COMPOSITE TESTS USING MATRIX POOLING: MINIMIZING COSTS, MAXIMIZING RESULTS

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Using imperfect biological tests to detect infected individuals leads to misclassification, an undesirable outcome. In order to lower misclassification errors, one may perform repeated tests, which increases the cost. Under certain conditions, one may increase the accuracy of the testing procedure at the same time as decreasing the costs of testing by intelligently pooling samples from various individuals. We introduce Matrix Pooling with imperfect tests and show that this algorithm under certain conditions does indeed increase the accuracy of testing whilst decreasing the costs. At the same time, Matrix Pooling decreases the time required for obtaining results when compared to individual tests and other pooling methods.