Supplementary Material for
**On the Evaluation of Unsupervised Outlier Detection: Measures, Datasets, and an Empirical Study**
by G. O. Campos, A. Zimek, J. Sander, R. J. G. B. Campello, B. Micenková, E. Schubert, I. Assent and M. E. Houle
Data Mining and Knowledge Discovery 30(4): 891-927, 2016, DOI: 10.1007/s10618-015-0444-8

# Wilt (2% of outliers version#01)

The data set differentiates diseased trees from other land covers. The former are considered outliers here.

Download all data set variants used (7.2 MB). You can also access the original data. (merge train and test [wilt.zip])

- Normalized, without duplicates
- Normalized, duplicates
- Not normalized, without duplicates
- Not normalized, duplicates

## Normalized, without duplicates

This version contains 5 attributes, 4655 objects, 93 outliers (2.00%)

Download raw algorithm results (39.6 MB) Download raw algorithm evaluation table (72.8 kB)

### Best Parameters

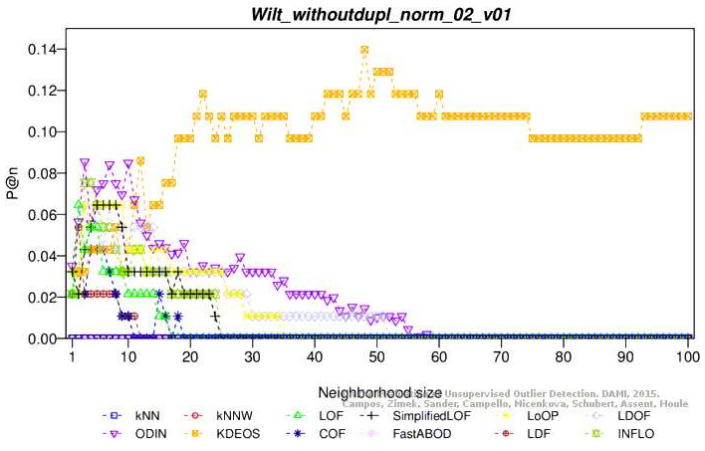
The following table contains the best (overall and per-method) results for each method and evaluation measure (when the same score was achieved twice, only the smallest k is given).
The Maximum F1-Measure is complimentary in addition to the measures in the original publication.

| Algorithm | k | P@n | Adj. P@n | AP | Adj. AP | Max-F1 | Adj. MF1 | ROC AUC |
|---|---|---|---|---|---|---|---|---|
| **KNN** | **1** | 0.00000 | -0.02039 | 0.02143 | 0.00148 | 0.05388 | 0.03459 | 0.57200 |
| **KNNW** | **1** | 0.00000 | -0.02039 | 0.02370 | 0.00380 | 0.05905 | 0.03987 | 0.60616 |
| **LOF** | **2** | 0.06452 | 0.04545 | 0.03214 | 0.01241 | 0.08358 | 0.06490 | 0.61279 |
| **LOF** | **4** | 0.05376 | 0.03447 | 0.03324 | 0.01353 | 0.07519 | 0.05633 | 0.63268 |
| **LOF** | **6** | 0.03226 | 0.01253 | 0.03292 | 0.01321 | 0.07154 | 0.05261 | 0.64678 |
| **SimplifiedLOF** | **5** | 0.06452 | 0.04545 | 0.04254 | 0.02302 | 0.09904 | 0.08067 | 0.70878 |
| **SimplifiedLOF** | **6** | 0.06452 | 0.04545 | 0.04326 | 0.02376 | 0.09249 | 0.07399 | 0.72371 |
| **SimplifiedLOF** | **10** | 0.03226 | 0.01253 | 0.04078 | 0.02123 | 0.09054 | 0.07200 | 0.73261 |

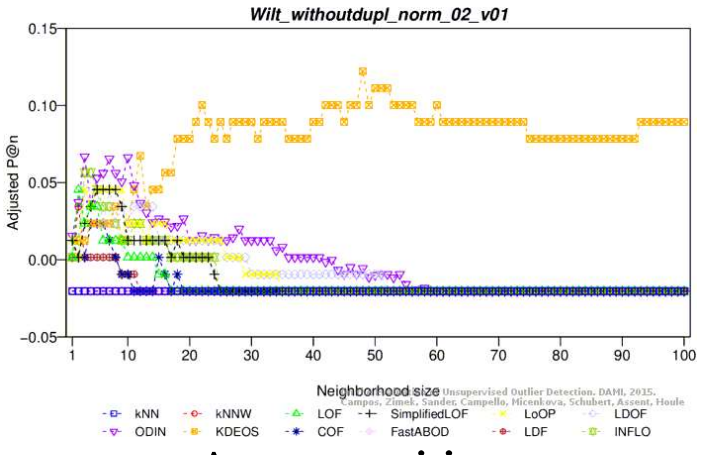
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **LoOP** | **3** | 0.06452 | 0.04545 | 0.03924 | 0.01965 | 0.08869 | 0.07011 | 0.68138 |
| **LoOP** | **5** | 0.06452 | 0.04545 | 0.04386 | 0.02437 | 0.10676 | 0.08855 | 0.71415 |
| **LoOP** | **6** | 0.06452 | 0.04545 | 0.04520 | 0.02573 | 0.09774 | 0.07935 | 0.72842 |
| **LoOP** | **10** | 0.04301 | 0.02350 | 0.04275 | 0.02324 | 0.09208 | 0.07357 | 0.73604 |
| **LDOF** | **3** | 0.06452 | 0.04545 | 0.03966 | 0.02008 | 0.08675 | 0.06813 | 0.66834 |
| **LDOF** | **5** | 0.06452 | 0.04545 | 0.04507 | 0.02561 | 0.11144 | 0.09332 | 0.71133 |
| **LDOF** | **7** | 0.06452 | 0.04545 | 0.04985 | 0.03048 | 0.11080 | 0.09268 | 0.74953 |
| **LDOF** | **10** | 0.04301 | 0.02350 | 0.04753 | 0.02811 | 0.09650 | 0.07808 | 0.77135 |
| **ODIN** | **3** | 0.08547 | 0.06683 | 0.04559 | 0.02613 | 0.12232 | 0.10443 | 0.69783 |
| **ODIN** | **7** | 0.08418 | 0.06551 | 0.05445 | 0.03518 | 0.11740 | 0.09940 | 0.73894 |
| **ODIN** | **9** | 0.06961 | 0.05064 | 0.05130 | 0.03196 | 0.12000 | 0.10206 | 0.74326 |
| **ODIN** | **10** | 0.08495 | 0.06629 | 0.05259 | 0.03328 | 0.12349 | 0.10562 | 0.73885 |
| **FastABOD** | **3** | 0.00000 | -0.02039 | 0.02387 | 0.00397 | 0.05610 | 0.03686 | 0.59685 |
| **FastABOD** | **4** | 0.00000 | -0.02039 | 0.02374 | 0.00384 | 0.05747 | 0.03826 | 0.60446 |
| **FastABOD** | **6** | 0.00000 | -0.02039 | 0.02334 | 0.00343 | 0.05967 | 0.04051 | 0.60393 |
| **KDEOS** | **21** | 0.10753 | 0.08933 | 0.06463 | 0.04557 | 0.13364 | 0.11598 | 0.78982 |
| **KDEOS** | **29** | 0.10753 | 0.08933 | 0.07742 | 0.05861 | 0.15122 | 0.13392 | 0.78500 |
| **KDEOS** | **41** | 0.10753 | 0.08933 | 0.07623 | 0.05740 | 0.15385 | 0.13660 | 0.77253 |
| **KDEOS** | **48** | 0.13978 | 0.12225 | 0.07523 | 0.05638 | 0.14925 | 0.13191 | 0.76650 |
| **LDF** | **2** | 0.05376 | 0.03447 | 0.02981 | 0.01003 | 0.06776 | 0.04875 | 0.60000 |
| **LDF** | **4** | 0.02151 | 0.00156 | 0.03056 | 0.01080 | 0.06282 | 0.04371 | 0.62864 |
| **LDF** | **5** | 0.02151 | 0.00156 | 0.02957 | 0.00979 | 0.07088 | 0.05194 | 0.63006 |
| **INFLO** | **3** | 0.07527 | 0.05642 | 0.03582 | 0.01616 | 0.08964 | 0.07108 | 0.61762 |
| **INFLO** | **4** | 0.07527 | 0.05642 | 0.03756 | 0.01794 | 0.09009 | 0.07154 | 0.65191 |
| **INFLO** | **6** | 0.05376 | 0.03447 | 0.03631 | 0.01666 | 0.09624 | 0.07782 | 0.65300 |
| **COF** | **4** | 0.04301 | 0.02350 | 0.03748 | 0.01786 | 0.08565 | 0.06701 | 0.67426 |
| **COF** | **6** | 0.04301 | 0.02350 | 0.03551 | 0.01584 | 0.07306 | 0.05416 | 0.68326 |

