Tips of Writing a LaTeX Paper

Using VS Code & Overleaf V2 as an Example

Ming-Ming Cheng

College of Computer Science, Nankai University

Course materials: `https://mmcheng.net/writing/`

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Table of Contents

Using Overleaf V2 for Joint Working

See also the official tutorial
`https://www.overleaf.com/learn/latex/Tutorials`

Online collaborative LaTeX editing

- Easy to work with many co-authors

Version control using git sync

- Using GitHub for Git based version control

Comments discussion

- Comments location, author name, time, and reply

Overleaf V2 Interface

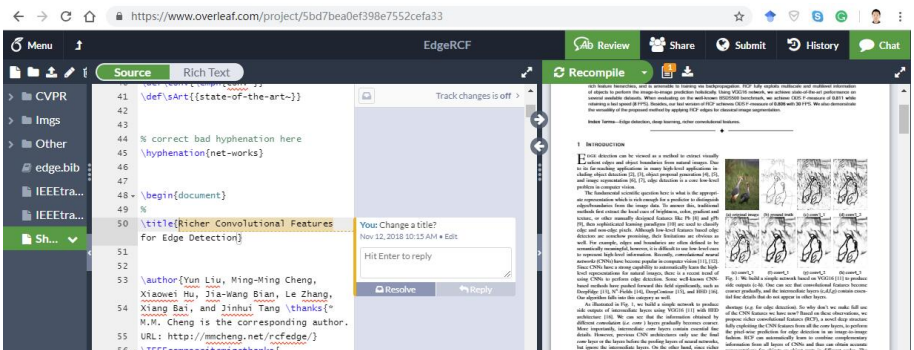


Fig.: Website Interface. (Overleaf V2)

Avoid Meaningless Account Names

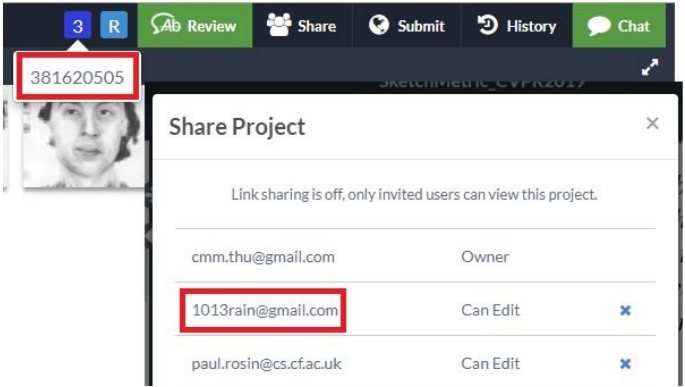


Fig.: Avoid such meaningless names during working with others, email communications, etc. Academic accounts have additional benefits/discount from commercial companies.

Direct Git access available in Overleaf V2.

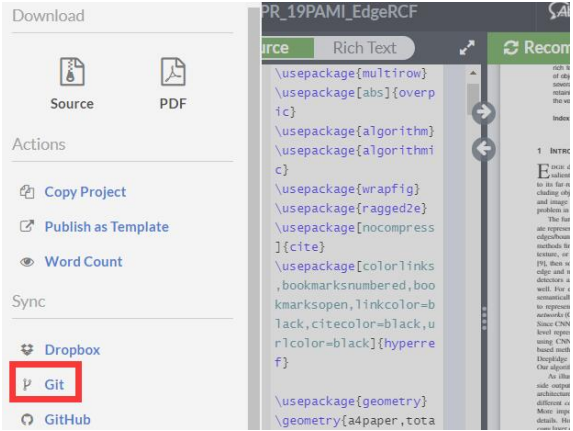


Fig.: Direct Git access is launched in Jan. 2019.

Overleaf with Git

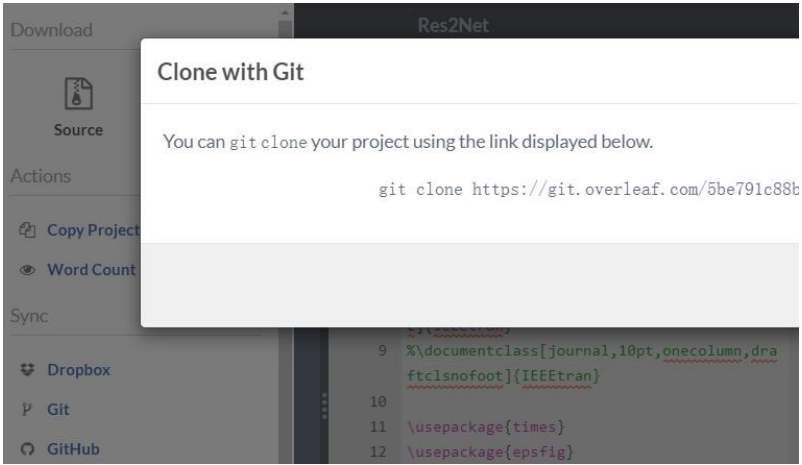


Fig.: Overleaf version control using Git.

