Preparation of Papers for IEEE Transactions and Journals (June 2023)

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A. Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have already been defined in the abstract. Abbreviations such as IEEE, SI, ac, and dc do not have to be defined. Abbreviations that incorporate periods should not have spaces: write "C.N.R.S.," not "C. N. R. S." Do not use abbreviations in the title unless they are unavoidable (for example, "IEEE" in the title of this article).

B. Other Recommendations

Use one space after periods and colons. Hyphenate complex modifiers: "zero-field-cooled magnetization." Avoid dangling participles, such as, "Using (1), the potential was calculated." [It is not clear who or what used (1).] Write instead, "The potential was calculated by using (1)," or "Using (1), we calculated the potential."

Use a zero before decimal points: "0.25," not ".25." Use "cm^3," not "cc." Indicate sample dimensions as "0.1 cm $\times$ 0.2 cm," not "0.1 $\times$ 0.2 cm^2." The abbreviation for "seconds" is "s," not "sec." Use "Wb/m^2" or "webers per square meter," not "webers/m^2." When expressing a range of values, write "7 to 9" or "7–9," not "7$\sim$9."

A parenthetical statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.) In American English, periods and commas are within quotation marks, like "this period." Other punctuation is "outside"! Avoid contractions; for example, write "do not" instead of "don't." The serial comma is preferred: "A, B, and C" instead of "A, B and C."

This paragraph of the first footnote will contain the date on which you submitted your paper for review. It will also contain support information, including sponsor and financial support acknowledgment. For example, "This work was supported in part by the U.S. Department of Commerce under Grant 123456."

The next few paragraphs should contain the authors' current affiliations, including current address and e-mail. For example, First A. Author is with the National Institute of Standards and Technology, Boulder, CO 80305 USA (e-mail: author@boulder.nist.gov).

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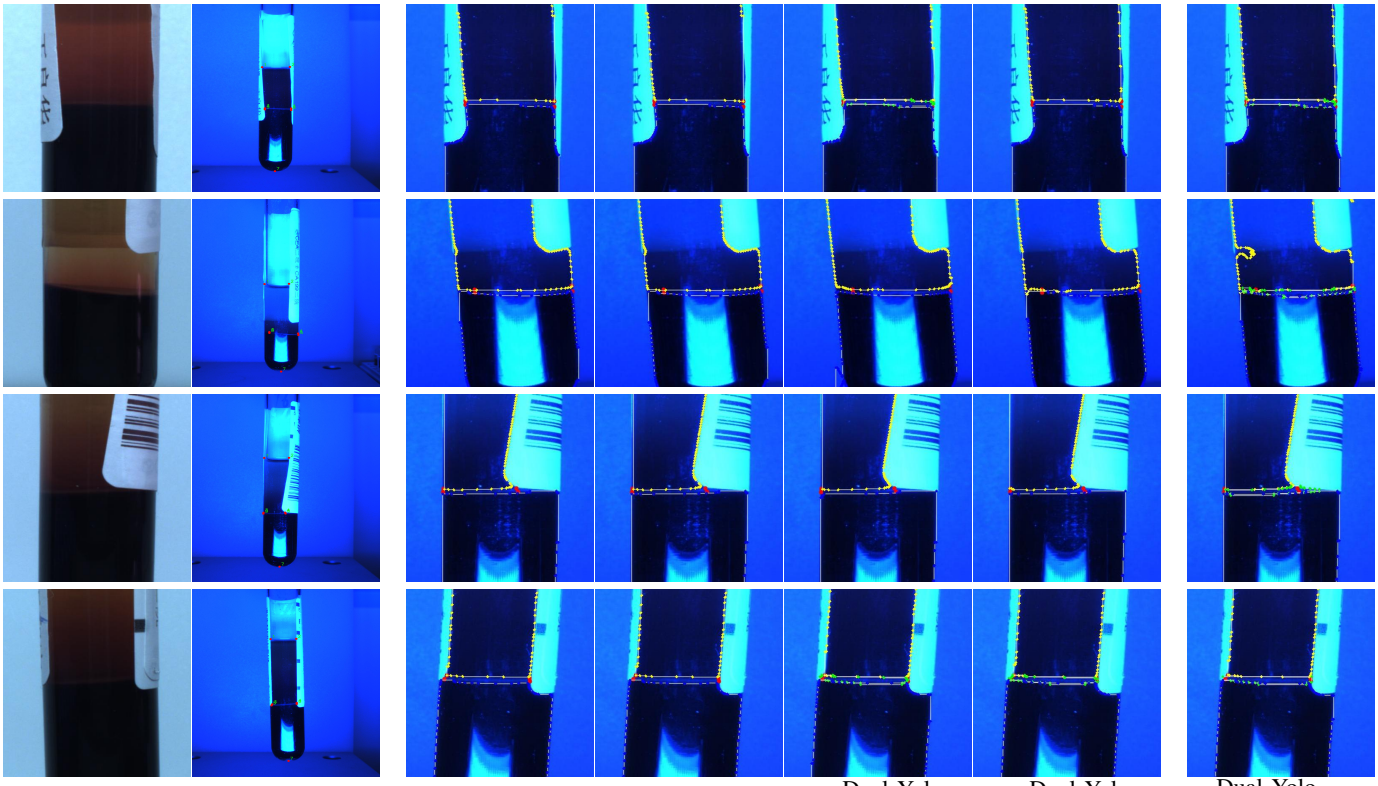

Fig. 3. Demonstrations of segmentation results from different models for the Blood Fractionation Component Segmentation task. In the figure, from top to bottom, the components are plasma, buffy coat, and red blood cell, respectively. From the third column, yellow, green, and blue points represent the segmented regions for plasma, buffy coat, and red blood cell. The regions outlined by white contours are the boundaries formed by the respective methods. From left to right, the columns display the following: original photo for the testing tube, ground truth annotated by professional blood testing personnel, Yolo11-Blue result, Yolo11-White result, Dual Yolo Concat Fusion result, Dual Yolo CrossAttn Fusion result, and Dual Yolo (Our Best).