## Plots

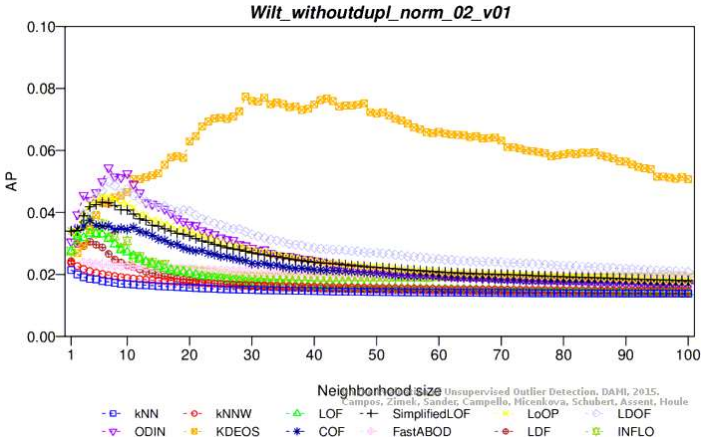
### Precision at *n*



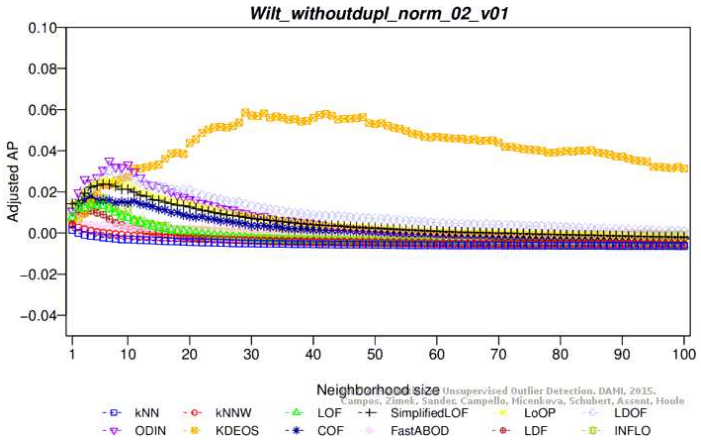

### Adjusted precision at *n*



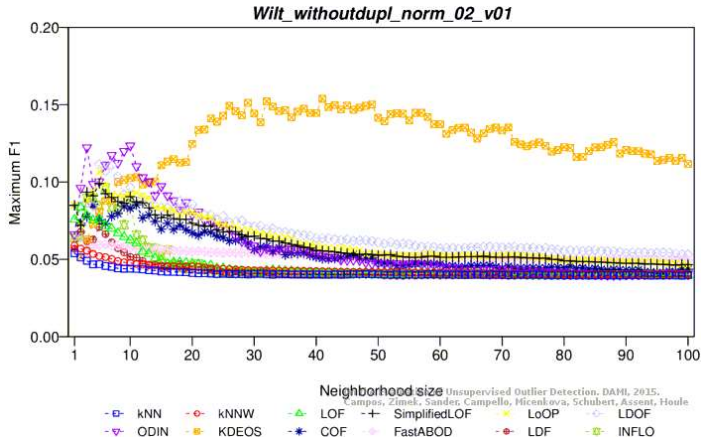

### Average precision



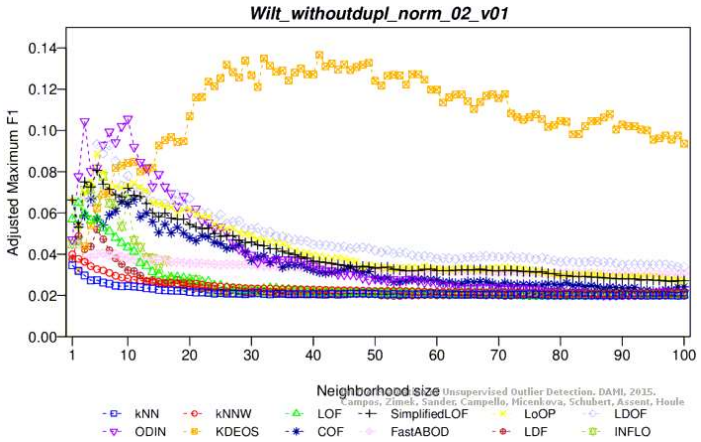

## Adjusted average precision



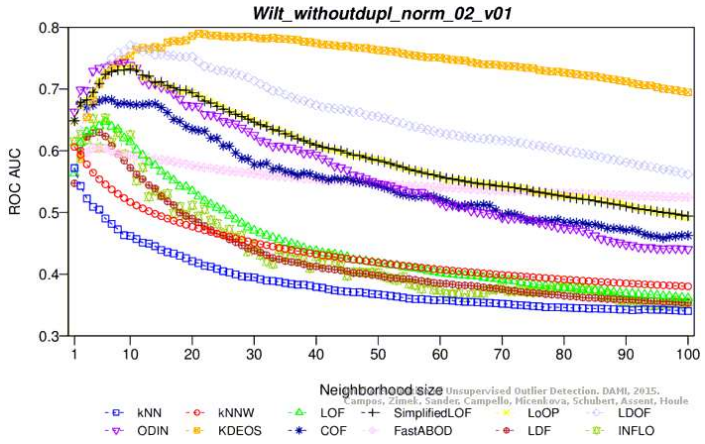

## Maximum F1 score



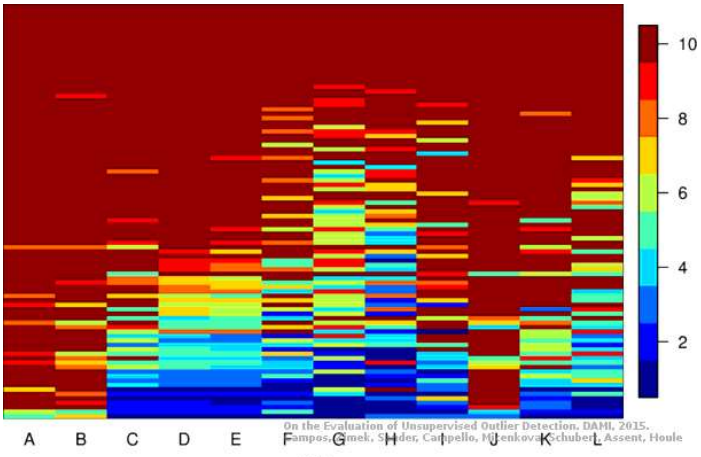

## Adjusted maximum F1 score




## ROC AUC




## Diversity




A: KNN, B: KNNW, C: LOF, D: SimplifiedLOF, E: LoOP, F: LDOF
G: ODIN, H: KDEOS, I: COF, J: FastABOD, K: LDF, L: INFLO

# Normalized, duplicates

This version contains 5 attributes, 4671 objects, 93 outliers (1.99%)

