Supplementary Material

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

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| --- | --- | --- | --- | --- | --- | --- |
| 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) |