Date Proiect

Dataset piele: https://www.kaggle.com/code/alexishzl/skin-cancer-isic/data

Dataset poze cu obiecte: https://www.kaggle.com/datasets/shamsaddin97/image-captioning-dataset-random-images

Cu datasetul din ISIC + poze normal skin:

```
Epoch 1/35
113/113 [==============================] - 122s 1s/step - loss: 2.0692 - accuracy: 0.2032 - val_loss: 1.9917 - val_accuracy: 0.2412
Epoch 2/35
113/113 [==============================] - 107s 950ms/step - loss: 1.8666 - accuracy: 0.2957 - val_loss: 1.7961 - val_accuracy: 0.3518
Epoch 3/35
113/113 [==============================] - 101s 896ms/step - loss: 1.7086 - accuracy: 0.3970 - val_loss: 1.6454 - val_accuracy: 0.4403
Epoch 4/35
113/113 [==============================] - 98s 863ms/step - loss: 1.5994 - accuracy: 0.4402 - val_loss: 1.5756 - val_accuracy: 0.4137
Epoch 5/35
113/113 [==============================] - 97s 859ms/step - loss: 1.5616 - accuracy: 0.4607 - val_loss: 1.5557 - val_accuracy: 0.4513
Epoch 6/35
113/113 [==============================] - 99s 873ms/step - loss: 1.5129 - accuracy: 0.4662 - val_loss: 1.6498 - val_accuracy: 0.3562
Epoch 7/35
113/113 [==============================] - 97s 856ms/step - loss: 1.4572 - accuracy: 0.4928 - val_loss: 1.5614 - val_accuracy: 0.4181
Epoch 8/35
113/113 [==============================] - 96s 854ms/step - loss: 1.3761 - accuracy: 0.5039 - val_loss: 1.5571 - val_accuracy: 0.4137
Epoch 9/35
113/113 [==============================] - 97s 855ms/step - loss: 1.3340 - accuracy: 0.5260 - val_loss: 1.6255 - val_accuracy: 0.3783
Epoch 10/35
113/113 [==============================] - 97s 863ms/step - loss: 1.2911 - accuracy: 0.5454 - val_loss: 1.5828 - val_accuracy: 0.4181
Epoch 11/35
113/113 [==============================] - 97s 857ms/step - loss: 1.2132 - accuracy: 0.5642 - val_loss: 1.5406 - val_accuracy: 0.4646
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Epoch 12/35
113/113 [==============================] - 96s 849ms/step - loss: 1.1502 - accuracy: 0.5914 - val_loss: 1.6936 - val_accuracy: 0.4381
Epoch 13/35
113/113 [==============================] - 96s 850ms/step - loss: 1.2493 - accuracy: 0.5587 - val_loss: 1.7557 - val_accuracy: 0.4602
Epoch 14/35
113/113 [==============================] - 96s 848ms/step - loss: 1.2235 - accuracy: 0.5592 - val_loss: 1.8954 - val_accuracy: 0.4159
Epoch 15/35
113/113 [==============================] - 99s 878ms/step - loss: 1.0749 - accuracy: 0.6035 - val_loss: 1.7760 - val_accuracy: 0.4735
