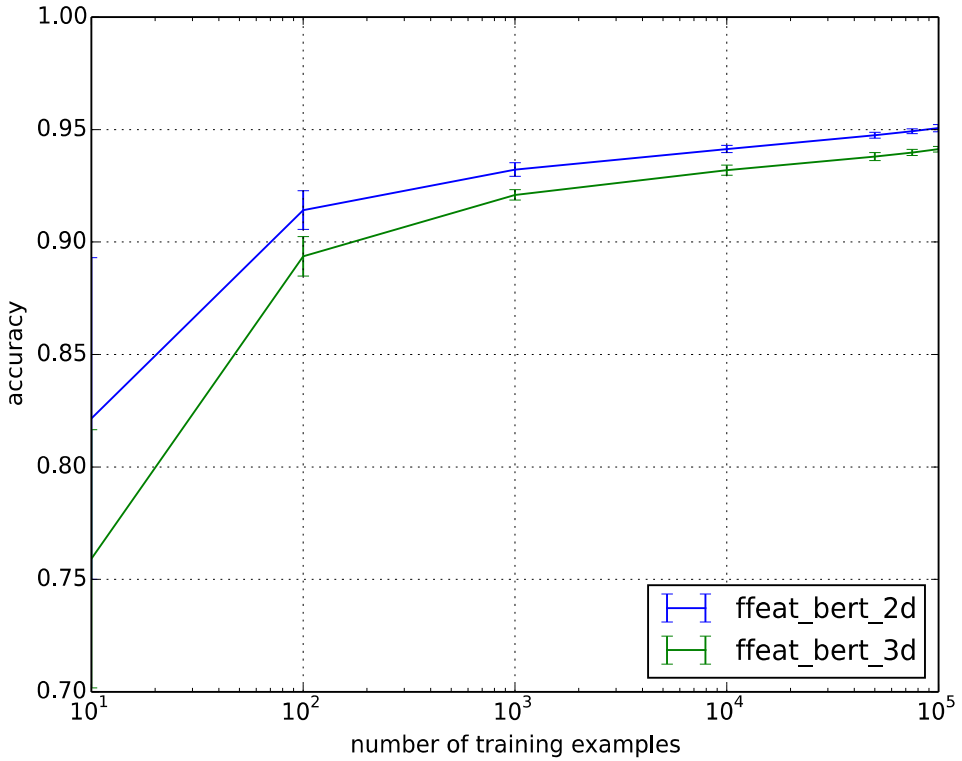
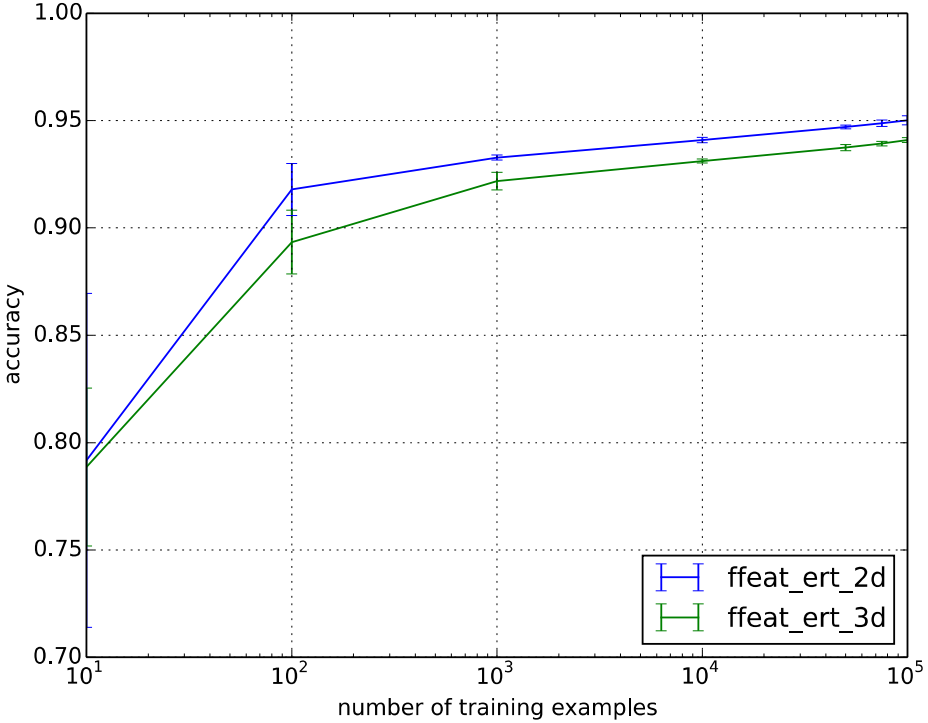
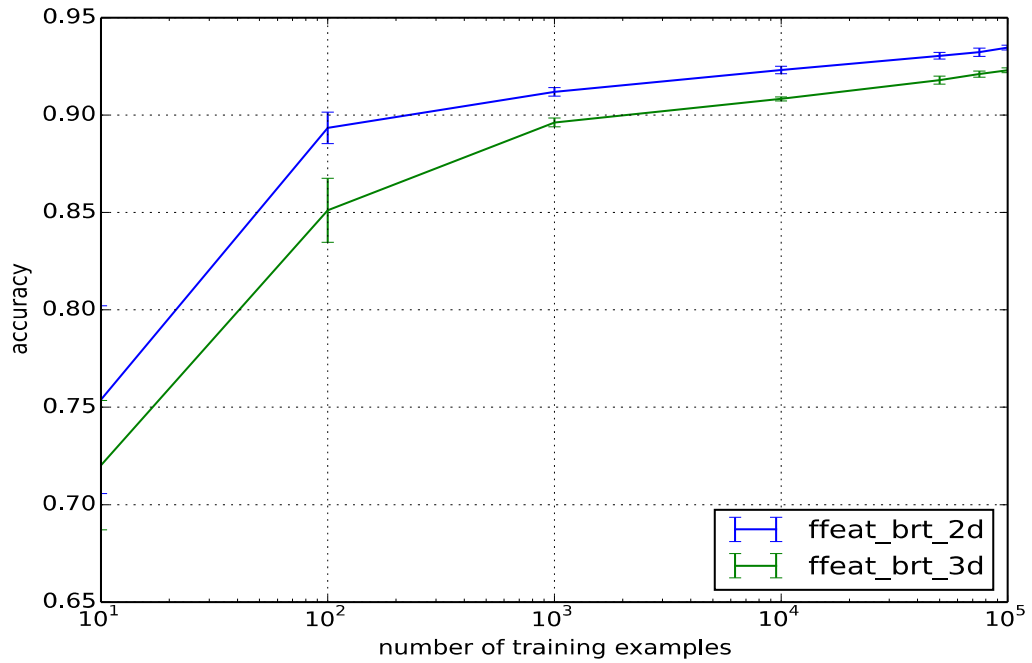
Summary: Feature Curves

2d vs. 3d

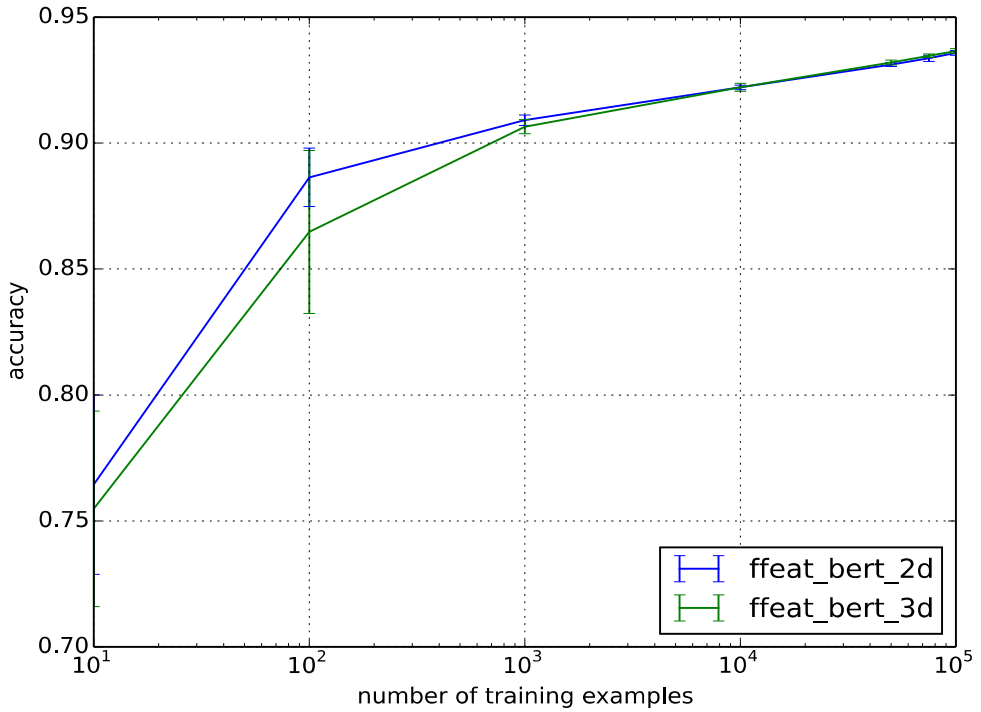
- Only for ISBI2013 and Pedunculus, because for Sopnetcompare, features can only be calculated in 2d, because sigma in 3d is too large for only 20 z-slices.

