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Supplementary Table SI. Risk-of-bias assessment for the included studies

Author	Year	Domain 1: patient selection	Domain 2: index test(s)	Domain 3: reference standard	Domain 4: flow and timing
Kainz [34]	2017	Risk of bias: low Applicability concerns: low	Risk of bias: high Applicability concerns: low	Risk of bias: unclear Applicability concerns: low	Risk of bias: low
Xu [35]	2017	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: unclear	Risk of bias: low
Awan [36]	2017	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Chen [37]	2017	Risk of bias: low Applicability concerns: unclear	Risk of bias: low Applicability concerns: unclear	Risk of bias: low Applicability concerns: low	Risk of bias: low
Xu [38]	2017	Risk of bias: low Applicability concerns: low	Risk of bias: high Applicability concerns: low	Risk of bias: high Applicability concerns: low	Risk of bias: unclear
Haj-Hassan [36]	2017	Risk of bias: high Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear Applicability concerns: low	Risk of bias: unclear
Chaofeng	2017	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear
Van Eycke [40]	2018	Risk of bias: high Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Graham [41]	2019	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear
Yoon [42]	2019	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: low
Qaiser [9]	2019	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Sari [43]	2019	Risk of bias: low Applicability concerns: unclear	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: low Applicability concerns: low	Risk of bias: low
Rączkowski [44]	2019	Risk of bias: high Applicability concerns: high	Risk of bias: low Applicability concerns: low	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: high
Sena [26]	2019	Risk of bias: high Applicability concerns: high	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: high	Risk of bias: high
Xu [34]	2020	Risk of bias: high Applicability concerns: low	Risk of bias: unclear Applicability concerns: low	Risk of bias: high Applicability concerns: low	Risk of bias: low
Song [45]	2020	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Shaban [18]	2020	Risk of bias: high Applicability concerns: high	Risk of bias: low Applicability concerns: high	Risk of bias: low Applicability concerns: low	Risk of bias: high
Iizuka	2020	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: unclear
Masud [46]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Wang [6]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: unclear
Gupta [14]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: unclear	Risk of bias: unclear

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Supplementary Table SI. Cont.

Author	Year	Domain 1: patient selection	Domain 2: index test(s)	Domain 3: reference standard	Domain 4: flow and timing
Yu [10]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Toğaçar [47]	2021	Risk of bias: high Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: high
Terradillos [48]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear
Paladini [28]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear Applicability concerns: low	Risk of bias: unclear
Ben Hamida [24]	2021	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: unclear
Zhou [49]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Riasatian [30]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear
Tsuneki [25]	2021	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: unclear	Risk of bias: low
Jiao [29]	2021	Risk of bias: high Applicability concerns: high	Risk of bias: high Applicability concerns: unclear	Risk of bias: high Applicability concerns: unclear	Risk of bias: low
Kim [27]	2021	Risk of bias: high Applicability concerns: unclear	Risk of bias: low Applicability concerns: low	Risk of bias: high Applicability concerns: low	Risk of bias: unclear
Yan [19]	2022	Risk of bias: high Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: unclear
Dabass [20]	2022	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear
Kassani [13]	2022	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear
Shen [50]	2022	Risk of bias: low Applicability concerns: low	Risk of bias: high Applicability concerns: low	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: high
Chehade [15]	2022	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Collins [16]	2022	Risk of bias: high Applicability concerns: low	Risk of bias: low Applicability concerns: high	Risk of bias: low Applicability concerns: high	Risk of bias: high
Ho [12]	2022	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Reis [51]	2022	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low
Albashish	2022	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: low Applicability concerns: unclear	Risk of bias: unclear Applicability concerns: unclear	Risk of bias: unclear
Li [31]	2022	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: low Applicability concerns: low	Risk of bias: unclear

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Supplementary Table SII. Commonly utilised datasets for model training on pathological annotations of colorectal cancer

Dataset name	Origin	Sample size	Sample description
MICCAI 2015 Dataset (GlaS Challenge)	University Hospitals of Coventry and Warwickshire	165 images (85 training – 80 testing)	Histopathological H&E images of colorectal cancer and healthy tissue. Various tumour grades are included
NCT-CRC-HE-100K Dataset	NCT Biobank and the University Medical Centre Mannheim archive	100,000 images from 85 CRC patients	Histopathological H&E images of colorectal adenocarcinoma and healthy tissue
CRC-VAL-HE-7K Dataset	NCT Biobank	7180 images from 50 CRC Patients	Histopathological H&E images of colorectal adenocarcinoma. Used as a validation dataset for the NCT-CRC-HE-100K Dataset (no overlapping images)
AiCOLO Dataset	Multicentre Project	396 images	Histopathological H&E images of colorectal cancer and normal tissue. Annotations include extra-tumoral structures of interest
LC25000 Dataset	The Veterans Health Administration Healthcare System	10,000 images	Histopathological H&E images of colorectal adenocarcinoma and healthy tissue