# Notation

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| ROC | Receiver Operating Characteristic |  |
| LROC | Location Receiver Operating Characteristic |  |
| ROI | Region of Interest |  |
| FROC | Free-response Receiver Operating Characteristic |  |
| Reader | Radiologist or algorithmic observer | Indexed by |
| Modality, Treatment | The entire imaging chain, excluding the radiologist, used to obtain the images | Indexed by |
| Case | Patient, could be multiple images, or even images from different modalities | Indexed by |
|  | Total number of non-diseased cases in dataset | Indexed by |
|  | Total number of diseased cases in dataset | Indexed by |
|  | Total number of cases in dataset |  |
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| 2AFC | Two alternative forced choice | Paired presentation of non-diseased and diseased cases; task is to select diseased case |
| AUC | Area Under Curve |  |
| TP | True Positive |  |
| FP | False Positive |  |
| TN | True Negative |  |
| FN | False Negative |  |
| TPF | True Positive Fraction |  |
| FPF | False Positive Fraction |  |
|  | Normal distribution with mean  and variance ;= |  |
|  |  |  |
|  | Probability density function corresponding to ; |  |
|  | Cumulative distribution function corresponding to unit normal: |  |
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| D | Diagnosis; D= 1 for non-diseased; D= 2 for diseased |  |
| T | Truth, i.e., disease status; T= 1 for non-diseased; T= 2 for diseased |  |
| Se | Sensitivity | = TPF |
| Sp | Specificity | =1-FPF |
|  | Disease prevalence in population |  |
|  | Disease prevalence in laboratory study |  |
|  | Accuracy |  |
| PPV | Positive Predictive Value |  |
| NPV | Negative Predictive Value |  |
| Z, z | Random decision variable; realized value is z | z-sample |
|  | Random Z-sample for case |  |
|  | Threshold for reporting |  |
|  | Probability of A given, or conditioned on, B |  |
|  | Normal distribution with mean  and variance |  |
| pdf | probability density function |  |
| CDF | cumulative distribution function |  |
|  | pdf of |  |
|  | pdf of |  |
|  | CDF of |  |
|  |  | Inverse function |
| ROC plot | Plot of TPF (ordinate) vs. FPF |  |
|  | AUC under binormal model fitted ROC curve |  |
|  | AUC under binormal model fitted ROC curvemov |  |
|  | number of ROC bins |  |
|  | Number of counts rated ROC: *r* in truth state *t* | r = 1, 2, ..., |
| BI-RADS | Breast Imaging Reporting and Data System |  |
| MQSA | Mammography Quality Standards Act |  |
|  | Case  in case-truth state |  |
|  |  | Indicator function |
|  | FPF defined by threshold |  |
|  | TPF defined by threshold |  |
|  | Operating point defined by threshold |  |
|  |  | is the uppermost non-trivial point |
| W | Wilcoxon statistic |  |
|  |  | kernel function |
|  | Classical parameters of binormal model |  |
|  |  |  |
|  |  | Binning thresholds |
|  |  | Binning rule |
|  | threshold vector |  |
|  | , log likelihood function |  |
|  | Pearson goodness of fit statistic |  |
|  | Variance of X |  |
|  | Covariance of X and Y |  |
|  |  | detectability index |
|  |  | case-set index |
|  |  |  |
|  | AUC with case k deleted | jackknife AUC for case k |
| bootstrap variance |  |  |
| jackknife variance |  |  |
| Latent NLs and latent LLs | Suspicious regions | Regions detected by the initial glance, within 0.1 second, that represent perturbations from the non-diseased image "template" |
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