Download raw algorithm results (39.7 MB) Download raw algorithm evaluation table (72.7 kB)

## Best Parameters

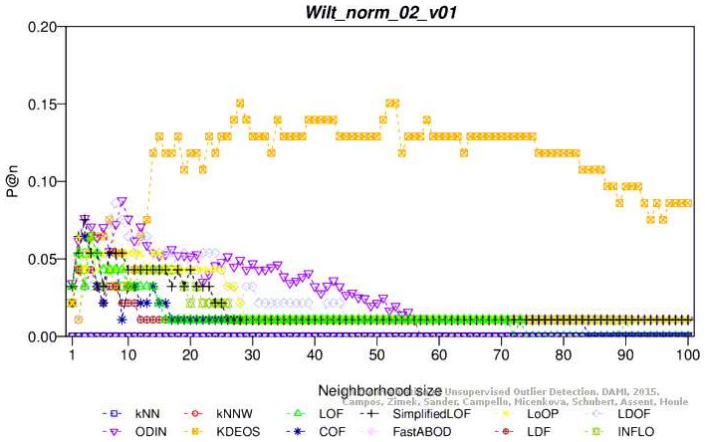
The following table contains the best (overall and per-method) results for each method and evaluation measure (when the same score was achieved twice, only the smallest k is given).
The Maximum F1-Measure is complimentary in addition to the measures in the original publication.

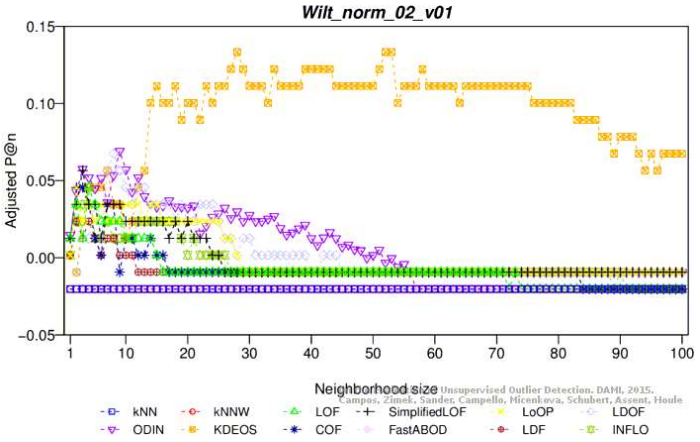
| Algorithm | k | P@n | Adj. P@n | AP | Adj. AP | Max-F1 | Adj. MF1 | ROC AUC |
|---|---|---|---|---|---|---|---|---|
| **KNN** | **1** | 0.00000 | -0.02031 | 0.02415 | 0.00433 | 0.05942 | 0.04031 | 0.61656 |
| **KNNW** | **1** | 0.00000 | -0.02031 | 0.02324 | 0.00340 | 0.05571 | 0.03652 | 0.58472 |
| **KNNW** | **2** | 0.00000 | -0.02031 | 0.02354 | 0.00370 | 0.05613 | 0.03695 | 0.60181 |
| **KNNW** | **3** | 0.00000 | -0.02031 | 0.02322 | 0.00338 | 0.05743 | 0.03828 | 0.59979 |
| **LOF** | **3** | 0.03226 | 0.01260 | 0.04579 | 0.02640 | 0.10969 | 0.09161 | 0.71702 |
| **LOF** | **4** | 0.06452 | 0.04551 | 0.04742 | 0.02806 | 0.10966 | 0.09157 | 0.73600 |
| **SimplifiedLOF** | **3** | 0.07527 | 0.05648 | 0.04551 | 0.02612 | 0.11030 | 0.09223 | 0.69359 |
| **SimplifiedLOF** | **6** | 0.03226 | 0.01260 | 0.05459 | 0.03538 | 0.13258 | 0.11496 | 0.76661 |
| **SimplifiedLOF** | **10** | 0.04301 | 0.02357 | 0.05186 | 0.03260 | 0.11765 | 0.09972 | 0.77844 |
| **LoOP** | **2** | 0.06452 | 0.04551 | 0.03791 | 0.01836 | 0.08148 | 0.06282 | 0.67843 |
| **LoOP** | **7** | 0.04301 | 0.02357 | 0.05795 | 0.03881 | 0.13529 | 0.11773 | 0.78119 |
| **LoOP** | **9** | 0.04301 | 0.02357 | 0.05602 | 0.03684 | 0.12844 | 0.11074 | 0.78654 |
| **LDOF** | **8** | 0.08602 | 0.06745 | 0.05376 | 0.03454 | 0.11908 | 0.10119 | 0.76894 |
| **LDOF** | **10** | 0.06452 | 0.04551 | 0.05706 | 0.03791 | 0.12456 | 0.10677 | 0.79553 |
| **ODIN** | **7** | 0.05497 | 0.03577 | 0.07152 | 0.05265 | 0.16271 | 0.14570 | 0.80665 |
| **ODIN** | **9** | 0.08774 | 0.06921 | 0.06200 | 0.04294 | 0.13972 | 0.12224 | 0.78186 |
| **FastABOD** | **3** | 0.00000 | -0.02031 | 0.02583 | 0.00604 | 0.06230 | 0.04325 | 0.62040 |
| **FastABOD** | **5** | 0.00000 | -0.02031 | 0.02586 | 0.00607 | 0.06400 | 0.04499 | 0.63177 |
| **KDEOS** | **21** | 0.11828 | 0.10037 | 0.08956 | 0.07107 | 0.16928 | 0.15240 | 0.81937 |
| **KDEOS** | **25** | 0.12903 | 0.11134 | 0.08817 | 0.06964 | 0.18132 | 0.16469 | 0.81454 |
| **KDEOS** | **28** | 0.15054 | 0.13328 | 0.08867 | 0.07015 | 0.16156 | 0.14453 | 0.81659 |
| **LDF** | **2** | 0.04301 | 0.02357 | 0.03747 | 0.01791 | 0.08789 | 0.06936 | 0.65949 |
| **LDF** | **4** | 0.04301 | 0.02357 | 0.04102 | 0.02154 | 0.09331 | 0.07489 | 0.70563 |
| **INFLO** | **4** | 0.06452 | 0.04551 | 0.04387 | 0.02445 | 0.10033 | 0.08206 | 0.70464 |
| **INFLO** | **6** | 0.03226 | 0.01260 | 0.04674 | 0.02737 | 0.12018 | 0.10231 | 0.73275 |
| **INFLO** | **8** | 0.03226 | 0.01260 | 0.04410 | 0.02468 | 0.12262 | 0.10479 | 0.71727 |
| **COF** | **2** | 0.06452 | 0.04551 | 0.03911 | 0.01959 | 0.08046 | 0.06178 | 0.64393 |
| **COF** | **3** | 0.06452 | 0.04551 | 0.04241 | 0.02295 | 0.10612 | 0.08796 | 0.65906 |
| **COF** | **4** | 0.05376 | 0.03454 | 0.04364 | 0.02421 | 0.10256 | 0.08433 | 0.69456 |
| **COF** | **6** | 0.02151 | 0.00163 | 0.04167 | 0.02220 | 0.09238 | 0.07394 | 0.72088 |

