**Supporting Information**

**S1 Table.** The running time and clinical sensitivity of different models for the analysis

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| --- | --- | --- |
| Model | Run time (per sample) | clinical sensitivity |
| GMM and Gradient boosting semiautomatic combination | 15 mins | 88.89% |
| K means automatic method | 7-8 mins | 77.78% |
| K means and FDA semiautomatic combination | ~2 hours | 83.33% |
| K means and CNN semiautomatic combination | ~2.5 hours | 88.89% |
| K means and RNN semiautomatic combination | ~3 hours | 88.89% |

**Note.** All models are calculated under a cluster with 4 1080ti GPU.