Epoch 16/35
113/113 [==============================] - 97s 857ms/step - loss: 1.0501 - accuracy: 0.6334 - val_loss: 2.1020 - val_accuracy: 0.4093
Epoch 17/35
113/113 [==============================] - 96s 854ms/step - loss: 0.8653 - accuracy: 0.6816 - val_loss: 2.1998 - val_accuracy: 0.4358
Epoch 18/35
113/113 [==============================] - 96s 854ms/step - loss: 0.7250 - accuracy: 0.7353 - val_loss: 2.2447 - val_accuracy: 0.4513
Epoch 19/35
113/113 [==============================] - 97s 857ms/step - loss: 0.7695 - accuracy: 0.7309 - val_loss: 2.2260 - val_accuracy: 0.4181
Epoch 20/35
113/113 [==============================] - 96s 853ms/step - loss: 0.6633 - accuracy: 0.7470 - val_loss: 2.2933 - val_accuracy: 0.4336
Epoch 21/35
113/113 [==============================] - 97s 857ms/step - loss: 0.5990 - accuracy: 0.7852 - val_loss: 2.4526 - val_accuracy: 0.4181
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Epoch 22/35
113/113 [==============================] - 96s 852ms/step - loss: 0.6015 - accuracy: 0.7890 - val_loss: 2.5831 - val_accuracy: 0.3872
Epoch 23/35
113/113 [==============================] - 96s 851ms/step - loss: 0.6247 - accuracy: 0.7774 - val_loss: 3.6202 - val_accuracy: 0.3385
Epoch 24/35
113/113 [==============================] - 100s 888ms/step - loss: 0.5618 - accuracy: 0.8018 - val_loss: 3.3621 - val_accuracy: 0.3518
Epoch 25/35
113/113 [==============================] - 99s 876ms/step - loss: 0.5387 - accuracy: 0.8051 - val_loss: 3.6545 - val_accuracy: 0.3518
Epoch 26/35
113/113 [==============================] - 96s 849ms/step - loss: 0.5463 - accuracy: 0.8200 - val_loss: 2.7212 - val_accuracy: 0.3717
Epoch 27/35
113/113 [==============================] - 96s 847ms/step - loss: 0.4244 - accuracy: 0.8621 - val_loss: 3.0498 - val_accuracy: 0.4093
Epoch 28/35
113/113 [==============================] - 96s 854ms/step - loss: 0.3626 - accuracy: 0.8749 - val_loss: 3.6711 - val_accuracy: 0.3695
Epoch 29/35
113/113 [==============================] - 97s 858ms/step - loss: 0.2996 - accuracy: 0.8942 - val_loss: 4.2729 - val_accuracy: 0.3451
Epoch 30/35
113/113 [==============================] - 98s 872ms/step - loss: 0.2762 - accuracy: 0.9136 - val_loss: 4.6404 - val_accuracy: 0.3584
Epoch 31/35
113/113 [==============================] - 96s 852ms/step - loss: 0.3233 - accuracy: 0.8998 - val_loss: 4.6038 - val_accuracy: 0.3429
Epoch 32/35
```