## Plots

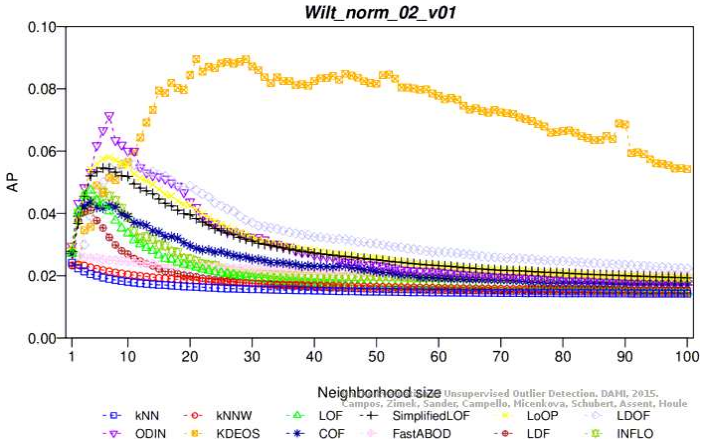
**Precision at *n***

**Adjusted precision at *n***



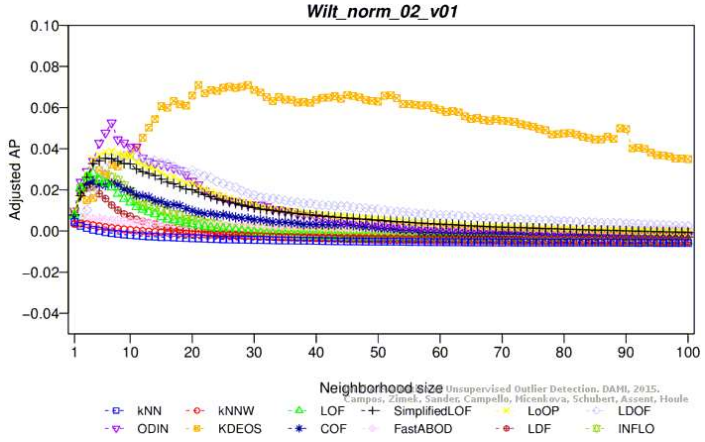



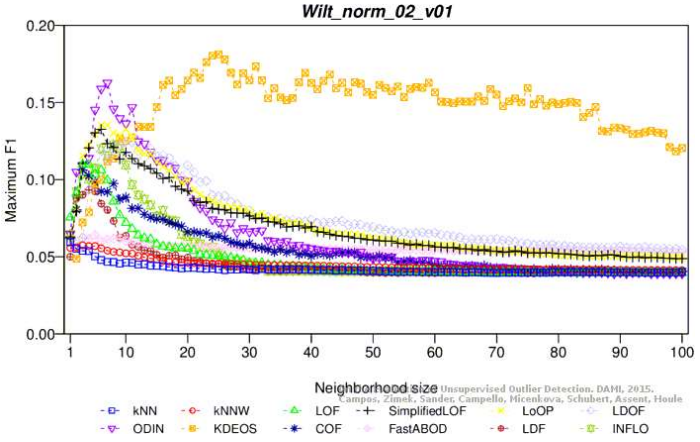

**Average precision**




**Adjusted average precision**

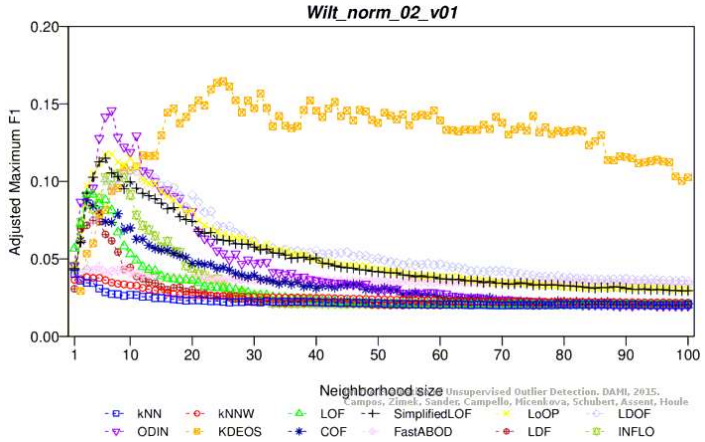
**Maximum F1 score**

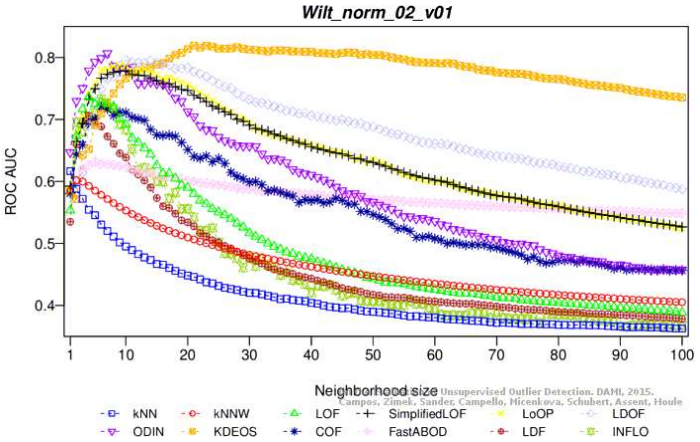


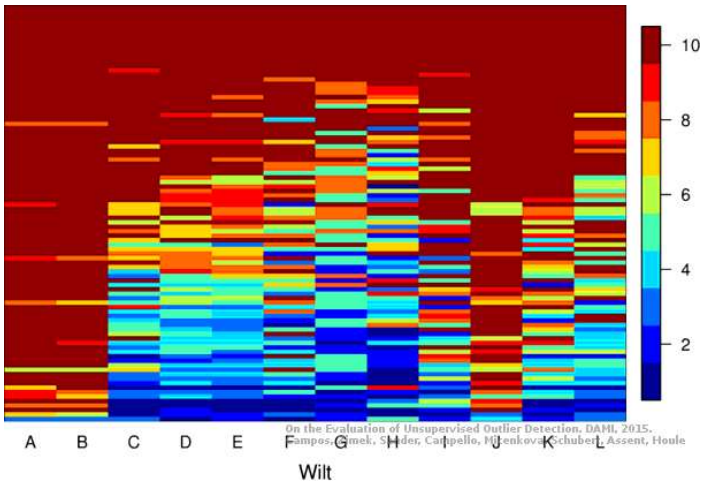

**Adjusted maximum F1 score**

**ROC AUC**




**Diversity**




A: KNN, B: KNNW, C: LOF, D: SimplifiedLOF, E: LoOP, F: LDOF
G: ODIN, H: KDEOS, I: COF, J: FastABOD, K: LDF, L: INFLO

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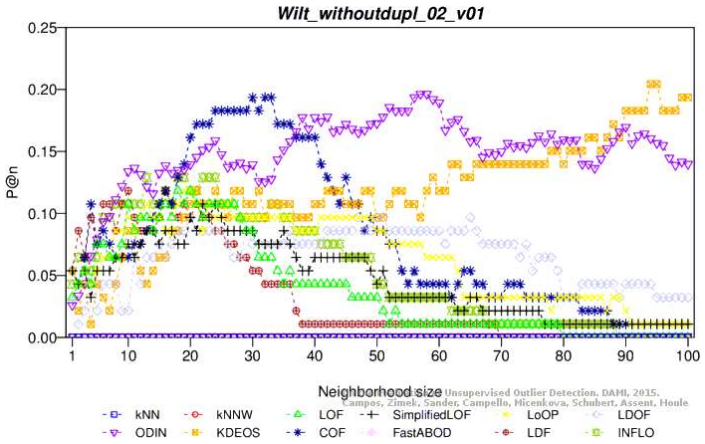
The Maximum F1-Measure is complimentary in addition to the measures in the original publication.