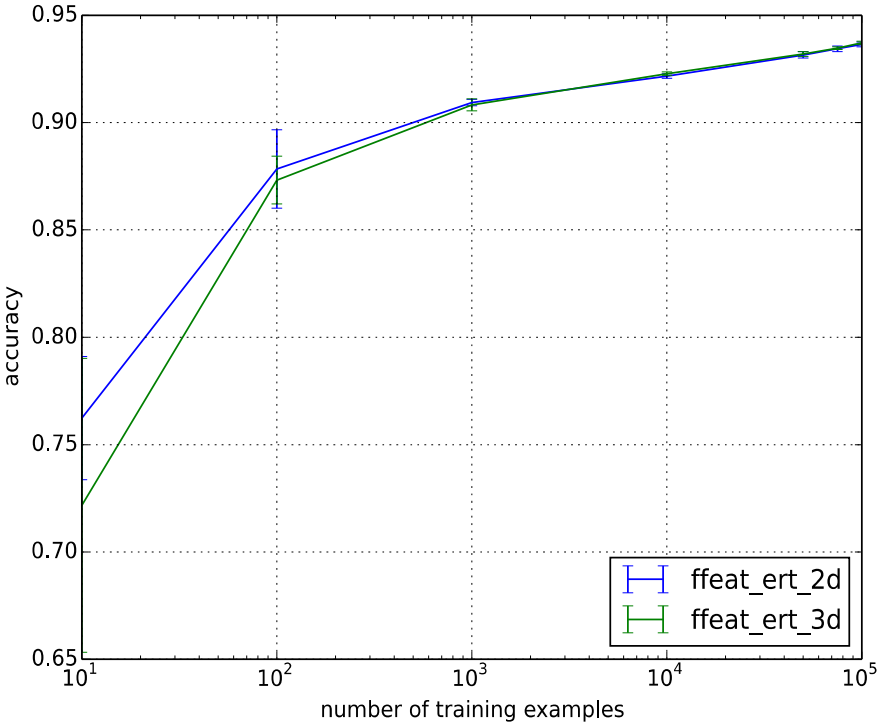


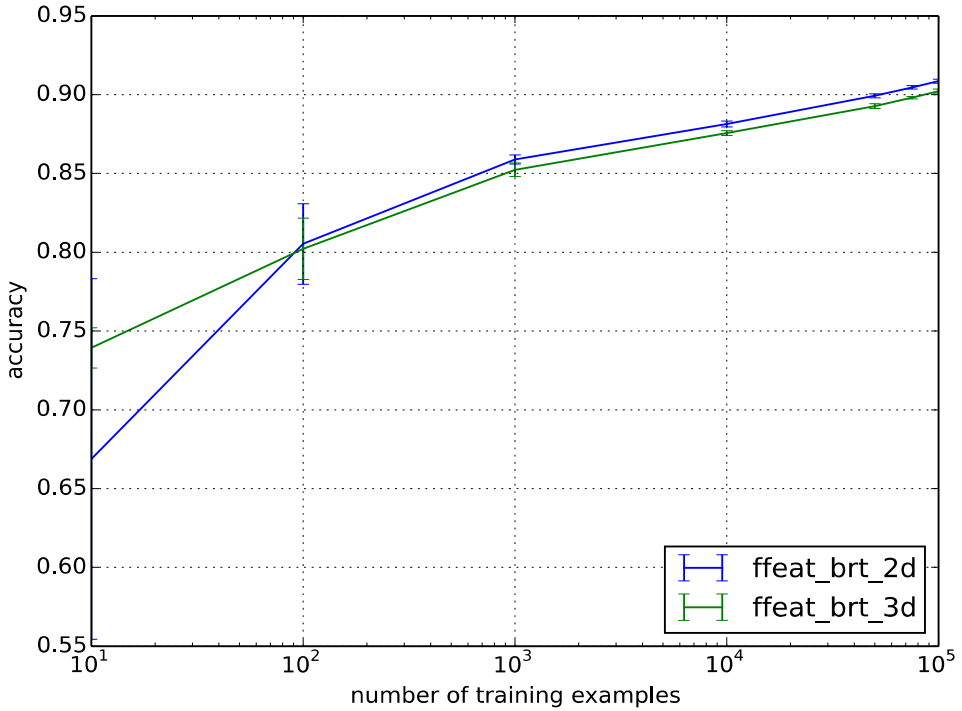




- Pedunculus dataset:
- Comparison of 2d vs 3d calculation of pixmaps for bert, ert and brt.
- For all three, calculation in 2d is significantly beneficial





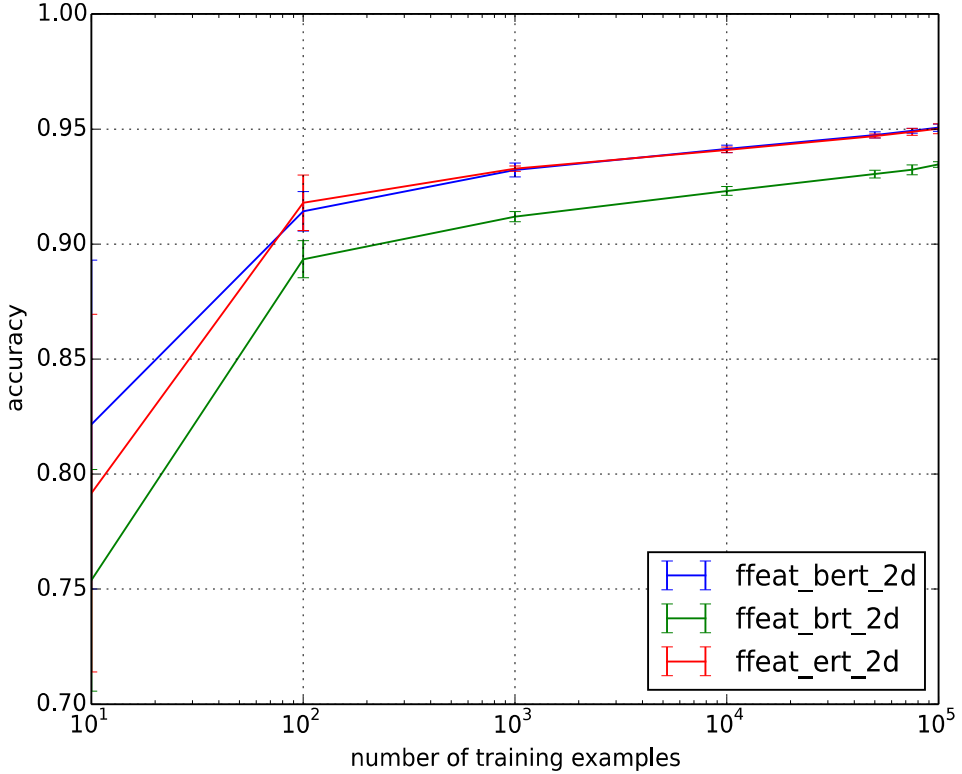


- ISBI2013 dataset:
- Comparison of 2d vs 3d calculation of pixmaps for bert, ert and brt.
- For bert and ert, 2d is beneficial for few training instances, then the differences vanish.
- For brt, 3d is beneficial for few instances, then 2d becomes a little better.

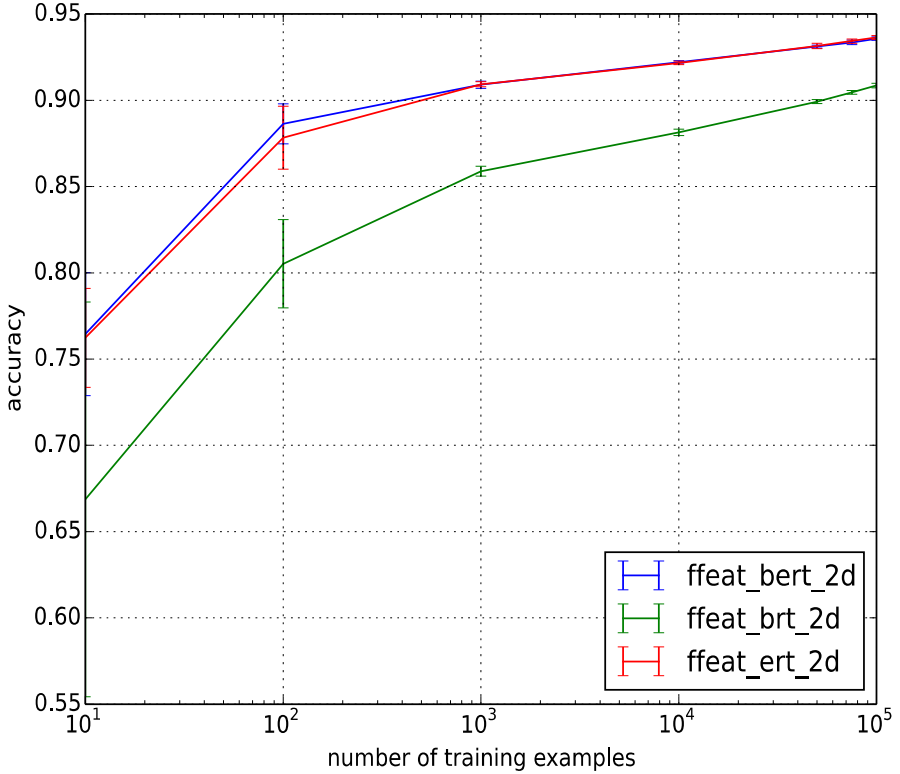
Comparison of feature combinations

- For all three datasets.