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Epoch 31/35
113/113 [==============================] - 96s 852ms/step - loss: 0.3233 - accuracy: 0.8998 - val_loss: 4.6038 - val_accuracy: 0.3429
Epoch 32/35
113/113 [==============================] - 96s 852ms/step - loss: 0.3313 - accuracy: 0.8793 - val_loss: 4.6150 - val_accuracy: 0.3827
Epoch 33/35
113/113 [==============================] - 96s 852ms/step - loss: 0.3158 - accuracy: 0.8920 - val_loss: 4.2721 - val_accuracy: 0.3717
Epoch 34/35
113/113 [==============================] - 97s 857ms/step - loss: 0.2112 - accuracy: 0.9252 - val_loss: 4.6494 - val_accuracy: 0.3429
Epoch 35/35
113/113 [==============================] - 96s 852ms/step - loss: 0.1863 - accuracy: 0.9391 - val_loss: 4.5628 - val_accuracy: 0.3805
```

Am egalat numarul de poze, 300 de poze in fiecare folder:

```
Epoch 1/25
155/155 [==============================] - 130s 818ms/step - loss: 2.0661 - accuracy: 0.2245 - val_loss: 2.1126 - val_accuracy: 0.2880
Epoch 2/25
155/155 [==============================] - 146s 942ms/step - loss: 1.5725 - accuracy: 0.3985 - val_loss: 1.4852 - val_accuracy: 0.4159
Epoch 3/25
155/155 [==============================] - 137s 886ms/step - loss: 1.4624 - accuracy: 0.4462 - val_loss: 1.4957 - val_accuracy: 0.4110
Epoch 4/25
155/155 [==============================] - 137s 887ms/step - loss: 1.3510 - accuracy: 0.4927 - val_loss: 1.4184 - val_accuracy: 0.4563
Epoch 5/25
155/155 [==============================] - 138s 889ms/step - loss: 1.2237 - accuracy: 0.5413 - val_loss: 1.3114 - val_accuracy: 0.4854
Epoch 6/25
155/155 [==============================] - 137s 881ms/step - loss: 1.1669 - accuracy: 0.5534 - val_loss: 1.2357 - val_accuracy: 0.5291
Epoch 7/25
155/155 [==============================] - 139s 897ms/step - loss: 1.0774 - accuracy: 0.5975 - val_loss: 1.1780 - val_accuracy: 0.5793
Epoch 8/25
155/155 [==============================] - 137s 882ms/step - loss: 0.9854 - accuracy: 0.6440 - val_loss: 1.1591 - val_accuracy: 0.5939
Epoch 9/25
155/155 [==============================] - 137s 885ms/step - loss: 0.8726 - accuracy: 0.6934 - val_loss: 1.1175 - val_accuracy: 0.6149
Epoch 10/25
```

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Epoch 10/25
155/155 [==============================] - 137s 887ms/step - loss: 0.7422 - accuracy: 0.7423 - val_loss: 1.1732 - val_accuracy: 0.6375
Epoch 11/25
155/155 [==============================] - 136s 881ms/step - loss: 0.6699 - accuracy: 0.7666 - val_loss: 1.1236 - val_accuracy: 0.6553
Epoch 12/25
155/155 [==============================] - 137s 882ms/step - loss: 0.6459 - accuracy: 0.7714 - val_loss: 1.7734 - val_accuracy: 0.5405
Epoch 13/25
155/155 [==============================] - 135s 875ms/step - loss: 0.6086 - accuracy: 0.7763 - val_loss: 1.4929 - val_accuracy: 0.5728
Epoch 14/25
155/155 [==============================] - 136s 878ms/step - loss: 0.5432 - accuracy: 0.8167 - val_loss: 1.4280 - val_accuracy: 0.5680
Epoch 15/25
155/155 [==============================] - 154s 997ms/step - loss: 0.5181 - accuracy: 0.8188 - val_loss: 1.1343 - val_accuracy: 0.7152
Epoch 16/25
155/155 [==============================] - 139s 897ms/step - loss: 0.3974 - accuracy: 0.8637 - val_loss: 1.1981 - val_accuracy: 0.6780
Epoch 17/25
155/155 [==============================] - 137s 883ms/step - loss: 0.4088 - accuracy: 0.8661 - val_loss: 1.0868 - val_accuracy: 0.7055
Epoch 18/25
155/155 [==============================] - 137s 885ms/step - loss: 0.4184 - accuracy: 0.8548 - val_loss: 1.0119 - val_accuracy: 0.7524
Epoch 19/25
155/155 [==============================] - 137s 887ms/step - loss: 0.3414 - accuracy: 0.8823 - val_loss: 1.0467 - val_accuracy: 0.7508
Epoch 20/25
155/155 [==============================] - 137s 886ms/step - loss: 0.3193 - accuracy: 0.8928 - val_loss: 1.1002 - val_accuracy: 0.7460
```

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Epoch 21/25
155/155 [==============================] - 138s 889ms/step - loss: 0.3102 - accuracy: 0.8964 - val_loss: 1.2140 - val_accuracy: 0.7152
Epoch 22/25
155/155 [==============================] - 137s 882ms/step - loss: 0.2830 - accuracy: 0.9009 - val_loss: 1.1821 - val_accuracy: 0.7201
Epoch 23/25
155/155 [==============================] - 136s 878ms/step - loss: 0.2488 - accuracy: 0.9195 - val_loss: 1.1263 - val_accuracy: 0.7540
Epoch 24/25
155/155 [==============================] - 136s 881ms/step - loss: 0.2244 - accuracy: 0.9207 - val_loss: 1.5354 - val_accuracy: 0.7104
Epoch 25/25
155/155 [==============================] - 144s 928ms/step - loss: 0.2391 - accuracy: 0.9223 - val_loss: 1.3543 - val_accuracy: 0.7282
```

Numar egalat de poze, 500 de poze in fiecare folder