| Algorithm | k | P@n | Adj. P@n | AP | Adj. AP | Max-F1 | Adj. MF1 | ROC AUC |
|---|---|---|---|---|---|---|---|---|
| **KNN** | **1** | 0.00000 | -0.02039 | 0.04000 | 0.02043 | 0.09777 | 0.07937 | 0.77001 |
| **KNN** | **2** | 0.00000 | -0.02039 | 0.04165 | 0.02211 | 0.10045 | 0.08211 | 0.78046 |
| **KNN** | **3** | 0.00000 | -0.02039 | 0.04100 | 0.02145 | 0.10119 | 0.08287 | 0.77802 |
| **KNNW** | **1** | 0.00000 | -0.02039 | 0.03582 | 0.01616 | 0.08949 | 0.07093 | 0.72632 |
| **KNNW** | **6** | 0.00000 | -0.02039 | 0.04081 | 0.02126 | 0.09770 | 0.07930 | 0.77805 |
| **KNNW** | **9** | 0.00000 | -0.02039 | 0.04020 | 0.02063 | 0.09985 | 0.08150 | 0.77439 |
| **LOF** | **11** | 0.08602 | 0.06739 | 0.09721 | 0.07880 | 0.19900 | 0.18268 | 0.88671 |
| **LOF** | **18** | 0.11828 | 0.10030 | 0.10165 | 0.08333 | 0.19407 | 0.17764 | 0.88236 |
| **LOF** | **19** | 0.10753 | 0.08933 | 0.10176 | 0.08345 | 0.20112 | 0.18483 | 0.88008 |
| **SimplifiedLOF** | **22** | 0.10753 | 0.08933 | 0.09416 | 0.07569 | 0.17996 | 0.16324 | 0.88759 |
| **SimplifiedLOF** | **23** | 0.09677 | 0.07836 | 0.09575 | 0.07731 | 0.17568 | 0.15887 | 0.88967 |
| **SimplifiedLOF** | **27** | 0.08602 | 0.06739 | 0.09566 | 0.07722 | 0.17905 | 0.16231 | 0.88998 |
| **SimplifiedLOF** | **32** | 0.07527 | 0.05642 | 0.09493 | 0.07648 | 0.18232 | 0.16565 | 0.88770 |
| **LoOP** | **19** | 0.11828 | 0.10030 | 0.08804 | 0.06945 | 0.16460 | 0.14757 | 0.87555 |
| **LoOP** | **26** | 0.10753 | 0.08933 | 0.09368 | 0.07520 | 0.18075 | 0.16405 | 0.88497 |
| **LoOP** | **27** | 0.09677 | 0.07836 | 0.09443 | 0.07597 | 0.17851 | 0.16176 | 0.88576 |
| **LoOP** | **32** | 0.09677 | 0.07836 | 0.09460 | 0.07614 | 0.17935 | 0.16262 | 0.88427 |

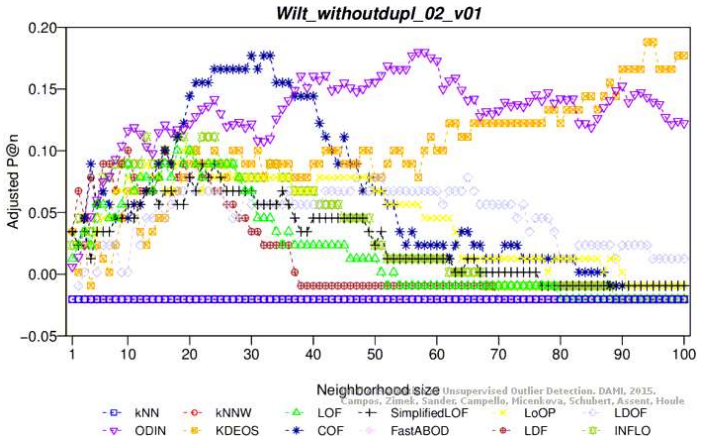
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **LDOF** | **20** | 0.09677 | 0.07836 | 0.06420 | 0.04512 | 0.13559 | 0.11797 | 0.81838 |
| **LDOF** | **46** | 0.08602 | 0.06739 | 0.08661 | 0.06799 | 0.17009 | 0.15317 | 0.88290 |
| **LDOF** | **50** | 0.09677 | 0.07836 | 0.08718 | 0.06857 | 0.17722 | 0.16044 | 0.88163 |
| **LDOF** | **54** | 0.08602 | 0.06739 | 0.08749 | 0.06889 | 0.17208 | 0.15520 | 0.88149 |
| **ODIN** | **26** | 0.13733 | 0.11974 | 0.12038 | 0.10244 | 0.19377 | 0.17734 | 0.89732 |
| **ODIN** | **38** | 0.17742 | 0.16065 | 0.13304 | 0.11536 | 0.22152 | 0.20565 | 0.89072 |
| **ODIN** | **58** | 0.19635 | 0.17997 | 0.11801 | 0.10003 | 0.21466 | 0.19865 | 0.86065 |
| **ODIN** | **66** | 0.15914 | 0.14200 | 0.11307 | 0.09499 | 0.22663 | 0.21086 | 0.84922 |
| **FastABOD** | **3** | 0.00000 | -0.02039 | 0.02843 | 0.00863 | 0.06495 | 0.04588 | 0.65416 |
| **FastABOD** | **11** | 0.00000 | -0.02039 | 0.02934 | 0.00955 | 0.06891 | 0.04993 | 0.66617 |
| **FastABOD** | **13** | 0.00000 | -0.02039 | 0.02927 | 0.00948 | 0.06655 | 0.04752 | 0.66626 |
| **KDEOS** | **93** | 0.18280 | 0.16614 | 0.13454 | 0.11690 | 0.20690 | 0.19073 | 0.87887 |
| **KDEOS** | **94** | 0.20430 | 0.18808 | 0.13385 | 0.11619 | 0.21000 | 0.19390 | 0.87901 |
| **KDEOS** | **100** | 0.19355 | 0.17711 | 0.13449 | 0.11685 | 0.21333 | 0.19730 | 0.87738 |
| **LDF** | **10** | 0.11828 | 0.10030 | 0.10462 | 0.08636 | 0.19578 | 0.17938 | 0.88910 |
| **LDF** | **20** | 0.09677 | 0.07836 | 0.09408 | 0.07561 | 0.20501 | 0.18880 | 0.85924 |
| **INFLO** | **13** | 0.12903 | 0.11128 | 0.07190 | 0.05298 | 0.13901 | 0.12146 | 0.81958 |
| **INFLO** | **24** | 0.12903 | 0.11128 | 0.08227 | 0.06356 | 0.16174 | 0.14465 | 0.84737 |
| **INFLO** | **27** | 0.10753 | 0.08933 | 0.08440 | 0.06573 | 0.16619 | 0.14919 | 0.84654 |
| **INFLO** | **30** | 0.09677 | 0.07836 | 0.08181 | 0.06310 | 0.16667 | 0.14968 | 0.84581 |
| **COF** | **21** | 0.17204 | 0.15516 | 0.11654 | 0.09853 | 0.22140 | 0.20553 | 0.89495 |
| **COF** | **26** | 0.18280 | 0.16614 | 0.12324 | 0.10537 | 0.25296 | 0.23774 | 0.88448 |
| **COF** | **30** | 0.19355 | 0.17711 | 0.12006 | 0.10212 | 0.23963 | 0.22413 | 0.87052 |

