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Statistical methods for mass spectrometry-based clinical proteomics

Kakourou, A.A.

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Author: Kakourou, Alexia

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Stellingen behorende bij het proefschrift getiteld
“Statistical Methods for Mass Spectrometry-based Clinical
Proteomics”

1. Censored regression can be used successfully to handle the limit of detection (LOD) problem in determining the average intensity of isotopic clusters in mass spectrometry proteomic data. (this thesis)
2. Both the intensity level and the shape of isotope clusters may be related to the class outcome and can be used to predict the presence or absence of the disease. (this thesis)
3. A sequential approach can be implemented within the Bayesian approach to gain insight into the added value of shape information in addition to intensity. (this thesis)
4. An essential difference between the convex combination and the model-based combination approach is that there is an implicit “re-calibration” phenomenon involved in the latter, since the class probabilities are not only combined, as in the case of convex combination, but also re-calibrated as suggested by Cox (1958). (this thesis)
5. We are drowning in information and starving for knowledge. (Rutherford D. Roger, 1915-2015)
6. To call in the statistician after the experiment is done may be no more than asking him to perform a post-mortem examination: he may be able to say what the experiment died of. (Ronald Fisher, *Presidential Address to the First Indian Statistical Congress*, 1938)
7. The combination of some data and an aching desire for an answer does not ensure that a reasonable answer can be extracted from a given body of data. (John W. Tukey, *The American Statistician*, 1986)
8. The apparent superiority of highly sophisticated methods may be illusory, with simple methods often being equally effective or even superior in classifying new data points. (David Hand, *Statistical Science*, 2006).
9. Τὰς δ' ἀρετὰς λαμβάνομεν ἐνεγήσαντες πρότερον, ὥσπερ καὶ ἐπὶ τῶν ἄλλων τεχνῶν - ἃ γὰρ δεῖ μαθόντας ποιεῖν, ταῦτα ποιοῦντες μανθάνομεν (Aristoteles, 384-322 BC). (English: We acquire the virtues after putting them into practice, just as we do in the other arts; for the things we have to learn before we can do them, we learn by doing them.) - I find this to be true in all areas of life.
10. Χालεπὰ τὰ καλὰ (Plato, 427-347 BC). (English: Nothing beautiful without struggle.) - There is scarcely any happiness, passion or success without struggle.

Alexia Kakourou
Leiden, March 8, 2018