```
Epoch 1/25
250/250 [==============================] - 233s 919ms/step - loss: 2.0809 - accuracy: 0.2062 - val_loss: 1.8275 - val_accuracy: 0.3520
Epoch 2/25
250/250 [==============================] - 219s 875ms/step - loss: 1.5835 - accuracy: 0.4038 - val_loss: 1.5837 - val_accuracy: 0.4310
Epoch 3/25
250/250 [==============================] - 231s 926ms/step - loss: 1.4174 - accuracy: 0.4602 - val_loss: 1.5615 - val_accuracy: 0.4290
Epoch 4/25
250/250 [==============================] - 221s 883ms/step - loss: 1.3247 - accuracy: 0.4990 - val_loss: 1.5207 - val_accuracy: 0.4770
Epoch 5/25
250/250 [==============================] - 218s 871ms/step - loss: 1.1976 - accuracy: 0.5485 - val_loss: 1.2900 - val_accuracy: 0.5300
Epoch 6/25
250/250 [==============================] - 226s 905ms/step - loss: 1.0759 - accuracy: 0.5955 - val_loss: 1.2607 - val_accuracy: 0.5590
Epoch 7/25
250/250 [==============================] - 218s 872ms/step - loss: 0.9971 - accuracy: 0.6348 - val_loss: 1.0363 - val_accuracy: 0.6420
Epoch 8/25
250/250 [==============================] - 219s 878ms/step - loss: 0.8886 - accuracy: 0.6805 - val_loss: 1.1192 - val_accuracy: 0.6280
Epoch 9/25
250/250 [==============================] - 218s 872ms/step - loss: 0.7735 - accuracy: 0.7225 - val_loss: 0.9038 - val_accuracy: 0.7100
Epoch 10/25
250/250 [==============================] - 218s 872ms/step - loss: 0.7159 - accuracy: 0.7505 - val_loss: 0.9393 - val_accuracy: 0.6870
Epoch 11/25
```

```
Epoch 11/25
250/250 [==============================] - 219s 877ms/step - loss: 0.6296 - accuracy: 0.7803 - val_loss: 0.8498 - val_accuracy: 0.7480
Epoch 12/25
250/250 [==============================] - 219s 877ms/step - loss: 0.5348 - accuracy: 0.8112 - val_loss: 0.9897 - val_accuracy: 0.7270
Epoch 13/25
250/250 [==============================] - 251s 1s/step - loss: 0.5340 - accuracy: 0.8195 - val_loss: 0.8185 - val_accuracy: 0.7650
Epoch 14/25
250/250 [==============================] - 247s 988ms/step - loss: 0.4166 - accuracy: 0.8575 - val_loss: 0.8742 - val_accuracy: 0.7690
Epoch 15/25
250/250 [==============================] - 225s 901ms/step - loss: 0.3995 - accuracy: 0.8602 - val_loss: 0.9616 - val_accuracy: 0.7300
Epoch 16/25
250/250 [==============================] - 270s 1s/step - loss: 0.3672 - accuracy: 0.8745 - val_loss: 0.8464 - val_accuracy: 0.7870
Epoch 17/25
250/250 [==============================] - 224s 897ms/step - loss: 0.3396 - accuracy: 0.8823 - val_loss: 0.8631 - val_accuracy: 0.8000
Epoch 18/25
250/250 [==============================] - 220s 879ms/step - loss: 0.3265 - accuracy: 0.8917 - val_loss: 0.7847 - val_accuracy: 0.8210
Epoch 19/25
250/250 [==============================] - 240s 959ms/step - loss: 0.3028 - accuracy: 0.8985 - val_loss: 1.1121 - val_accuracy: 0.7700
```

```
Epoch 20/25
250/250 [==============================] - 291s 1s/step - loss: 0.2785 - accuracy: 0.9025 - val_loss: 0.8916 - val_accuracy: 0.8140
Epoch 21/25
250/250 [==============================] - 276s 1s/step - loss: 0.2336 - accuracy: 0.9197 - val_loss: 1.0136 - val_accuracy: 0.7960
Epoch 22/25
250/250 [==============================] - 297s 1s/step - loss: 0.2442 - accuracy: 0.9187 - val_loss: 1.0095 - val_accuracy: 0.7960
Epoch 23/25
250/250 [==============================] - 295s 1s/step - loss: 0.2757 - accuracy: 0.9147 - val_loss: 0.9215 - val_accuracy: 0.8080
Epoch 24/25
250/250 [==============================] - 337s 1s/step - loss: 0.2761 - accuracy: 0.9105 - val_loss: 0.8348 - val_accuracy: 0.8420
Epoch 25/25
250/250 [==============================] - 316s 1s/step - loss: 0.2429 - accuracy: 0.9222 - val_loss: 0.7750 - val_accuracy: 0.8370
```

Varianta 3:

```
Instances:  431
Correct:  300
Errors:  131
```

Acc: 70%

Varianta 1:

```
Instances:  431
Correct:  243
Errors:  188
```

Acc: 56%

Varianta 2:

```
Instances:  431
Correct:  259
Errors:  172
```

Acc= 60%

Acuratete la detectarea pielii:

```
Instances:  379
Correct:  375
Errors:  4
```

Acc: 98%