## Plots

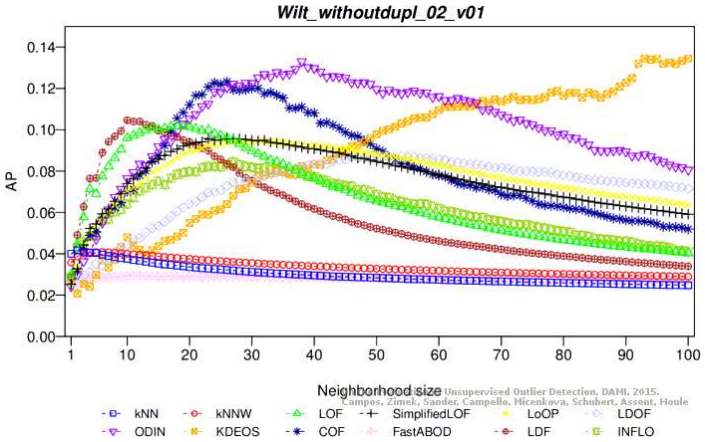
### Precision at *n*



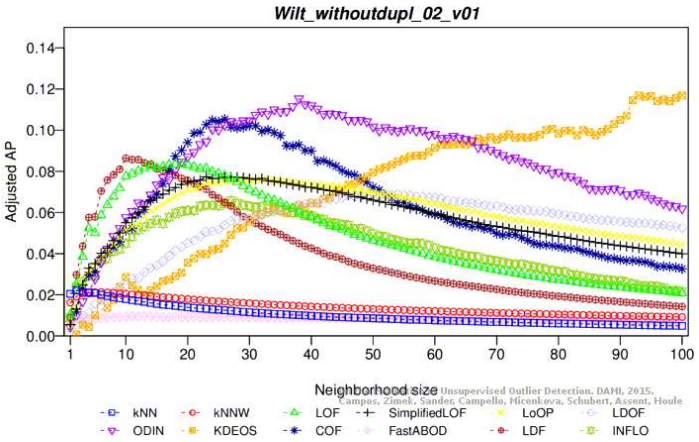

### Adjusted precision at *n*



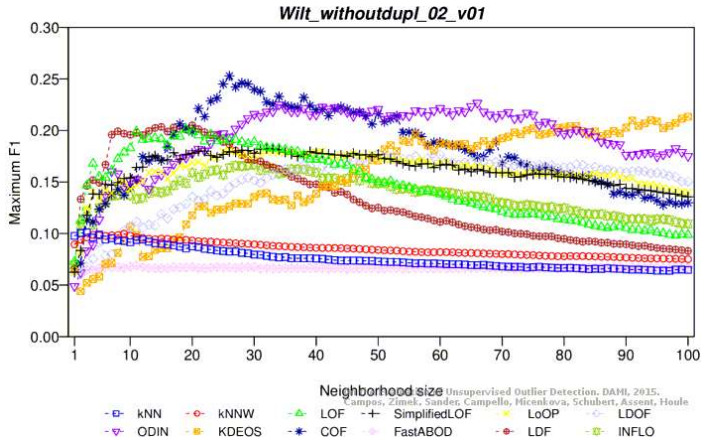

### Average precision



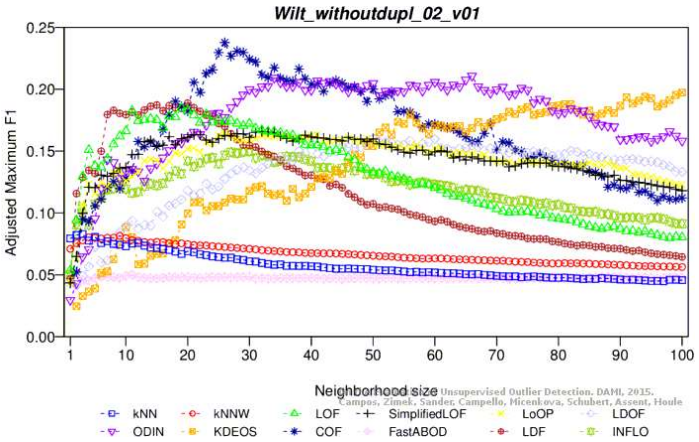

## Adjusted average precision



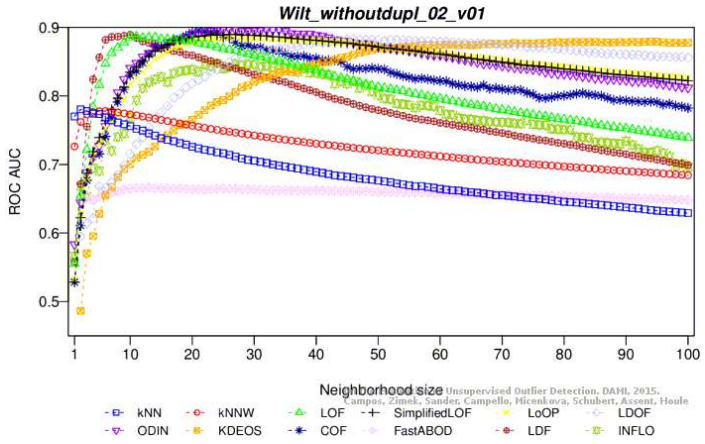

## Maximum F1 score



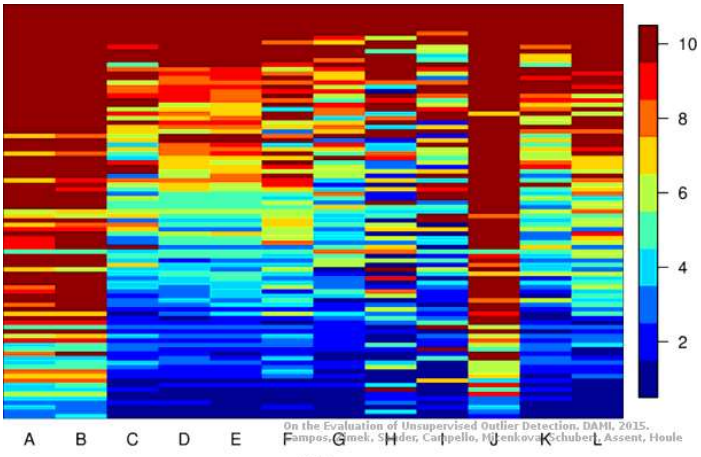

## Adjusted maximum F1 score




## ROC AUC




## Diversity




A: KNN, B: KNNW, C: LOF, D: SimplifiedLOF, E: LoOP, F: LDOF
G: ODIN, H: KDEOS, I: COF, J: FastABOD, K: LDF, L: INFLO

# Not normalized, duplicates

This version contains 5 attributes, 4671 objects, 93 outliers (1.99%)

