

Some Points for Writing CVPR Paper(s)

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Disclaimer

- Personal biased view
 - May be a bit outdated in today's AI publication world
 - Take it with a grain of salt
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- Have been in this business for quite some time.
 - Have published some papers, but also got rejected many times.
 - Have been reviewers/AC/workshop organizers/AE for top-tier journals.

1. Be a Story Teller or Tour Guide

- Explain (briefly) what is the central problem of your paper.
- Why should people care this problem.
- What is the core idea/intuition behind your approach solving this problem.



深入浅出，引人入胜

Don't leave question marks in people head while they read the paper.

1. Be a Story Teller or Tour Guide

- It is all about making your paper easy to read and follow. So:
- Do NOT create and use acronym extensively
 - e.g., SOTA, SOT, ABC, DEF, EYC, YET, Use acronym very carefully.
- Do NOT add unnecessary turning words – not a smooth flow
 - e.g., “We propose A. However, B is better. Nevertheless, A is good too. But ...”
- DO cross-refer back your math symbols in figures and experiments
 - e.g., “Figure 6 shows a visualization of the attention map of the encoder $E(x)$ ”
- Do NOT use praising/emotional words. Use facts/results/numbers instead.
 - e.g., “We performed a meticulous analysis and evaluation, .. which shows substantially better performance than all prior work”
 - e.g., “Prior work [xx] performs poorly on real data. No other prior method can work in the extreme low light situation. Only our method can work”
 - e.g., “Figure 7 clearly shows our method achieved a significantly better result”

2. Write Around Figures

- Reviewers and ACs are often very **lazy** (or **busy**)
 - Visual content is faster to digest (e.g., figures, videos, images)
 - Make visual content of your paper easy to understand and convincing
- Figures act as anchor points & milestones of the paper writing
 - Teaser figure, system diagram, intermediate results, ablation, ...
 - Plan out the rough layout of all figures on a piece of paper before writing
- Nice figures are time consuming to make, but they win you lots of points
 - Equally, bad figures will create major damage to your paper.

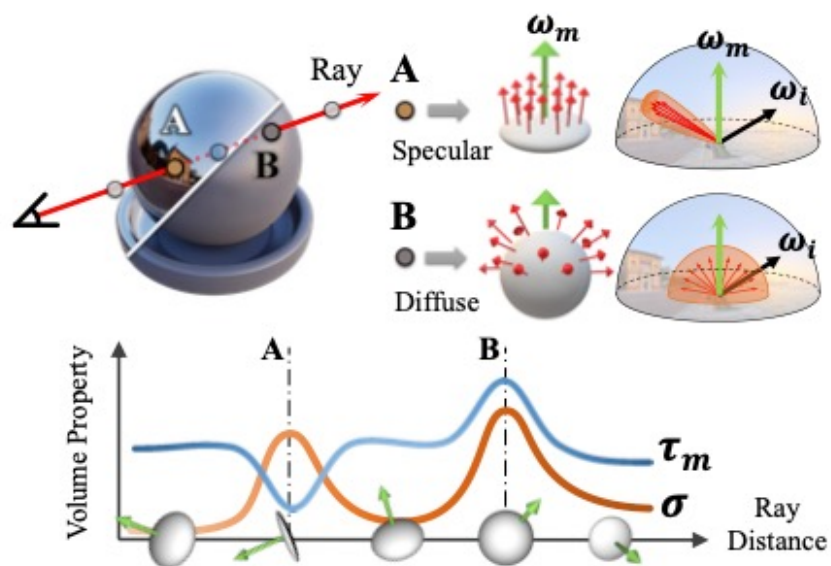


Figure 4: The rendering process of a ray: point A is relatively specular and point B is relatively diffuse. The ellipsoid that simulates the microflake distribution of A is thinner and that of B is rounder. The final color of ray is integral of transported radiation from the environment light by microflakes along the ray.

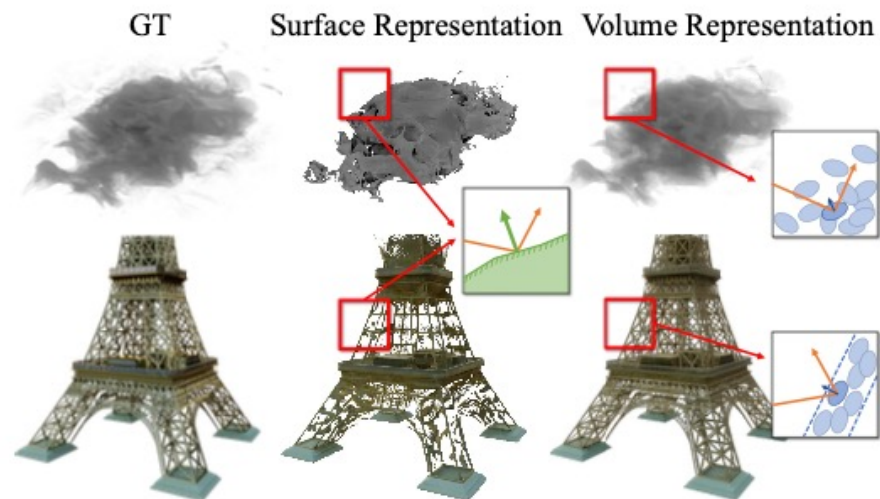


Figure 2: A surface-based representation can not handle scattering materials (e.g., cloud) and very complex geometry (e.g., Eiffel Tower). In contrast, the microflake volume can both handle a surface-like behavior by applying higher density inside the object and low density outside, and a volumetric object.