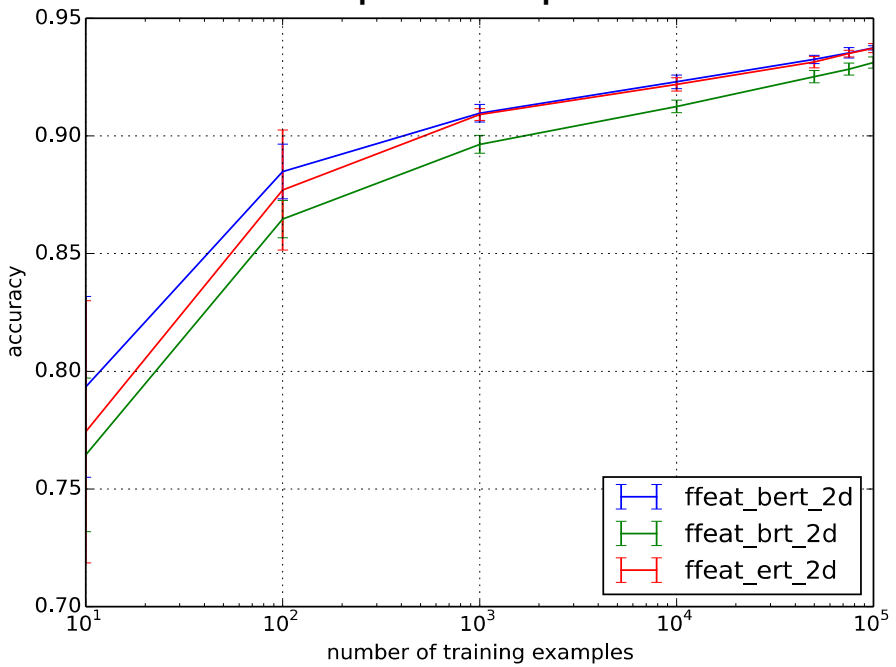
Pedunculus



ISBI2013



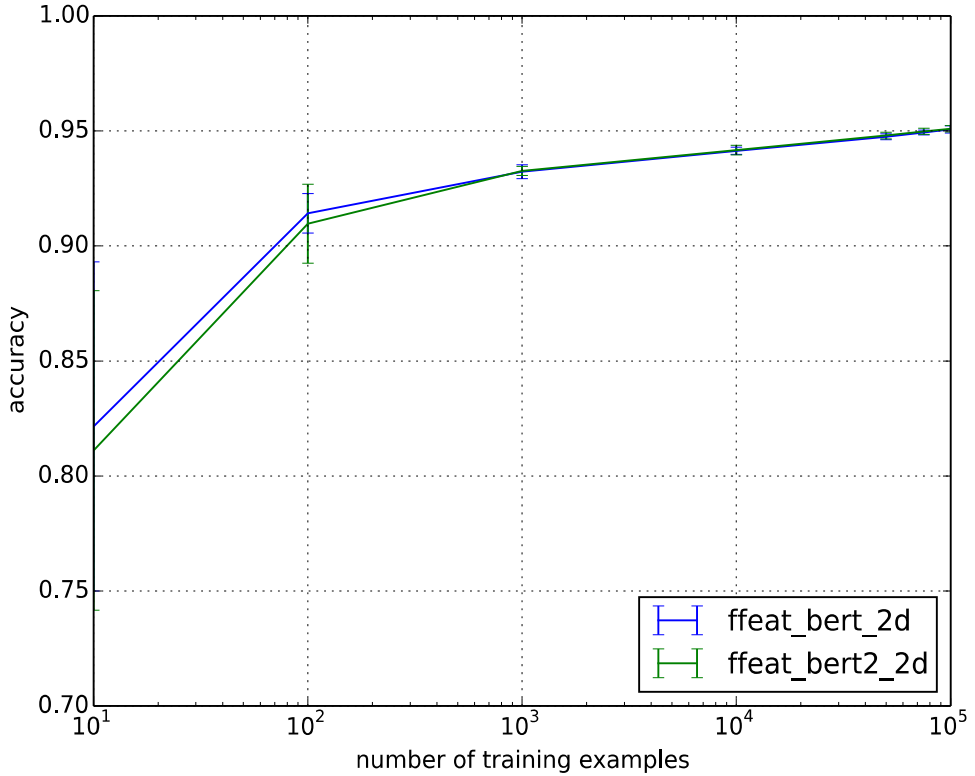
Sopnetcompare

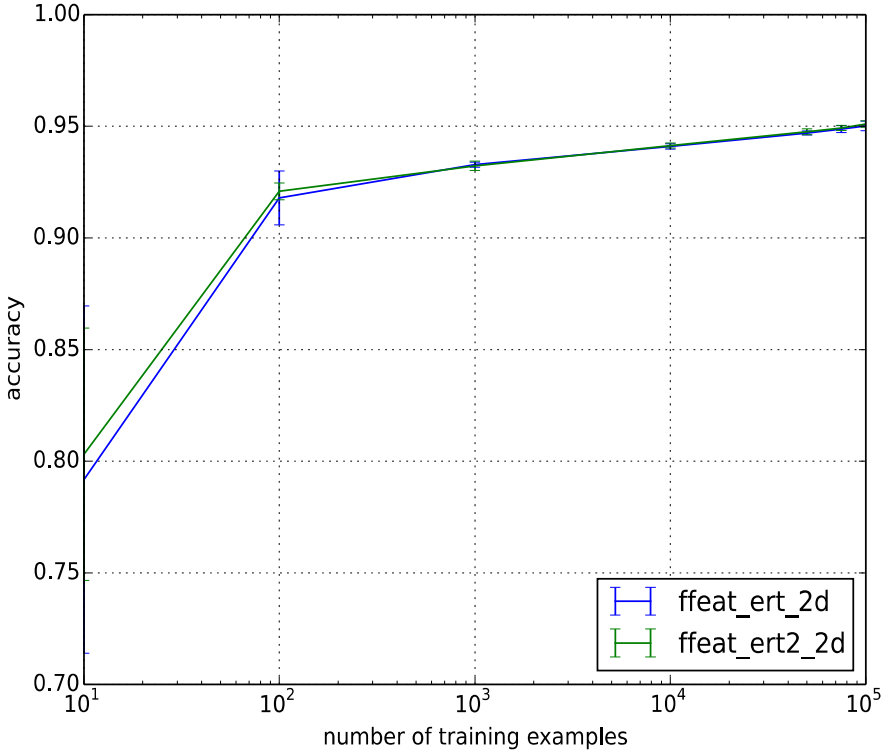


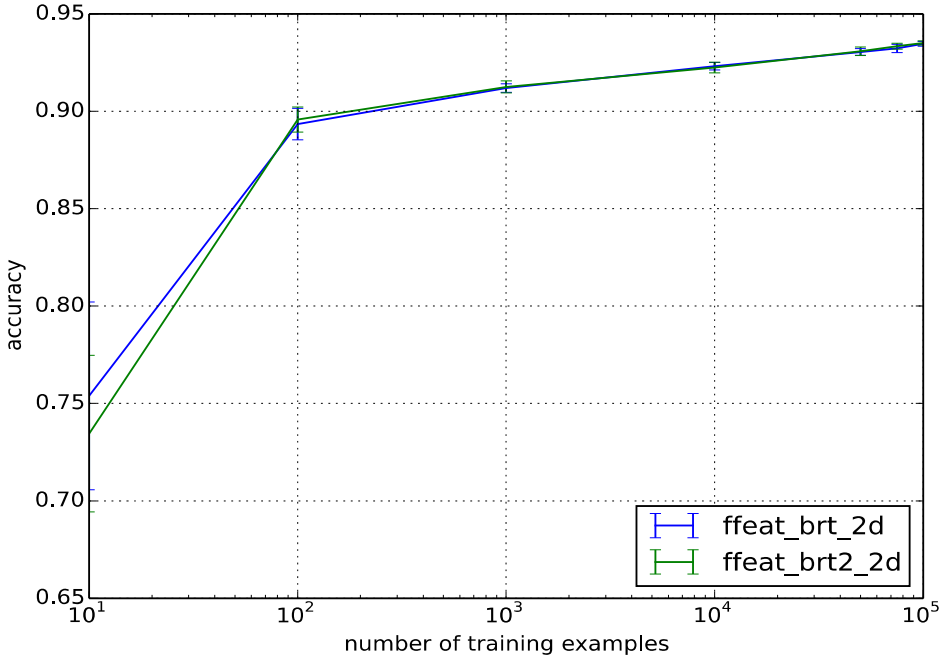
- Comparison of featurecombinations bert, ert and brt (2d for all).
- For all 3 datasets: bert and ert behave quite similarly and are significantly better than brt.

