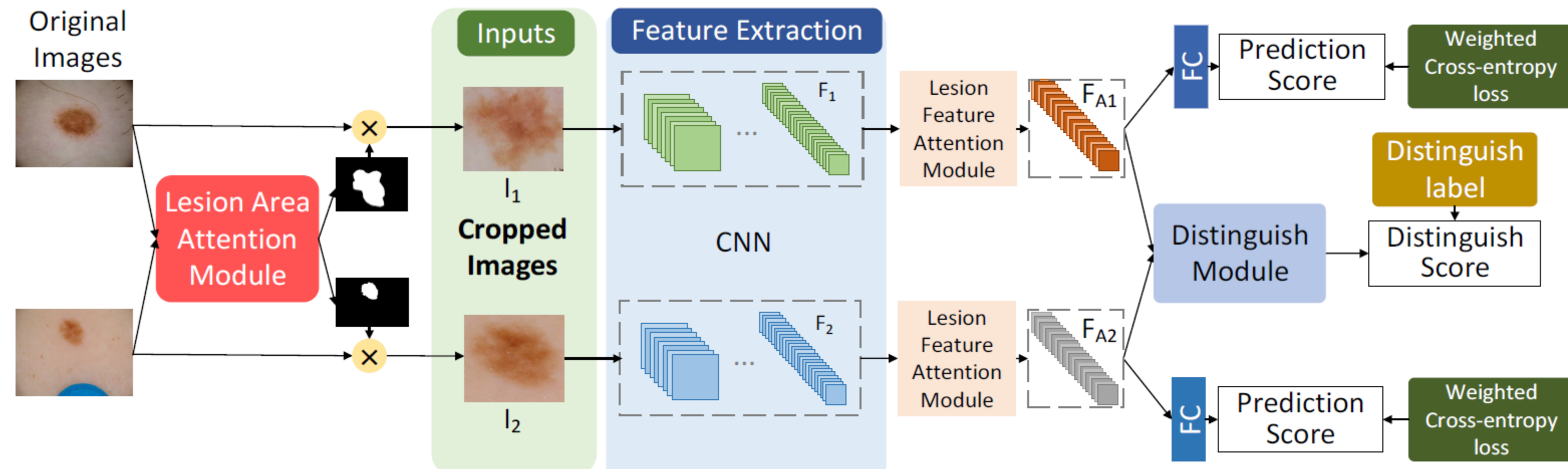
Compare step

Lesion Feature Attention Module

Distinguish strategy

Distinguish Module

Our Method



Experimental Results

State-of-the-art results

ISIC 2016

ISIC 2017

New perspectives

Doctors' diagnostic process

Doctors' learning process

| Method | AP | ACC | AUC |
|----------------|--------------|--------------|--------------|
| CIN(ours) | 0.740 | 0.887 | 0.873 |
| DCNN-FV [21] | 0.685 | 0.868 | 0.852 |
| SDL [22] | 0.664 | 0.858 | 0.818 |
| CUMED [20] | 0.637 | 0.855 | 0.804 |
| GTDL [7] | 0.619 | 0.813 | 0.802 |
| Result2-3B [7] | 0.615 | 0.844 | 0.808 |
| USYD [7] | 0.580 | 0.686 | 0.793 |
| Mufic-IT [7] | 0.534 | 0.760 | 0.685 |

| Methods | External data | Melanoma Classification | | | | | Seborrheic Keratosis | | | | | Average AUC |
|---------------------|---------------|-------------------------|--------------|--------------|--------------|--------------|----------------------|--------------|--------------|--------------|--------------|--------------|
| | | AUC | AP | ACC | SE | SP | AUC | AP | ACC | SE | SP | |
| CIN(ours) | 0 | 0.920 | 0.814 | 0.894 | 0.645 | 0.948 | 0.981 | 0.902 | 0.943 | 0.829 | 0.965 | 0.951 |
| RHN [17] | 0 | 0.883 | 0.810 | 0.890 | 0.732 | 0.901 | 0.961 | 0.843 | 0.885 | 0.912 | 0.907 | 0.926 |
| ARL-CNN [23] | 1320 | 0.875 | - | 0.850 | 0.658 | 0.896 | 0.958 | - | 0.868 | 0.878 | 0.867 | 0.917 |
| SDL [9] | 1320 | 0.868 | 0.689 | 0.872 | - | - | 0.955 | 0.818 | 0.917 | - | - | 0.912 |
| RENI [11] | 1444 | 0.868 | 0.710 | 0.828 | 0.735 | 0.851 | 0.953 | 0.786 | 0.803 | 0.978 | 0.773 | 0.911 |
| gpm-LSSSD [8] | 900 | 0.856 | 0.747 | 0.823 | 0.103 | 0.998 | 0.963 | 0.839 | 0.875 | 0.178 | 0.998 | 0.910 |
| Alea-Jacta-Est [12] | 7544 | 0.874 | 0.715 | 0.872 | 0.547 | 0.950 | 0.943 | 0.790 | 0.895 | 0.356 | 0.990 | 0.908 |
| EResNet [1] | 1600 | 0.870 | 0.732 | 0.858 | 0.427 | 0.963 | 0.921 | 0.770 | 0.918 | 0.589 | 0.976 | 0.896 |
| DLISL [4] | 1341 | 0.836 | 0.665 | 0.845 | 0.350 | 0.965 | 0.935 | 0.808 | 0.913 | 0.556 | 0.976 | 0.886 |