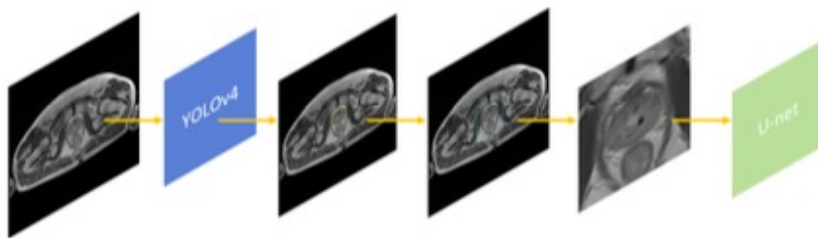


Figure 5. Post-processing workflow for prostate detection image. Legend starting from the left: input image in NxN size, YOLOv4 convolutional neural network, prostate detection output with yellow bounding-box, prostate detection output with enlarged turquoise bounding-box (15px padding), cropped prostate detection output and resized into 256x256px as U-Net input, U-Net convolutional neural network to segment prostate.

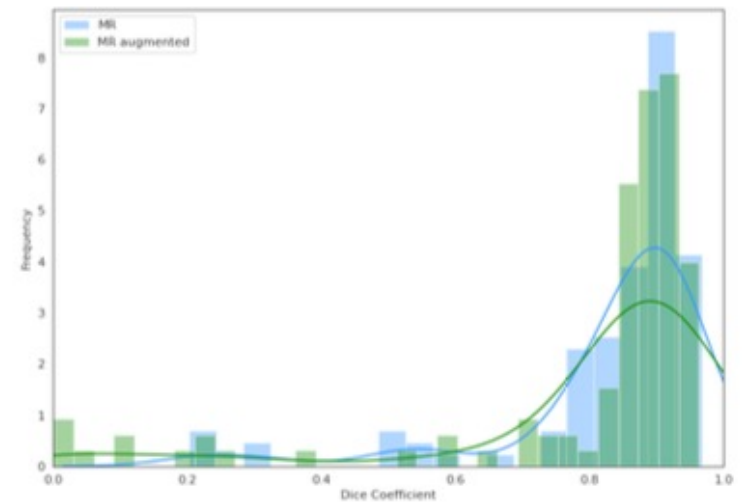


Figure 10. Distribution of Dice coefficient for two experiments: MR without augmentation (raw) and MR with augmented slices.

3. Try hard to provide insight whenever possible

- It is boring to read papers showing some block diagram of networks, and then some magic table/image results. --- We all hate those papers!
- People learn almost nothing from those types of papers.
- You want people to say “**Hmm... that is interesting. I’ve never thought about that before**” after reading your introduction.
- You do NOT want people to say “**Okay... yet another paper on super-resolution with CNN/GAN/Transformer/Diffusion/...**”

3. Try hard to provide insight whenever possible

- Providing insight is hard! But try your best to do it.
- People will value your efforts, and will greatly appreciate that.
- For example, you can:
 - Provide some intermediate results, e.g., visualization of distributions of some latent features, and draw intuition from them.
 - Use tools (e.g., grad-cam) to visualize the saliency, attention, flow, and/or other maps of your method/system.
 - Create some toy example (2D or 3D point), or simple geometry/motion, so that people can easily understand what your method is doing.
 - Perform some statistical analysis of some dataset to show your points.

4. Polish your paper like polishing your car

- Do NOT make your luxury car dirty like this one.
- Format and polish your paper till the deadline
 - Typos, grammar mistakes, font size inconsistency
 - Misalignment/errors in figures (not centering ...)
 - Bibliography not consistent style, typos,

“J. Gu, xxx. CVPR 23”

“Ginwei Gu, xxx, *IEEE Proceedings of CVPR 2023*”

“Gu, J, xxx, IEEE Conferences on CVPR 2023”

“J. Gu, xxx, In Proceedings of CVPR 2023”

“J. Gu, “Gan: 3d nerf”, In Proceedings of CVPR 2023”



5. About “Discussion and Limitation”

- I often give paper submission more credit with “Discussion” and/or “Limitations”
- This shows the authors thought deeply when they carried out their work. They did not just try one network and then got lucky.
- It points future directions to the audience – people learn things.
- But, be genuine and honest. Do NOT write some irrelevant or superficial limitations, or just fake something.

6. Supplementary material

- Supplementary **video** is a big plus in almost all cases.
- **Again, reviewers and ACs are very lazy (or busy).**
- For example, it can be a short presentation of your paper (say in 1~3min to explain your paper with ppt, recorded with ppt).
- If your paper is about video processing, video generation, or 3D related, then a **supplement video is a must-have**.
 - Show dynamic video results.
 - Show 3D results in different views and/or lighting conditions
 - Otherwise, how can reviewers/ACs believe it works for videos/3D?

7. Your efforts will NOT be wasted

- Even if your paper(s) do not get accepted by CVPR, it is OKAY.
- A wise man once told me “Any draft prepared nicely in a paper format will eventually get published somewhere”. And yes, that is true.
- You summarize a period of your research work into something concrete (a paper, a project website, a github repo, etc.)
- Consider other venues:
 - ICCV/ECCV/NeurIPS/SIGGRAPH/ICCP/ICML/ICLR/ICRA/workshops/arxiv/PAMI/...
 - Even just technical reports are fine. Many famous papers are technical reports.

Good Luck to Everyone!