Extrafeatures

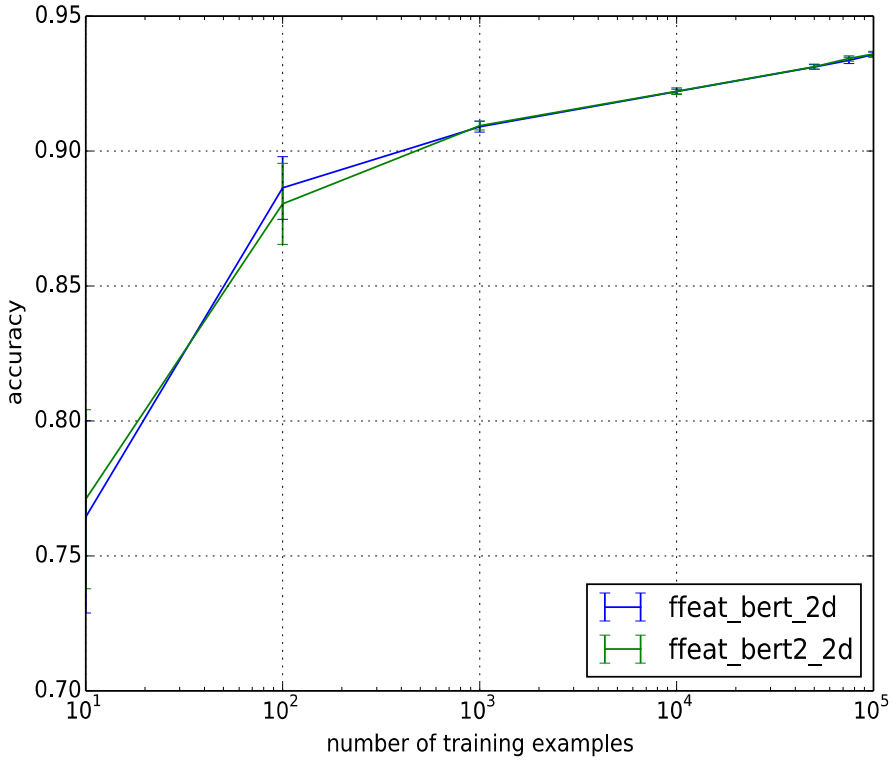
- For all three datasets

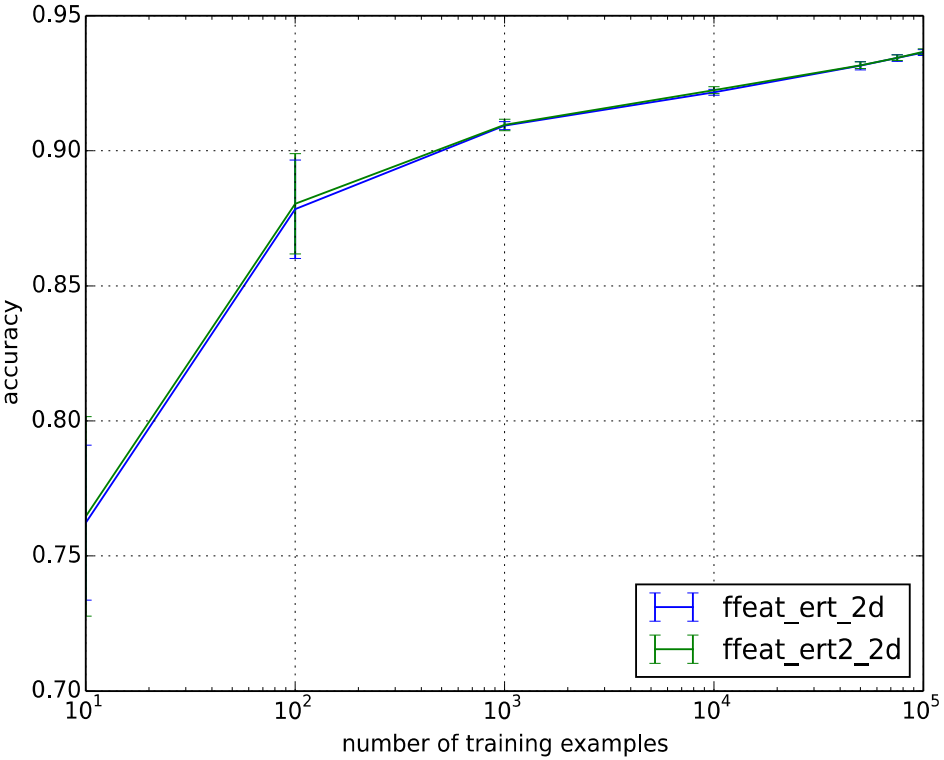


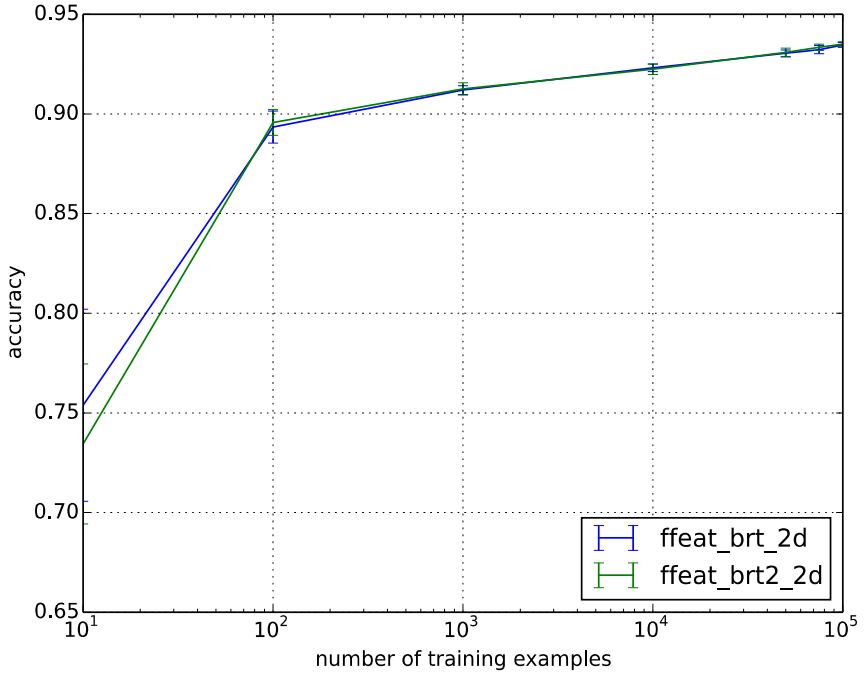




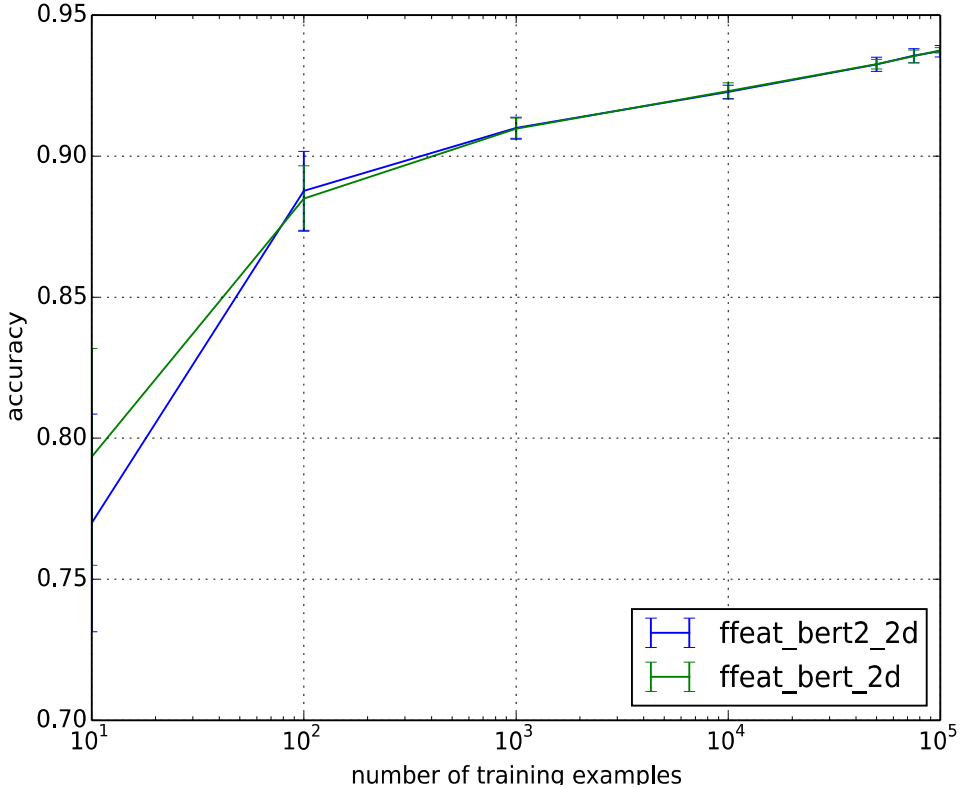
- Pedunculus dataset:
- Evaluation of extra features for z-edges for three feat combis.
- For all three, extrafeats dont show significant differences.

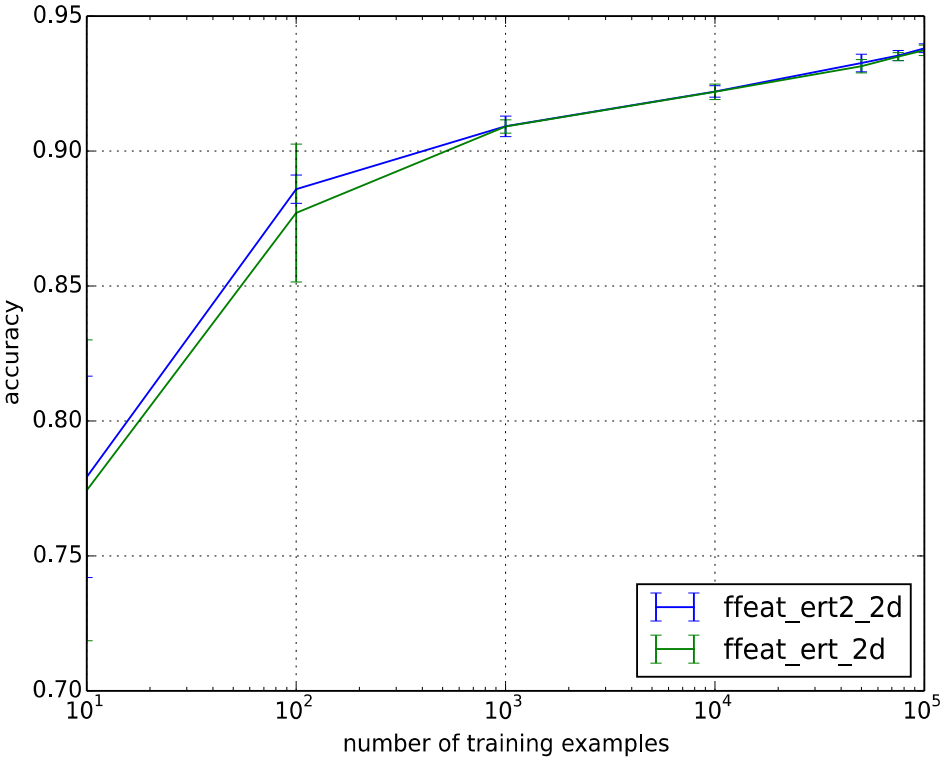


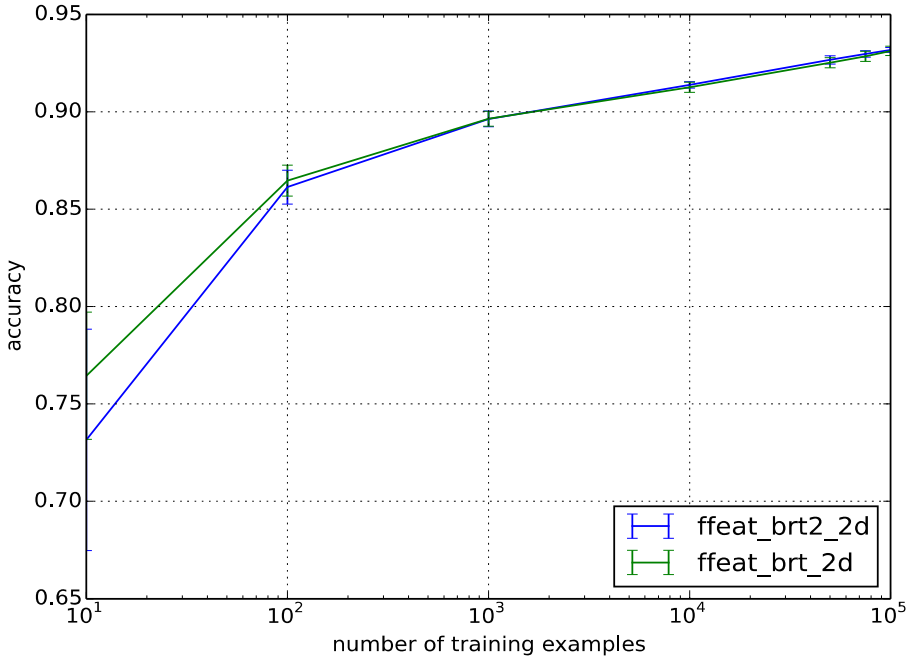




- ISBI2013 dataset:
- Evaluation of extra features for z-edges for three feat combis.
- For all three, extrafeats dont show significant differences.