TortoiseGit for Windows

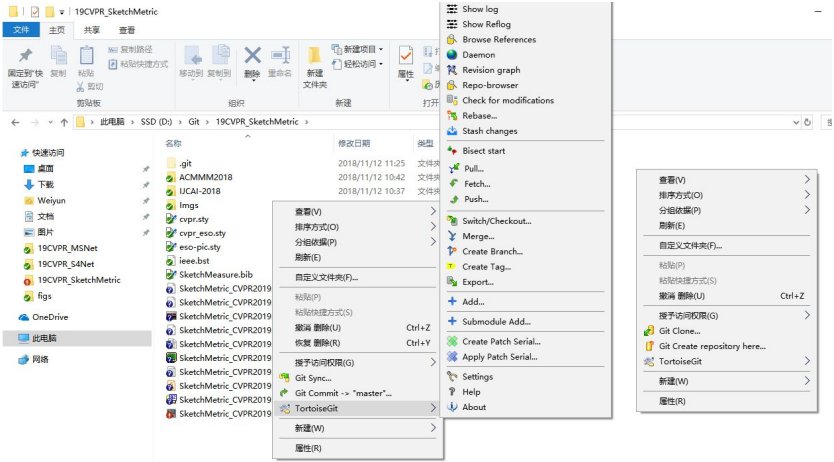


Fig.: Windows explore interface with TortoiseGit.

TortoiseGit for Windows

Different icons means different status

- Icons changes after sync using Git Clone.
- Red: on disk version is newer, commit ASAP.
- Green: on disk version is up to date.

Sync as ASAP to avoid version conflicts

- Default commit to **local repository**, not online repository.
- Following this order: **commit, pull, push**.

Break lines to avoid version conflict

- Avoid version conflict due to simultaneous editing
- Git software discover changes line-by-line
- Also makes the writing with pretty hierarchy

```
226 As one of the most fundamental problem in computer vision,
227 edge detection has been extensively studied for several decades.
228 %
229 \textit{Early pioneering methods} mainly focus on the utilization of intensity
230 and color gradients, such as Canny \cite{canny1986computational}.
231 However, these early methods are usually not accurate enough
232 for real-life applications.
233 %
234 To this end, \textit{feature learning based methods} have been proposed.
235 These methods, such as Pb \cite{martin2004learning},
236 gPb \cite{arbelaez2011contour}, and SE \cite{dollar2015fast},
```

Fig.: Break lines ASAP.

Pay Attention to Warnings in Overleaf

Warnings are often very helpful

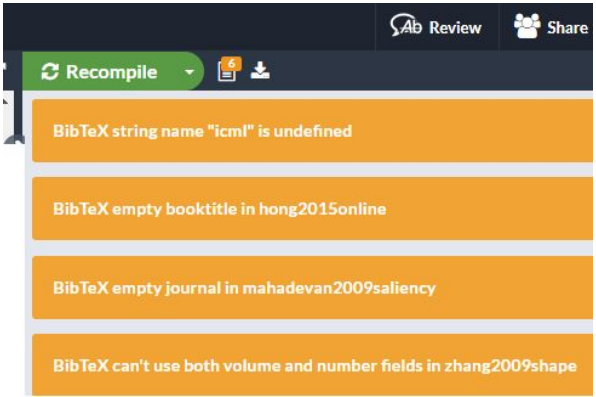


Fig.: Confirm every warning.

Pay Attention to Warnings in Overleaf

Warnings are often very helpful. Confirm every warning.