Download raw algorithm results (40.2 MB) Download raw algorithm evaluation table (71.5 kB)

## Best Parameters

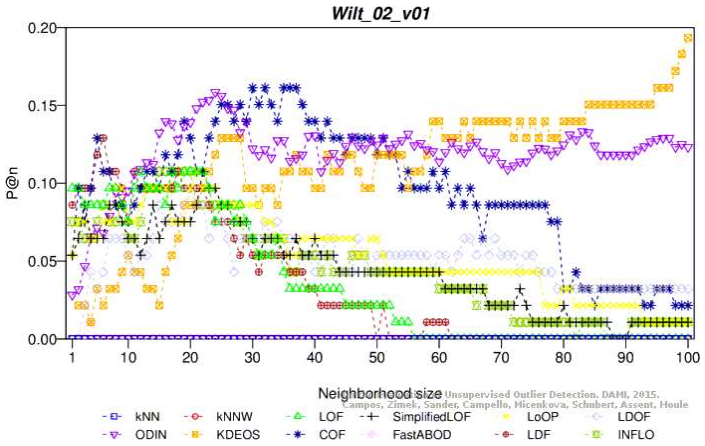
The following table contains the best (overall and per-method) results for each method and evaluation measure (when the same score was achieved twice, only the smallest k is given).
The Maximum F1-Measure is complimentary in addition to the measures in the original publication.

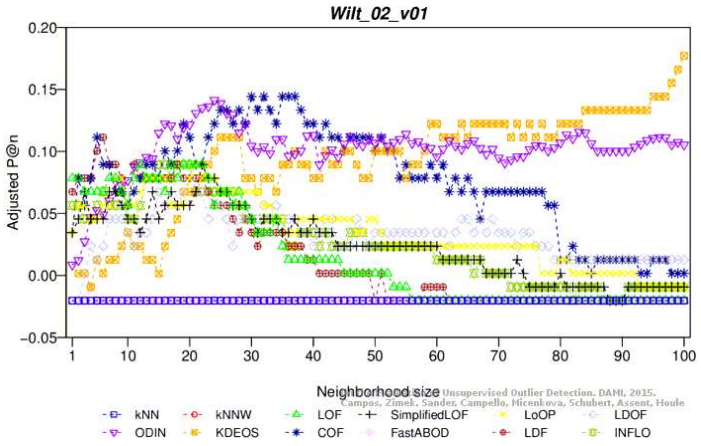
| Algorithm | k | P@n | Adj. P@n | AP | Adj. AP | Max-F1 | Adj. MF1 | ROC AUC |
|---|---|---|---|---|---|---|---|---|
| **KNN** | **1** | 0.00000 | -0.02031 | 0.04237 | 0.02292 | 0.10177 | 0.08353 | 0.76985 |
| **KNNW** | **1** | 0.00000 | -0.02031 | 0.03791 | 0.01836 | 0.09284 | 0.07441 | 0.70262 |
| **KNNW** | **4** | 0.00000 | -0.02031 | 0.04114 | 0.02166 | 0.09728 | 0.07894 | 0.76635 |
| **KNNW** | **7** | 0.00000 | -0.02031 | 0.04080 | 0.02131 | 0.10046 | 0.08218 | 0.76956 |
| **KNNW** | **8** | 0.00000 | -0.02031 | 0.04063 | 0.02114 | 0.10018 | 0.08190 | 0.76999 |
| **LOF** | **12** | 0.10753 | 0.08940 | 0.08091 | 0.06224 | 0.16000 | 0.14294 | 0.84574 |
| **LOF** | **19** | 0.10753 | 0.08940 | 0.08791 | 0.06938 | 0.17257 | 0.15576 | 0.85959 |
| **LOF** | **26** | 0.08602 | 0.06745 | 0.08412 | 0.06551 | 0.17931 | 0.16264 | 0.85501 |
| **SimplifiedLOF** | **22** | 0.10753 | 0.08940 | 0.08097 | 0.06230 | 0.15873 | 0.14164 | 0.85652 |
| **SimplifiedLOF** | **29** | 0.07527 | 0.05648 | 0.08206 | 0.06342 | 0.17496 | 0.15820 | 0.86517 |
| **SimplifiedLOF** | **34** | 0.06452 | 0.04551 | 0.08288 | 0.06425 | 0.16960 | 0.15273 | 0.86655 |
| **LoOP** | **21** | 0.10753 | 0.08940 | 0.07775 | 0.05901 | 0.15385 | 0.13666 | 0.84489 |
| **LoOP** | **32** | 0.07527 | 0.05648 | 0.08161 | 0.06295 | 0.17638 | 0.15965 | 0.86111 |
| **LoOP** | **34** | 0.06452 | 0.04551 | 0.08239 | 0.06375 | 0.17523 | 0.15847 | 0.86299 |
| **LDOF** | **20** | 0.09677 | 0.07843 | 0.06306 | 0.04403 | 0.14758 | 0.13027 | 0.78984 |
| **LDOF** | **54** | 0.05376 | 0.03454 | 0.07448 | 0.05568 | 0.15934 | 0.14226 | 0.85712 |
| **LDOF** | **56** | 0.05376 | 0.03454 | 0.07506 | 0.05627 | 0.15584 | 0.13870 | 0.85758 |
| **ODIN** | **24** | 0.15854 | 0.14145 | 0.10433 | 0.08614 | 0.17252 | 0.15571 | 0.85794 |
| **ODIN** | **34** | 0.12750 | 0.10977 | 0.10031 | 0.08203 | 0.17771 | 0.16101 | 0.86053 |
| **ODIN** | **59** | 0.12043 | 0.10256 | 0.09078 | 0.07231 | 0.18861 | 0.17212 | 0.84321 |
| **FastABOD** | **3** | 0.00000 | -0.02031 | 0.03110 | 0.01141 | 0.07657 | 0.05781 | 0.65325 |
| **FastABOD** | **4** | 0.01075 | -0.00934 | 0.02944 | 0.00973 | 0.06814 | 0.04921 | 0.64775 |
| **FastABOD** | **16** | 0.00000 | -0.02031 | 0.02883 | 0.00911 | 0.06523 | 0.04624 | 0.65390 |
| **KDEOS** | **99** | 0.18280 | 0.16619 | 0.10926 | 0.09116 | 0.19792 | 0.18162 | 0.83673 |
| **KDEOS** | **100** | 0.19355 | 0.17717 | 0.10932 | 0.09123 | 0.19672 | 0.18040 | 0.83640 |
| **LDF** | **6** | 0.12903 | 0.11134 | 0.07280 | 0.05397 | 0.15649 | 0.13935 | 0.80496 |
| **LDF** | **14** | 0.09677 | 0.07843 | 0.08863 | 0.07012 | 0.16556 | 0.14861 | 0.86009 |
| **LDF** | **18** | 0.10753 | 0.08940 | 0.08991 | 0.07142 | 0.17837 | 0.16168 | 0.85685 |
| **LDF** | **24** | 0.07527 | 0.05648 | 0.08403 | 0.06542 | 0.18219 | 0.16558 | 0.84894 |
| **INFLO** | **15** | 0.10753 | 0.08940 | 0.06495 | 0.04596 | 0.14570 | 0.12834 | 0.76322 |
| **INFLO** | **26** | 0.08602 | 0.06745 | 0.07214 | 0.05329 | 0.16927 | 0.15239 | 0.80602 |
| **INFLO** | **27** | 0.08602 | 0.06745 | 0.07248 | 0.05364 | 0.16704 | 0.15012 | 0.80754 |
| **COF** | **24** | 0.13978 | 0.12231 | 0.11739 | 0.09946 | 0.24478 | 0.22943 | 0.87169 |
| **COF** | **25** | 0.15054 | 0.13328 | 0.11663 | 0.09869 | 0.23529 | 0.21976 | 0.87222 |
| **COF** | **30** | 0.16129 | 0.14425 | 0.11410 | 0.09610 | 0.21705 | 0.20115 | 0.86650 |