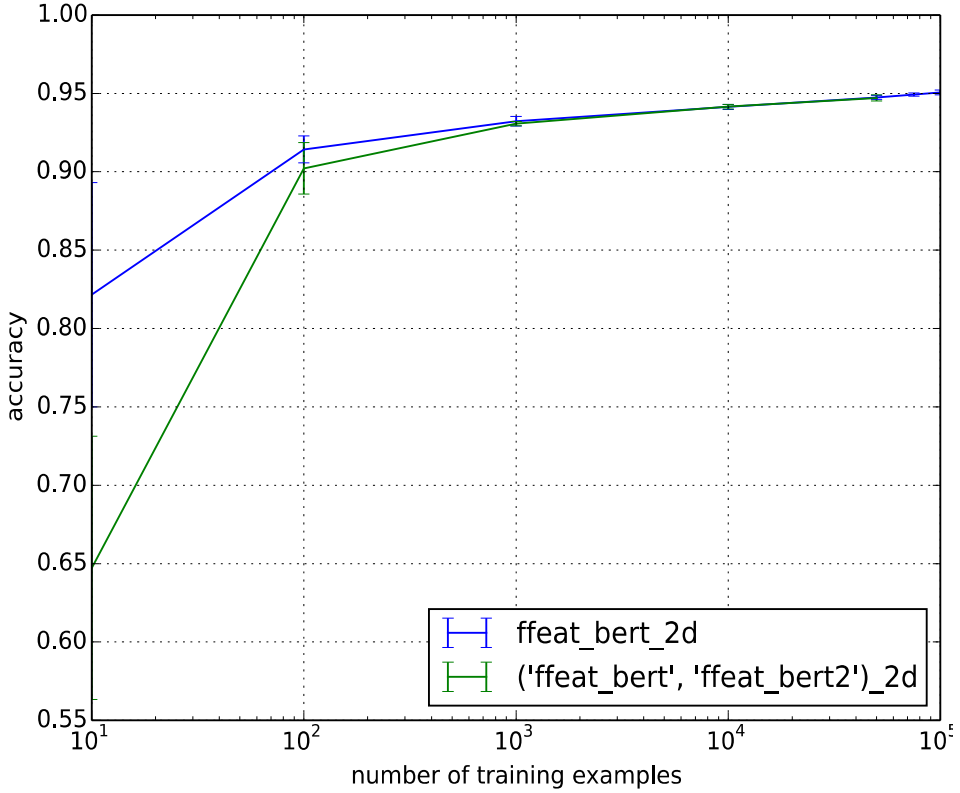


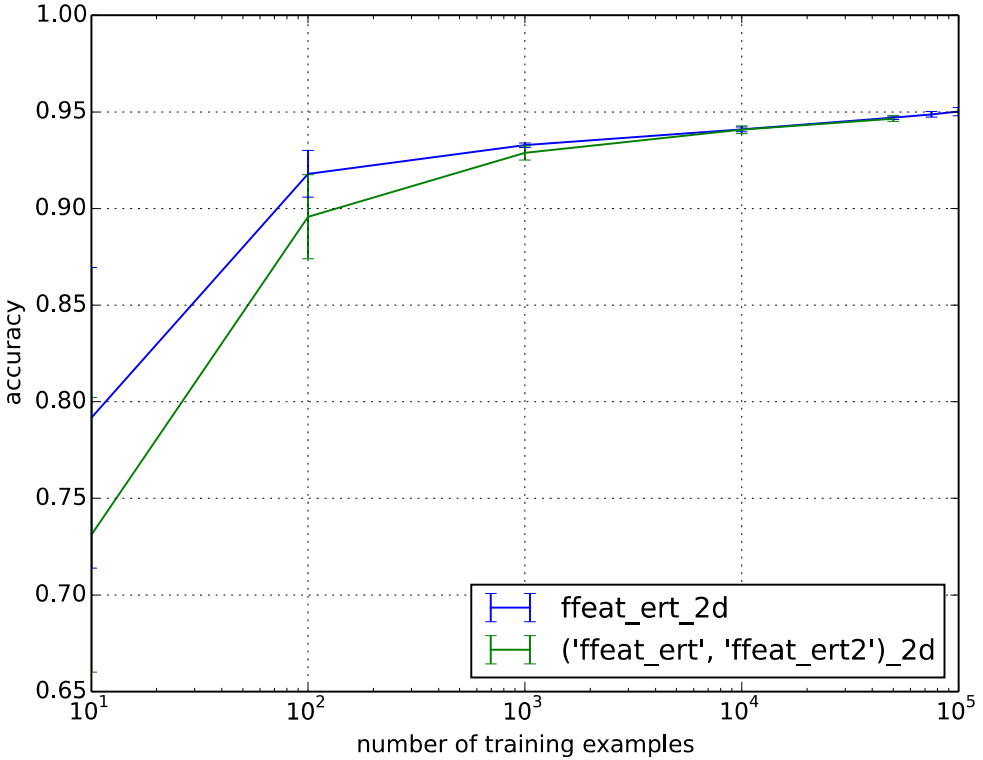


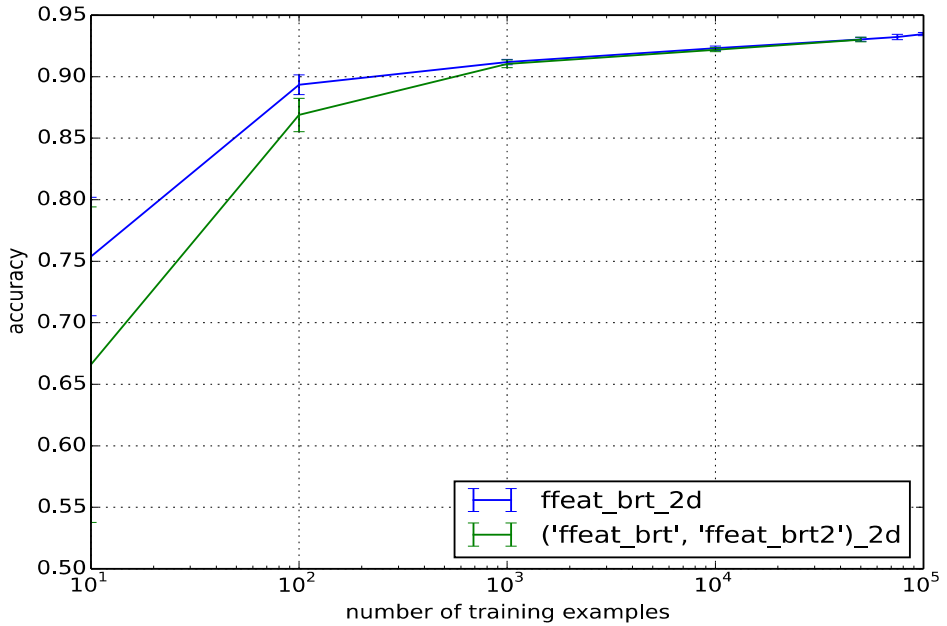
- Sopnetcompare dataset:
- Evaluation of extra features for z-edges for three feat combis.
- For all three, extrafeats dont show significant differences.

Comparison with 2 RFs

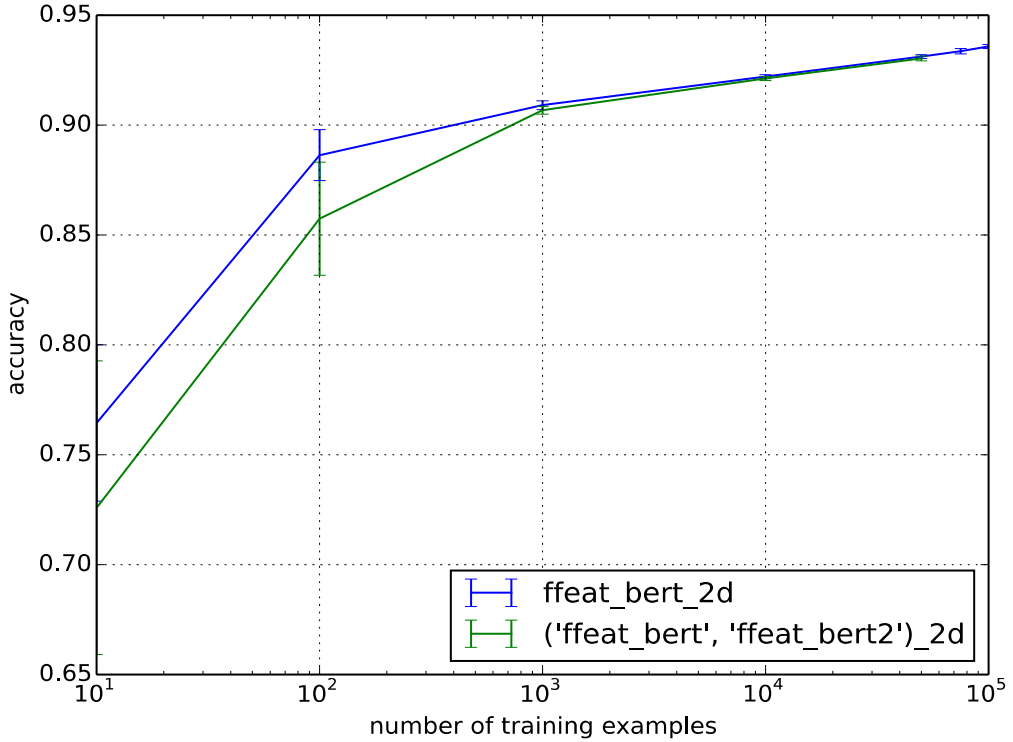
- For all three datasets.

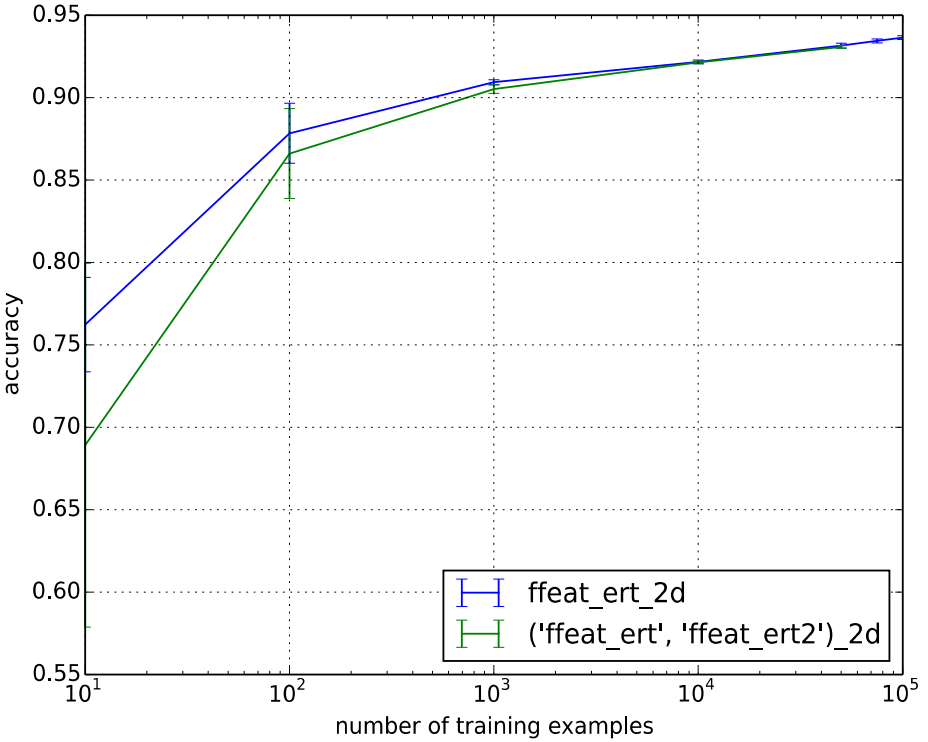


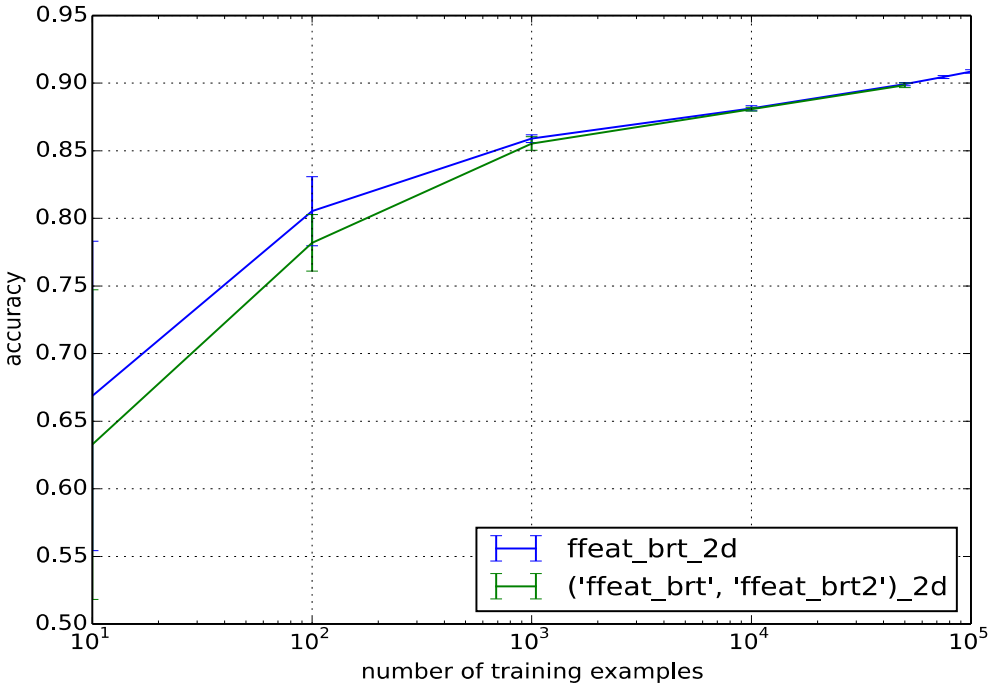




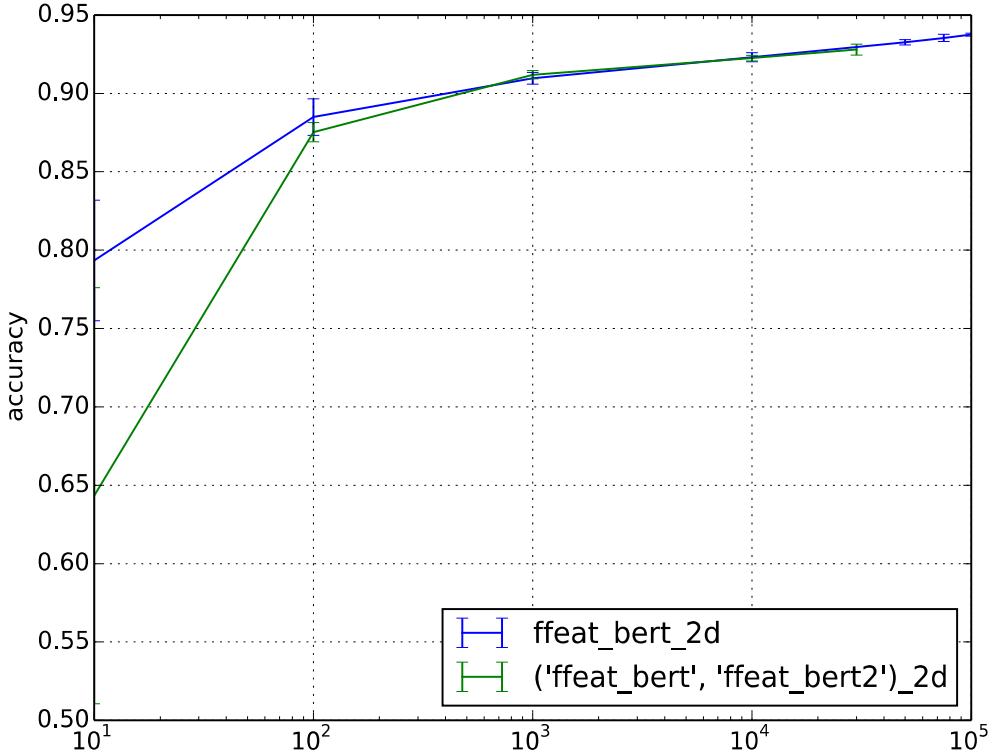
- Pedunculus dataset:
- Evaluation of learning 1 RF vs. two RF for three feat combis.
- For all three, seems to converge to the same result, but 1 RF much faster.