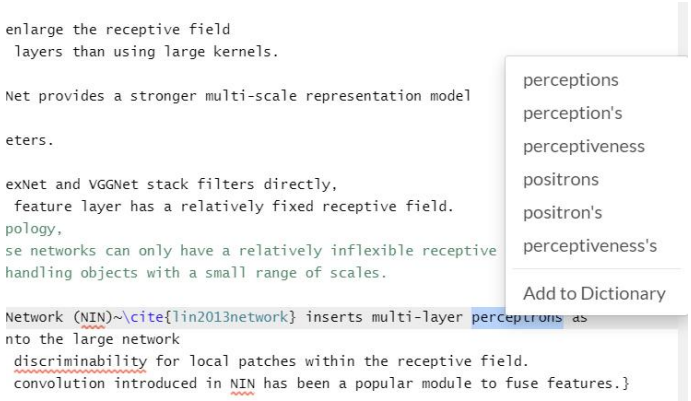
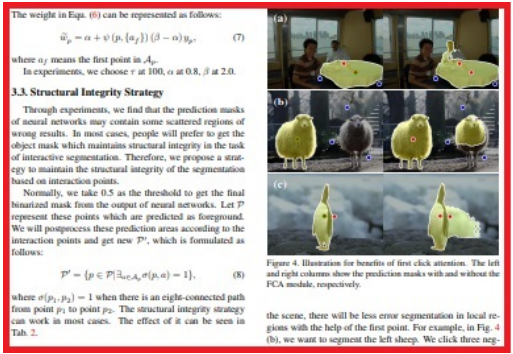


Fig.: Explicitly disable miss-alarms and use "add to dictionary" if you are confident.

Grammarly

- Prepare: Trying to get a clean pdf: `https://www.lin-zheng.com/latex-pure/`



The weight in Eqa. (6) can be represented as follows:

$$\widehat{w}_{p_i} = \alpha + \psi\left(p, \{a_f\}\right)(\beta - \alpha)y_p, \tag{7}$$

where a_f means the first point in A_p.

In experiments, we choose τ at 100, α at 0.8, β at 2.0.

3.3. Structural Integrity Strategy

Through experiments, we find that the prediction masks of neural networks may contain some scattered regions of wrong results. In most cases, people will prefer to get the object mask which maintains structural integrity in the task of interactive segmentation. Therefore, we propose a strategy to maintain the structural integrity of the segmentation based on interaction points.

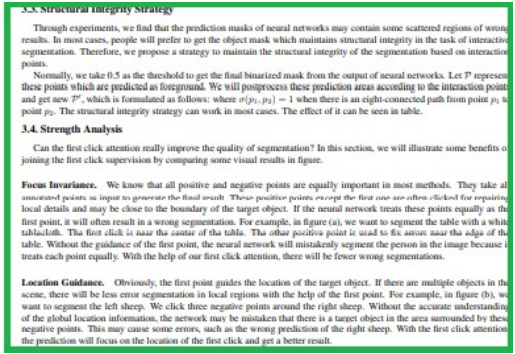
Normally, we take 0.5 as the threshold to get the final binarized mask from the output of neural networks. Let $\mathcal{P}$ represent these points which are predicted as foreground. We will postprocess these prediction areas according to the interaction points and get new $\mathcal{P}'$, which is formulated as follows:

$$\mathcal{P}' = \{p \in \mathcal{P} | \exists_{v \in A_p} \sigma(p, a) = 1\}, \tag{8}$$

where $\sigma(p_1, p_2) = 1$ when there is an eight-connected path from point p_1 to point p_2. The structural integrity strategy can work in most cases. The effect of it can be seen in Tab. 2.

Figure 4. Illustration for benefits of first click attention. The left and right columns show the prediction masks with and without the FCA module, respectively.

the scene, there will be less error segmentation in local regions with the help of the first point. For example, in Fig. 4 (b), we want to segment the left sheep. We click three neg-



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3.4. Strength Analysis

Can the first click attention really improve the quality of segmentation? In this section, we will illustrate some benefits of joining the first click supervision by comparing some visual results in figure.

Focus Invariance. We know that all positive and negative points are equally important in most methods. They take all annotated points as input to generate the final result. These positive points except the first one are often clicked for repairing local details and may be close to the boundary of the target object. If the neural network treats these points equally as the first point, it will often result in a wrong segmentation. For example, in figure (a), we want to segment the table with a white tablecloth. The first click is near the center of the table. The other positive point is used to fix errors near the edge of the table. Without the guidance of the first point, the neural network will mistakenly segment the person in the image because it treats each point equally. With the help of our first click attention, there will be fewer wrong segmentations.

Location Guidance. Obviously, the first point guides the location of the target object. If there are multiple objects in the scene, there will be less error segmentation in local regions with the help of the first point. For example, in figure (b), we want to segment the left sheep. We click three negative points around the right sheep. Without the accurate understanding of the global location information, the network may be mistaken that there is a target object in the area surrounded by these negative points. This may cause some errors, such as the wrong prediction of the right sheep. With the first click attention, the prediction will focus on the location of the first click and get a better result.