TABLE IV
COMPARISON OF OUR DUAL-ILLUMINATION CROSS-ATTENTION FUSION AGAINST OTHER APPROACHES ACROSS PLASMA, BUFFY COAT AND RED BLOOD CELLS SEGMENTATION TASKS IN TERMS OF VARIOUS METRICS

		Plasma + Red Blood Cells Segmentation@65				**Buffy Coat Segmentation@65**			
Method	Dual-backbone	Detection Rate(%) ↑	IOU ↑	Diff_{up}(px) ↓	Diff_{low}(px) ↓	Detection Rate(%) ↑	IOU ↑	Diff_{up}(px) ↓	Diff_{low}(px) ↓
Yolo11-Blue	×	–	–	–	–	96.39	0.73±0.22	6.2±6.6	6.9±4.9
Yolo11-White	×	–	–	–	–	96.39	0.73±0.22	6.2±6.6	6.9±4.9
Dual Yolo Concat	✓	–	–	–	–	90.56	0.73±0.22	6.2±5.1	**6.6±5.1**
Dual Yolo Weighted	✓	–	–	–	–	11.39	**0.77±0.16**	7.8±6.2	7.7±6.8
Dual Yolo CrossAttn	✓	–	–	–	–	97.50	0.73±0.22	6.2±5.4	6.8±5.1
Dual Yolo (Our Best)	✓	**–**	**–**	**–**	**–**	**97.78**	0.73±0.22	**6.1±5.1**	6.8±4.9

TABLE V
COMPARISON OF OUR DUAL-ILLUMINATION CROSS-ATTENTION FUSION AGAINST OTHER APPROACHES ACROSS PLASMA, BUFFY COAT AND RED BLOOD CELLS SEGMENTATION TASKS IN TERMS OF VARIOUS METRICS

		Plasma + Red Blood Cells Segmentation@70				**Buffy Coat Segmentation@70**			
Method	Dual-backbone	Detection Rate(%) ↑	IOU ↑	Diff_{up}(px) ↓	Diff_{low}(px) ↓	Detection Rate(%) ↑	IOU ↑	Diff_{up}(px) ↓	Diff_{low}(px) ↓
Yolo11-Blue	×	–	–	–	–	91.67	0.73±0.22	6.3±6.7	7.0±5.0
Yolo11-White	×	–	–	–	–	91.67	0.73±0.22	6.3±6.7	7.0±5.0
Dual Yolo Concat	✓	–	–	–	–	86.11	0.73±0.22	6.2±5.2	6.6±5.2
Dual Yolo Weighted	✓	–	–	–	–	9.44	**0.77±0.17**	41.8±104.3	7.6±6.5
Dual Yolo CrossAttn	✓	–	–	–	–	94.72	0.74±0.22	6.2±5.4	**6.4±5.1**
Dual Yolo (Our Best)	✓	**–**	**–**	**–**	**–**	**97.78**	0.73±0.22	**6.1±5.1**	6.8±4.9

TABLE VI
COMPARISON OF OUR DUAL-ILLUMINATION CROSS-ATTENTION FUSION AGAINST OTHER APPROACHES ACROSS PLASMA, BUFFY COAT AND RED BLOOD CELLS SEGMENTATION TASKS IN TERMS OF VARIOUS METRICS

		Plasma + Red Blood Cells Segmentation@75				**Buffy Coat Segmentation@75**			
Method	Dual-backbone	Detection Rate(%) ↑	IOU ↑	Diff_{up}(px) ↓	Diff_{low}(px) ↓	Detection Rate(%) ↑	IOU ↑	Diff_{up}(px) ↓	Diff_{low}(px) ↓
Yolo11-Blue	×	–	–	–	–	80.83	0.73±0.23	6.3±6.9	7.1±5.1
Yolo11-White	×	–	–	–	–	80.83	0.73±0.23	6.3±6.9	7.1±5.1
Dual Yolo Concat	✓	–	–	–	–	76.67	0.73±0.22	6.1±5.2	6.6±5.1
Dual Yolo Weighted	✓	–	–	–	–	6.39	**0.76±0.17**	48.8±114.7	7.8±7.0
Dual Yolo CrossAttn	✓	–	–	–	–	**86.39**	0.74±0.22	6.3±5.5	**6.5±5.0**
Dual Yolo (Our Best)	✓	**–**	**–**	**–**	**–**	85.56	0.73±0.22	**6.1±5.1**	6.9±5.0

TABLE VII
ABLATION EXPERIMENTS ON THE BLOOD FRACTIONATION COMPONENT SEGMENTATION TASK@70

No.	**Settings**			**Detection Rate(%) ↑**	**IOU ↑**
	Dual-backbone	Dual-illumination fusion method	Pre-training		
1	×	None	From Scratch	91.67	0.73±0.22
2	✓	Concatenation + Compression	From Scratch	–	–
3	✓	Concatenation + Compression	Transfer Learning	86.11	0.73±0.22
4	✓	Adaptive Weighted Fusion	From Scratch	–	–
5	✓	Adaptive Weighted Fusion	Transfer Learning	9.44	0.77±0.17
6	✓	Cross Modal Attention Fusion	From Scratch	–	–
7	✓	Cross Modal Attention Fusion	Transfer Learning	**97.78**	0.73±0.22