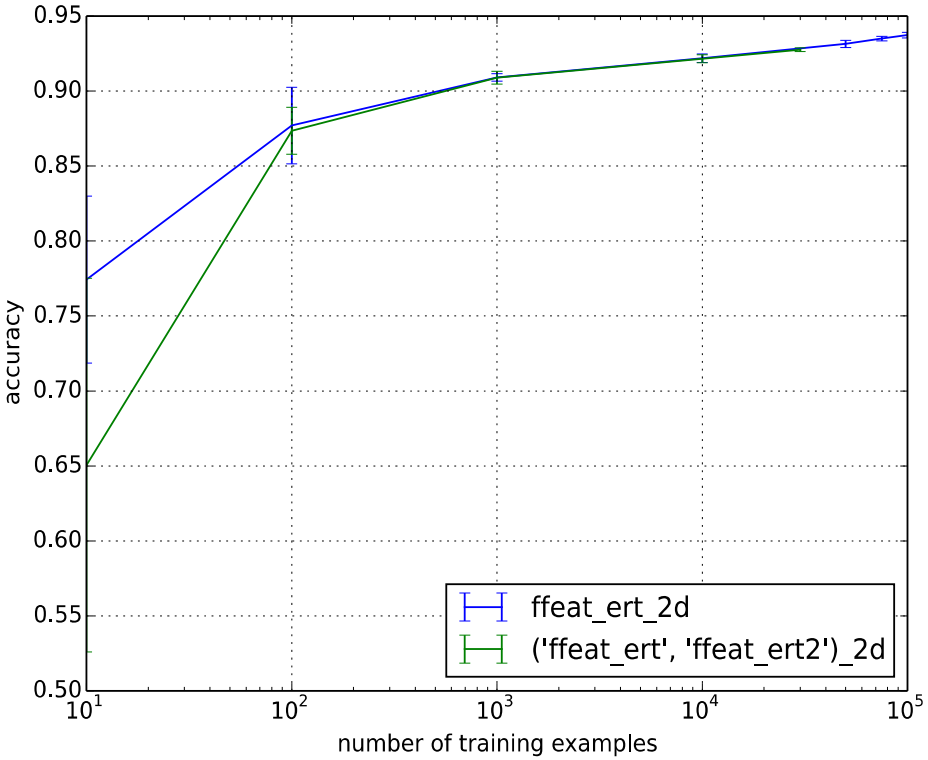


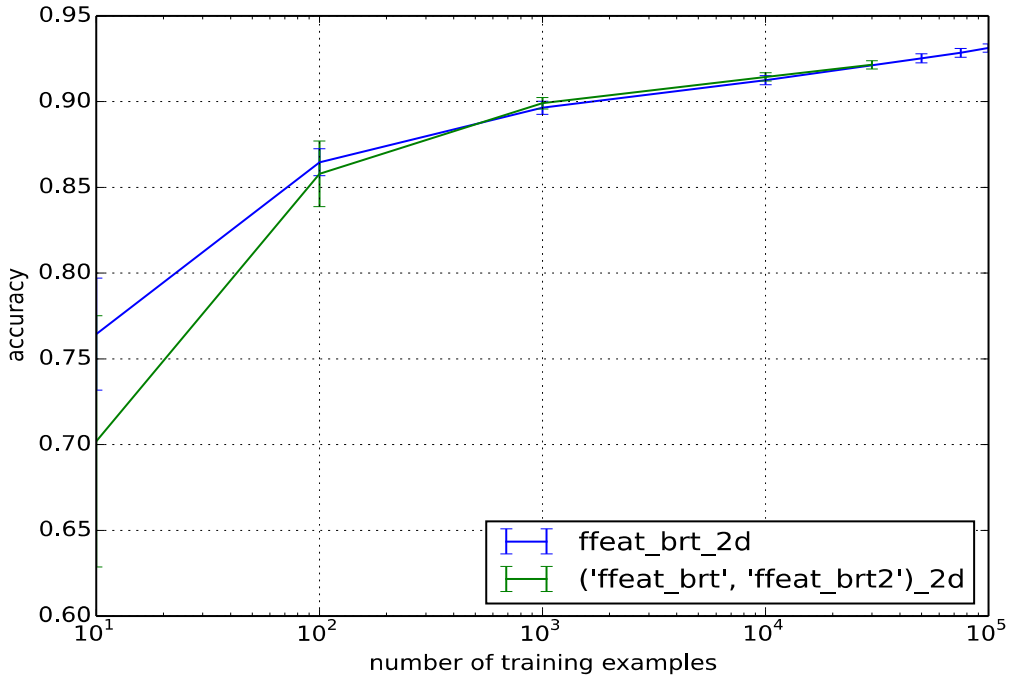




- ISBI2013 dataset:
- Evaluation of learning 1 RF vs. two RF for three feat combis.
- For all three, seems to converge to the same result, but 1 RF much faster.



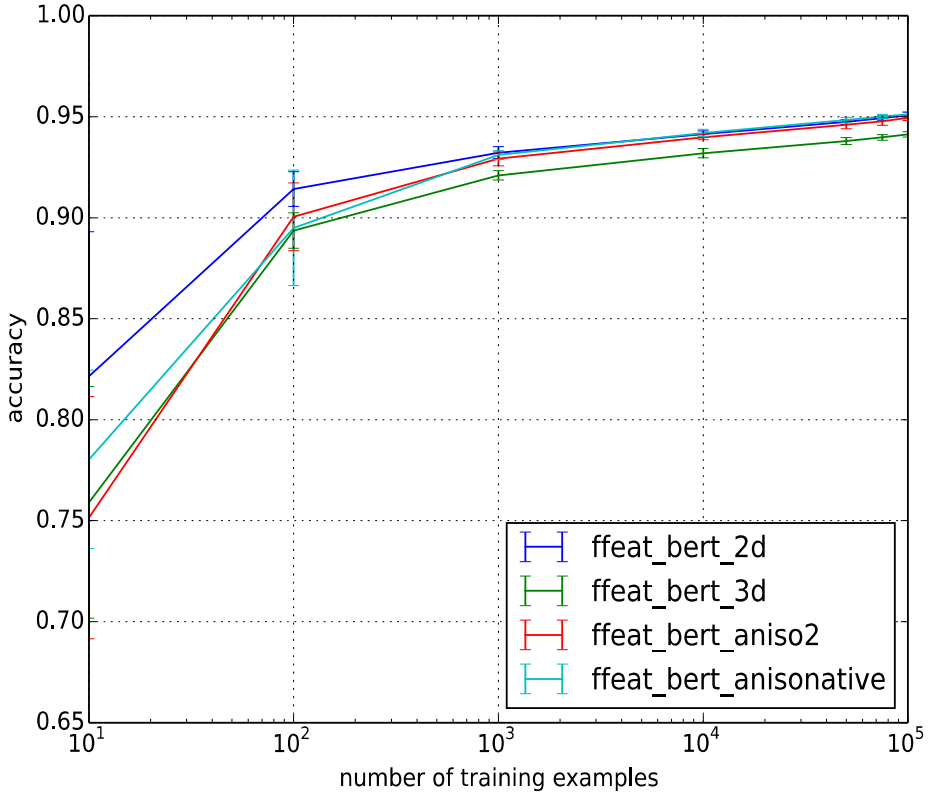


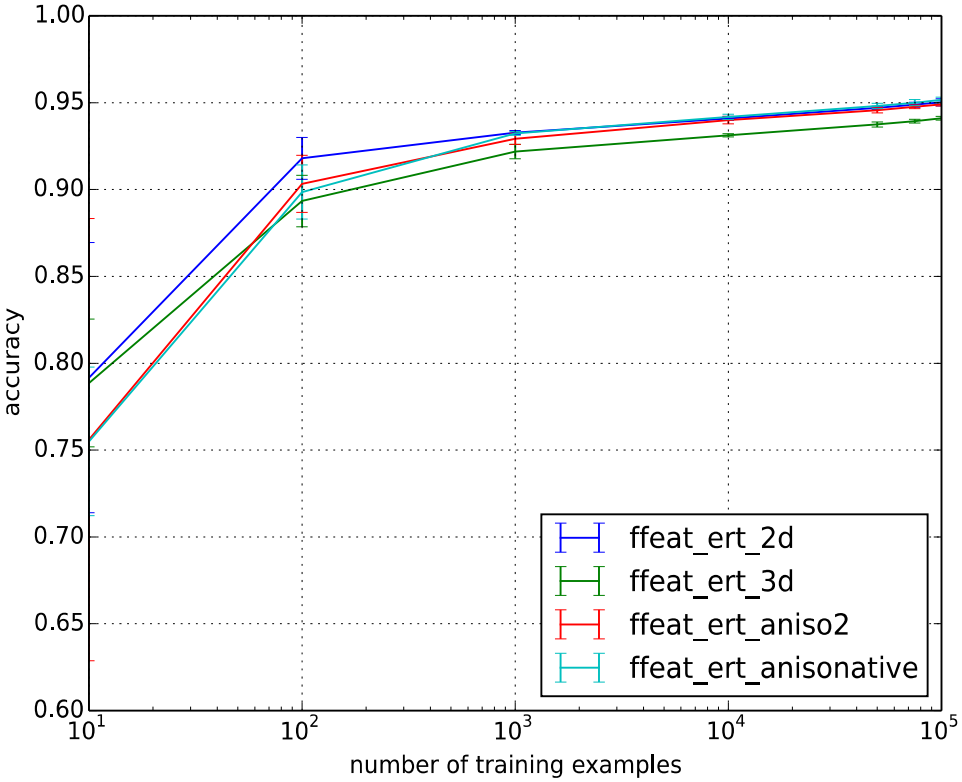


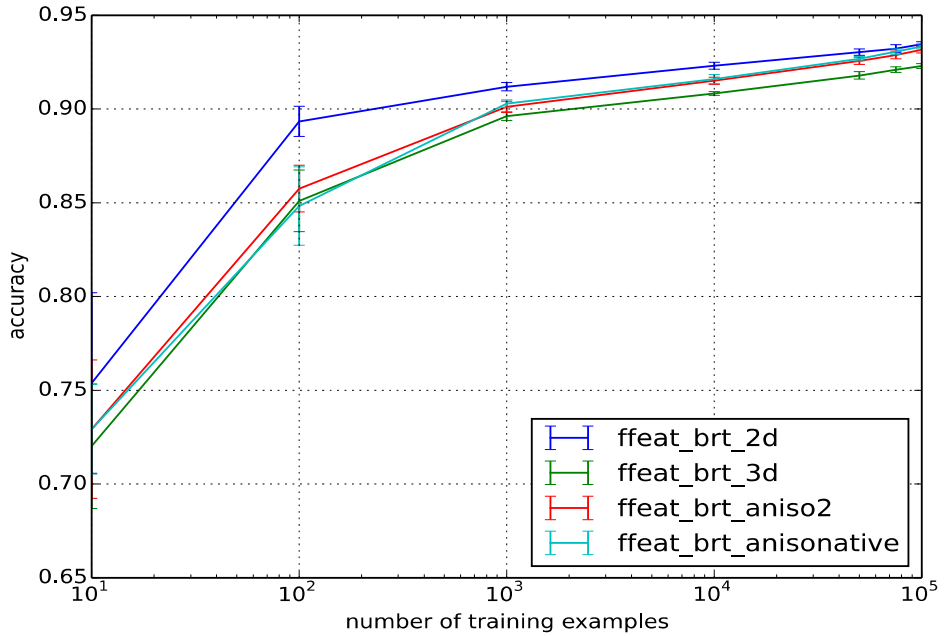
- Sopnetcompare dataset:
- Evaluation of learning 1 RF vs. two RF for three feat combis.
- For all three, seems to converge to the same result, but 1 RF much faster.

