Supplementary Material

**Supplementary Table 1.** Per-category classification performance of other related advanced methods and our methods.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Methods | Classes | ACC,%  (95% CI) | RE,%  (95% CI) | PRE,%  (95% CI) | F1,%  (95% CI) | AUC,%  (95% CI) |
| Zhang Y, et al.[54] | EGC | 95.5  (94.5-96.5) | 64.6  (47.2-82.0) | 78.6  (66.8-90.4) | 69.6  (60.1-79.1) | 97.3  (96.0-98.6) |
| LGIN | 87.3  (84.1-90.5) | 75.0  (63.5-86.5) | 81.3  (71.0-91.6) | 77.1  (71.1-83.1) | 93.3  (91.0-95.6) |
| non-neoplasm | 88.9  (85.8-92.0) | 93.6  (88.5-98.7) | 89.7  (83.7-95.7) | 91.3  (88.7-93.9) | 95.6  (94.0-97.2) |
| Yan T, et al.[41] | EGC | 95.2  (94.0-96.4) | 61.9  (40.3-83.5) | 77.7  (65.8-89.6) | 67.2  (55.7-78.7) | 97.2  (95.5-98.9) |
| LGIN | 89.2  (85.6-92.8) | 79.6  (65.3-93.9) | 84.5  (76.3-92.7) | 81.7  (71.4-92.0) | 94.7  (91.5-97.9) |
| non-neoplasm | 90.6  (88.4-92.8) | 93.9  (88.1-99.7) | 89.1  (84.4-93.8) | 91.3  (88.2-94.4) | 96.5  (95.3-97.7) |
| Zheng W, et al.[55] | EGC | 96.5  (94.7-98.3) | 64.1  (42.5-85.7) | **89.8**  **(85.9-93.7)** | 73.8  (56.5-91.1) | 98.2  (96.6-99.8) |
| LGIN | 88.5  (84.4-92.6) | **79.9**  **(69.3-90.5)** | 81.9  (69.2-94.6) | 80.0  (74.1-85.9) | 94.5  (91.8-97.2) |
| non-neoplasm | 89.3  (85.1-93.5) | 93.4  (87.1-99.7) | 90.2  (85.1-95.3) | 91.6  (87.9-95.3) | 96.1  (94.0-98.2) |
| MainNet | EGC | **97.2**  (95.4-99.0) | **85.3**  (73.5-97.1) | 82.2  (68.5-95.9) | **81.5**  (73.9-89.1) | **98.4**  (96.9-99.9) |
| LGIN | **92.0**  (87.6-96.4) | 78.8  (64.9-92.7) | **92.5**  (87.1-97.9) | **82.8**  (77.4-88.2) | **97.0**  (94.3-99.7) |
| non-neoplasm | **92.0**  (87.7-96.3) | **96.7**  (93.6-99.8) | **91.4**  (85.6-97.2) | **92.0**  (88.7-95.3) | **97.1**  (94.8-99.4) |