In [ ]:
```
import matplotlib.pyplot as plt
import numpy as np
```

In [ ]:
```
# copy in data from models
unet_dense = [0.20812642017533506, 0.2578258598403149, 0.3865207163270
9667,
              0.48511553058324386, 0.5565386885128203, 0.6104222299758
69,
              0.7634135886712623, 0.8907896448739177, 0.88179867361746
66,
             0.9257373102794859, 0.9174220094059201, 0.959778019183091
5,
             0.9650313255954475, 0.9658791233827932, 0.972471878724827
4,
             0.9669660754972844, 0.9705856855174897, 0.975425425295711
9,
             0.9754254252957119, 0.9722009792304509]
binary_unet = [0.03076708, 0.26077694, 0.69731647,
               0.8761656, 0.9267923, 0.9440743,
               0.9646625, 0.96605474, 0.9796819,
               0.9873327, 0.9905527, 0.9939194,
               0.9946747, 0.99616665, 0.9971552,
               0.99708843, 0.99812275, 0.99848175,
               0.99828255, 0.9985839]
unet = [0.056599605669096054, 0.12844972193742932, 0.2005224957634244,
        0.26874792109721146, 0.320397627920077, 0.36860063885326266,
        0.4037181176894292, 0.42460357003478426, 0.443452590687884,
        0.5027413971610729, 0.5253818489347764, 0.5484180600001666,
        0.6100975581703549, 0.6114380467575958, 0.6074159207854862,
        0.5853961196540793, 0.6067535521858026, 0.5915578696457021,
        0.6134722758087695, 0.6190795607831053]

unet_geo = [0.2052074849009804, 0.23224181414530967, 0.331822900184649
16,
            0.4123301375896399, 0.5458474013511735, 0.6393220052337557,
            0.7376786037902147, 0.8794905555530069, 0.8711831031931951,
            0.9201638040239357, 0.9018647786624286, 0.9404804158988795,
            0.9347172168658329, 0.947956569157596, 0.9462959037352868,
             0.9730886143624058, 0.965131501310994, 0.973586752683823,
            0.9731479518676434, 0.9755631672421303]
unet_bilateral = [0.20651435495082912, 0.20943384347307006, 0.30408971
442411936,
                  0.39966573060512584, 0.46743252819469305, 0.525396575
1826485,
                  0.575939094632558, 0.6183994276528076, 0.654076773909
9619,
                  0.6834502874182378, 0.7276469402600495, 0.77919845330
```

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25881,
                0.839037959574324, 0.8749511593574193, 0.908199256378
1489,
                0.9404387158013467, 0.9512208467252286, 0.95982340840
641,
                0.9664867084190479, 0.9733689125329208]
unet_clahe = [0.20425266992681212, 0.26620483579244186, 0.369539404001
67146,
            0.4475727661988305, 0.5088791825989213, 0.563222048676296
8,
            0.6090879517661296, 0.6460644092440373, 0.676563384198917
3,
            0.7018165283501802,0.7405051894943357,0.7557569303408436,
             0.728360520940344, 0.7806099212268821, 0.790371259890758
2,
             0.8366030276372507, 0.8743033280285829, 0.91279912758682
32,
             0.9404140068497533, 0.9747500238907578]
unet_combined = [0.20156708421547695, 0.2452152196062531, 0.3249890177
388996,
               0.40931870883846766, 0.48752347508156285, 0.5499208870
529281,
               0.6047172838720108, 0.723015216651123, 0.7870999737968
356,
               0.8931176493824247, 0.9383418378941221, 0.948311282156
2026,
               0.9451116552097676, 0.9465910148180233, 0.956934512388
7376,
               0.9632789965898534, 0.965131974870094, 0.9685879692648
928,
               0.9639190229157446, 0.9688777062337831]
unet_combined3 = [0.20681166132226578, 0.3201351075945741, 0.407660483
32693877,
                0.4778321857931183, 0.5414861528482368, 0.59397425564
97564,
                0.6357719203943613, 0.6696542737319916, 0.69726840040
64087,
                0.71919023186733, 0.7978044010373684, 0.8488697013302
204,
                0.9004917605318719, 0.9284652819860104, 0.94117345196
022,
                0.9589580041722285, 0.9674279623250235, 0.97063164431
39743,
                0.9730305292268205, 0.9738448611987557]
```

In [ ]:
```
plt.figure(figsize=(20, 10))
x = range(20)
plt.plot(x, unet_dense, label='UNet + Densenet')
plt.plot(x, binary_unet, label='Binary UNet')
plt.plot(x, unet, label = 'Multiclass UNet')
plt.plot(x, unet_geo, label='UNet + Densenet + Geometric Mask')
plt.plot(x, unet_bilateral, label='UNet + Densenet + Bilateral Filter'
)
plt.plot(x, unet_clahe, label='UNet + Densenet + CLAHE Normalization')
plt.plot(x, unet_combined, label='UNet + Densenet + All 3')
plt.plot(x, unet_combined3, label='Unet + Densenet + All 3 + Random Ma
sks')
plt.xlabel("Epoch")
plt.xticks(np.arange(20))
plt.ylabel("mIoU")
plt.title("mIoU vs Epoch")
plt.legend()
plt.savefig("/Users/jmak/Documents/CS271/biods220-project/figs/final_m
iou.png")
plt.show()
```

In [ ]:
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!pwd
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In [ ]:
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