Aniso Feature Computation

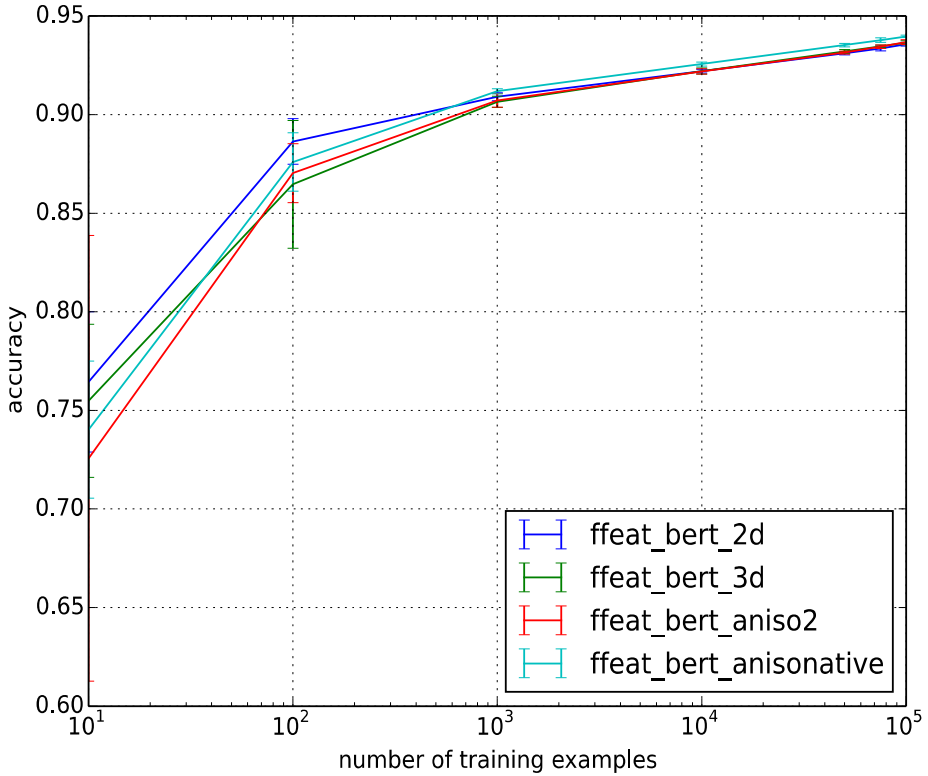
- The features in make_pixfeats are computed with different ways of taking into account the anisotropy. This is done by scaling the sigma in z – direction.
- We compare 4 methods:
  - Strict 2d calculation
  - Strict 3d calculation
  - Scaling with 1 / 2
  - Scaling with 1 / (factor of anisotropy)

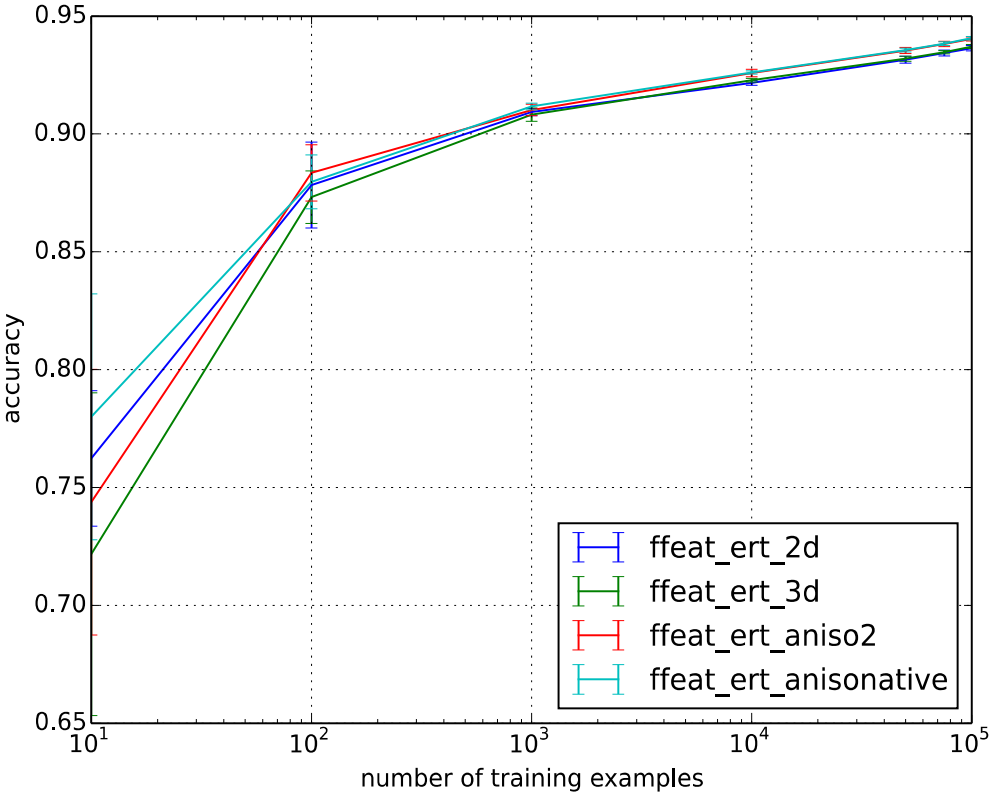


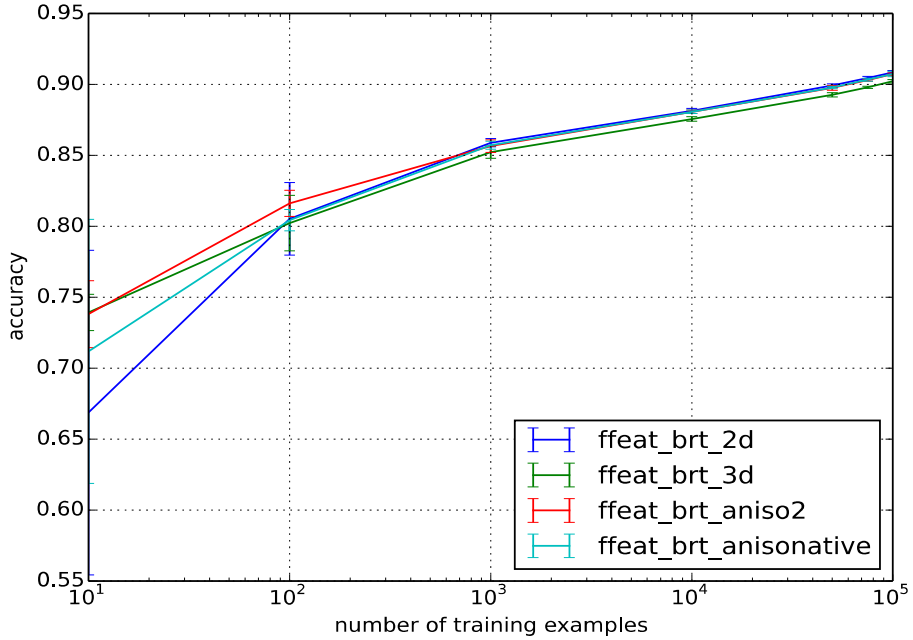




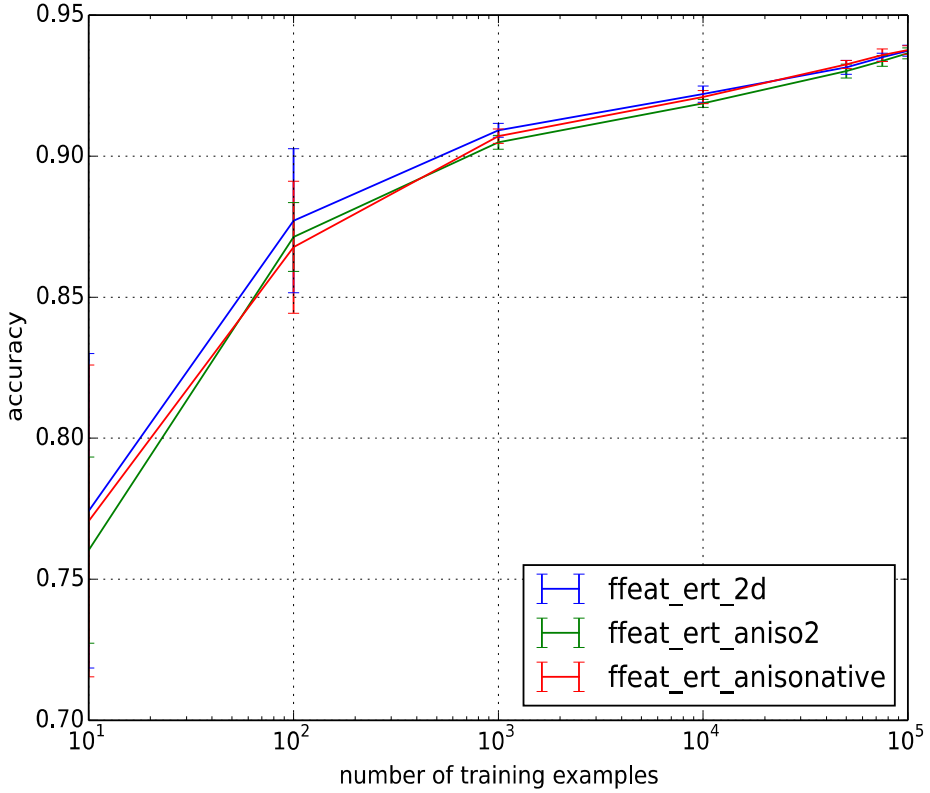
- Pedunculus dataset:
- Evaluation of aniso pixfeatures.
- In the beginning, the 2d features perform significantly better. For bert and ert the native aniso features are slightly better in the end.