## Plots

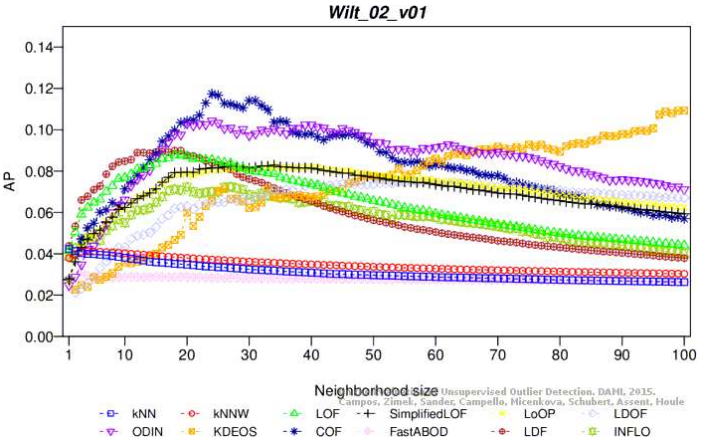
**Precision at *n***

**Adjusted precision at *n***



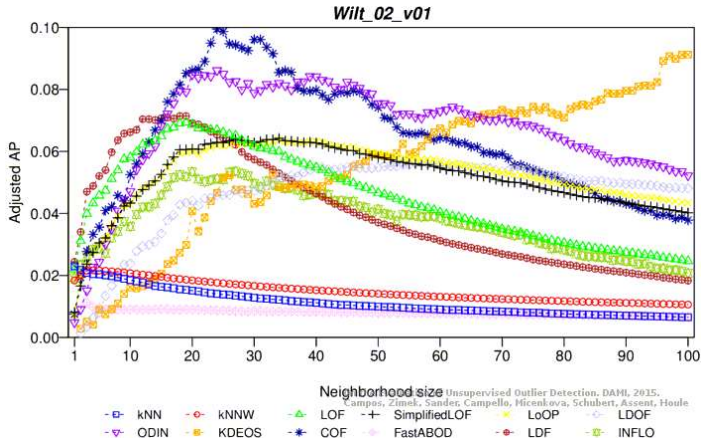



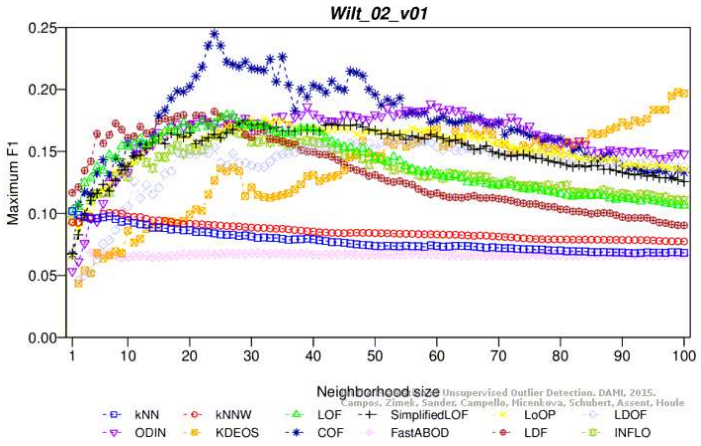

**Average precision**




**Adjusted average precision**

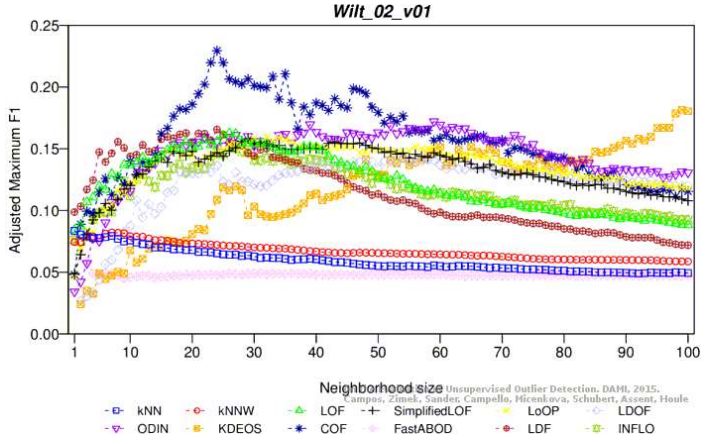
**Maximum F1 score**

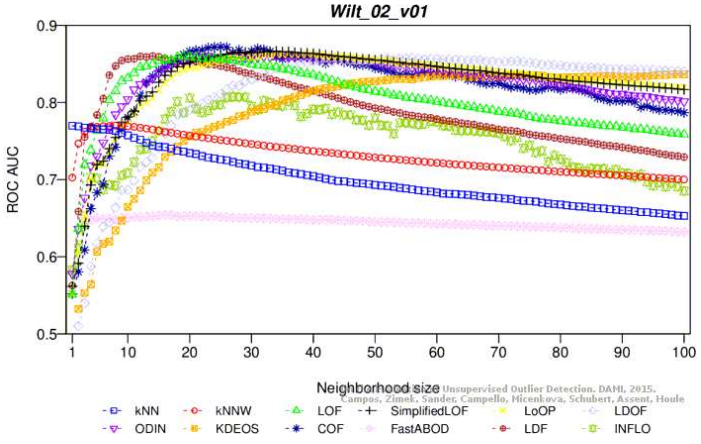


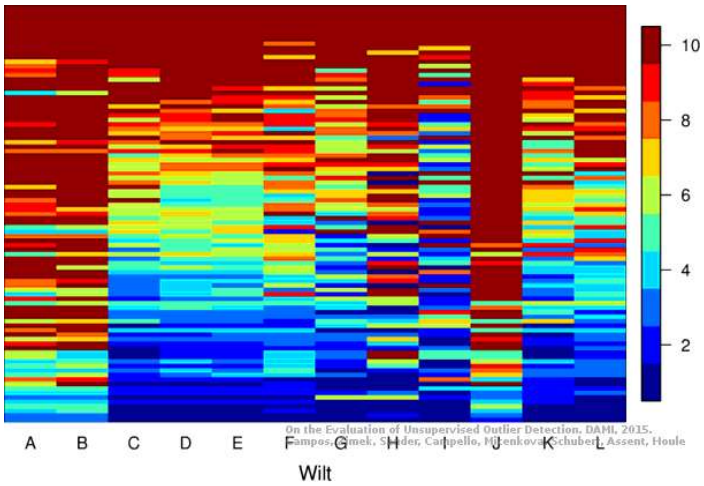

**Adjusted maximum F1 score**

**ROC AUC**




**Diversity**




A: KNN, B: KNNW, C: LOF, D: SimplifiedLOF, E: LoOP, F: LDOF
G: ODIN, H: KDEOS, I: COF, J: FastABOD, K: LDF, L: INFLO

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