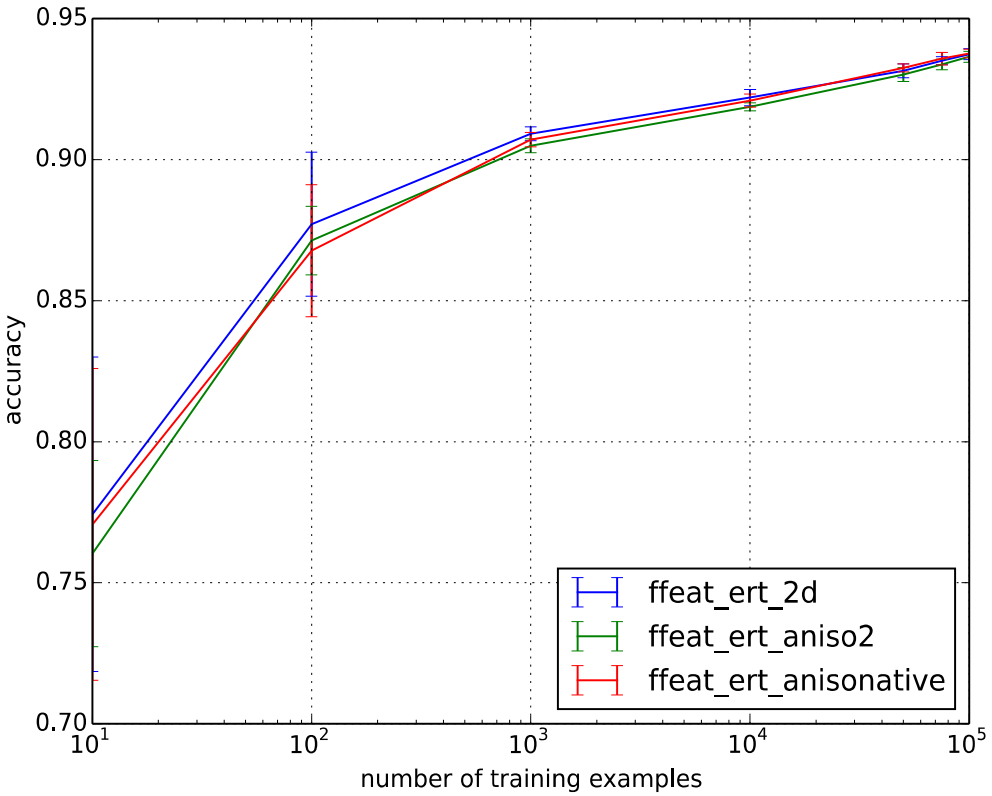


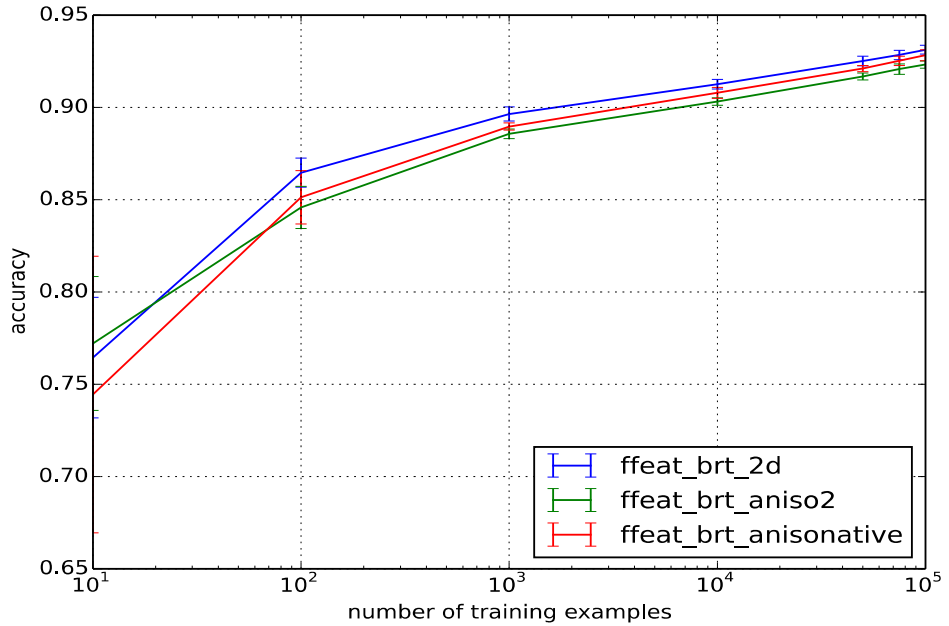




- ISBI2013 dataset:
- Evaluation of aniso pixfeatures.
- For bert and ert the native aniso features perfrom slightly better.

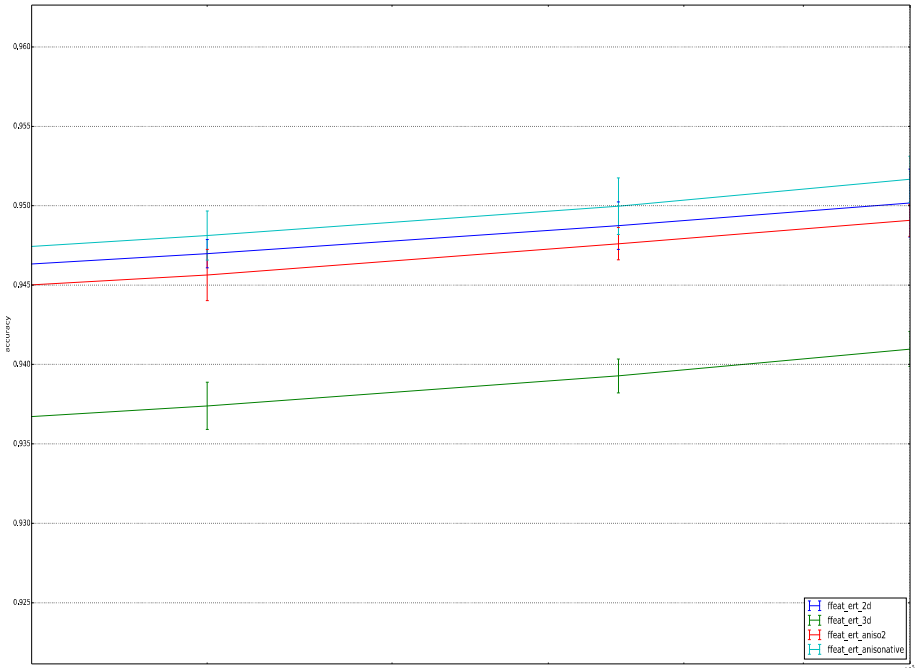




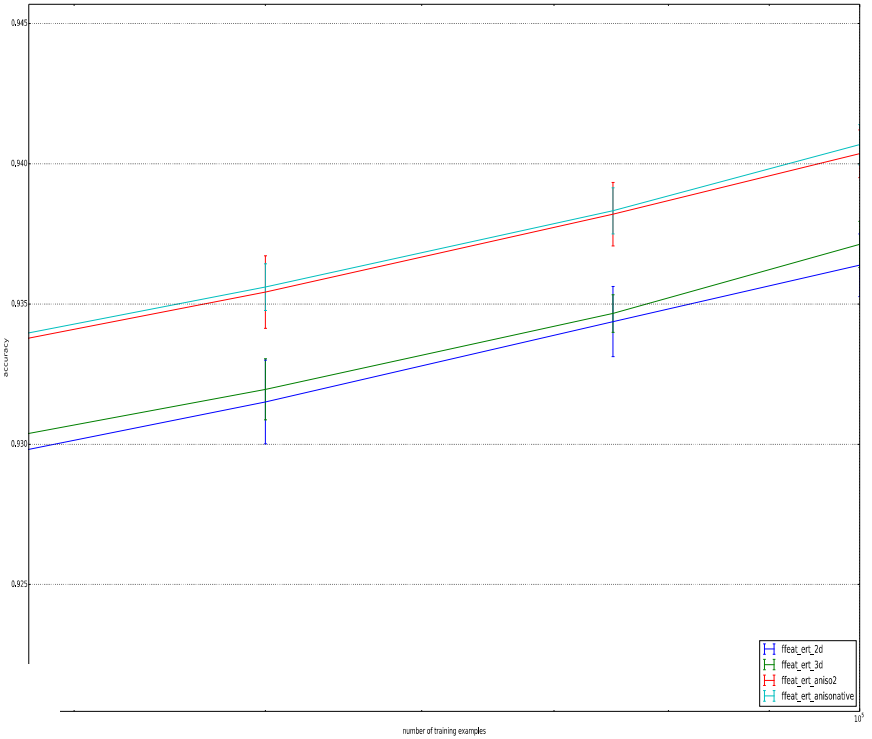


- Sopnetcompare dataset:
- Evaluation of aniso pixfeatures.
- 2d feats seem to perform the best for all features (high anisotropy + registration errors)

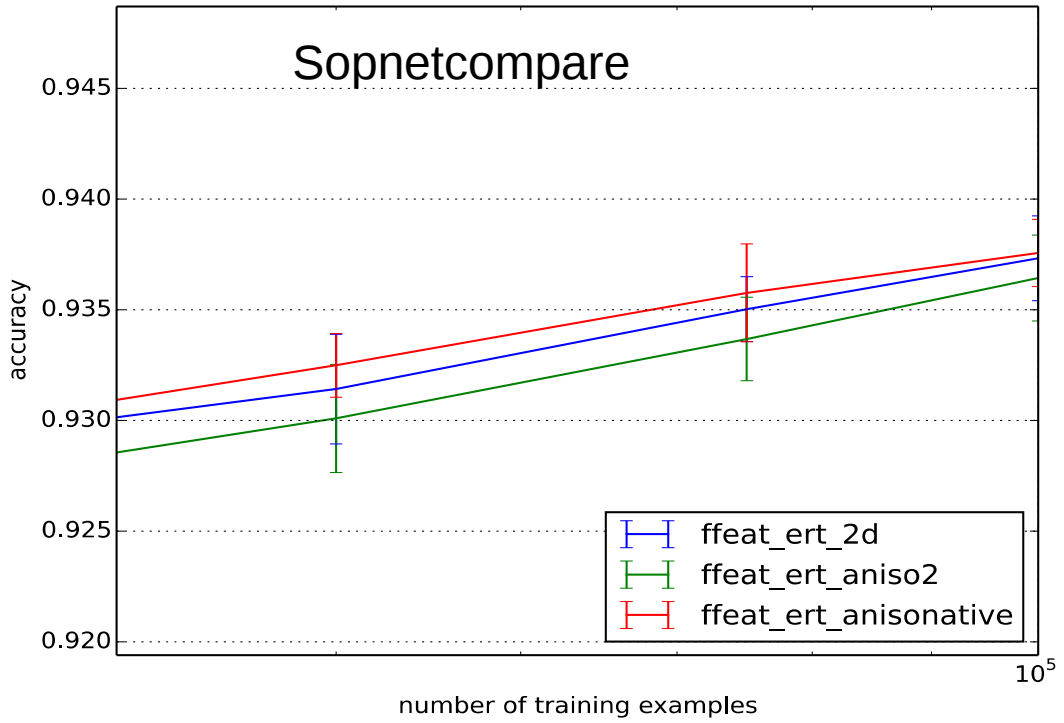
Pedunculus



ISBI2013



Sopnetcompare



- Zoom of ert for the 3 datasets:
- Pedunculus: Natve performs best, than 2d, than factor 2, all three significantly better than 3d.
- ISBI: Native and aniso2 perform significantly better than 2d and 3d.
- Sopnetcompare: Performance not significantly different.