Fig.: Remove figures, tables, big equations to fascinate pdf $\rightarrow$ docx.

Grammarly

- Prepare: Use MS Word to open pdf file and save as docx

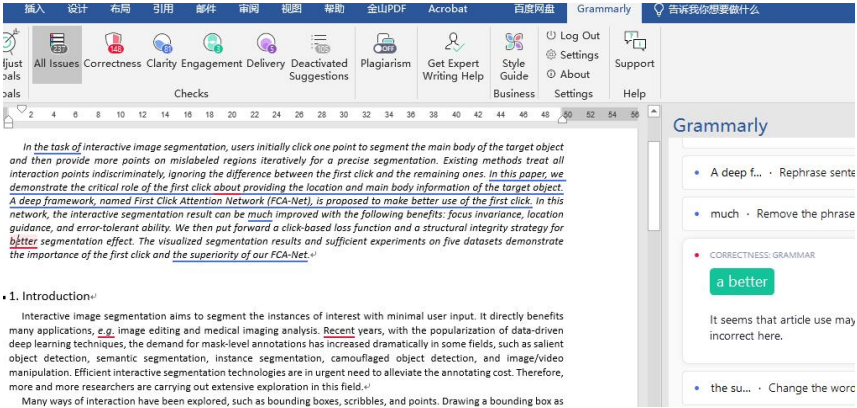
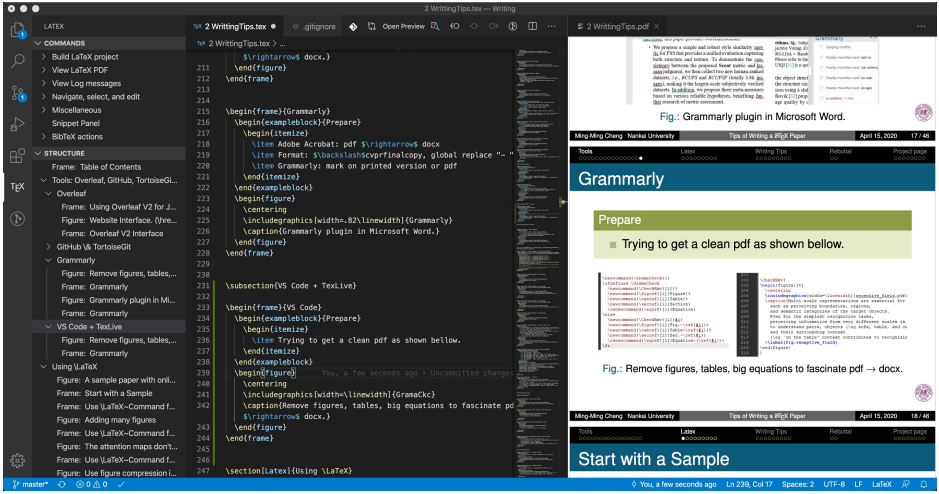


Fig.: Grammarly plugin in Microsoft Word.

VSCode


2 WrittingTips.tex — Writing
LATEX
COMMANDS
Build LaTeX project
View LaTeX PDF
View Log messages
Navigate, select, and edit
Miscellaneous
Snippet Panel
BibTeX actions
STRUCTURE
Frame: Table of Contents
Tools: Overleaf, GitHub, TortoiseGi...
Overleaf
Frame: Using Overleaf V2 for J...
Figure: Website Interface. {\hre...
Frame: Overleaf V2 Interface
GitHub \& TortoiseGit
Grammarly
Figure: Remove figures, tables,...
Frame: Grammarly
Figure: Grammarly plugin in Mi...
Frame: Grammarly
VS Code + TexLive
Figure: Remove figures, tables,...
Frame: Grammarly
Using LaTeX
Figure: A sample paper with onli...
Frame: Start with a Sample
Frame: Use \LaTeX-Command f...
Figure: Adding many figures
Frame: Use \LaTeX-Command f...
Figure: The attention maps don't...
Frame: Use \LaTeX-Command f...
Figure: Use figure compression i...
2 WrittingTips.tex
.gitignore
Open Preview
2 WrittingTips.pdf
$\rightarrow$ docx.
\end{figure}
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\begin{frame}{Grammarly}
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\item Format: $\backslash$cvprfinalcopy, global replace "… "
\item Grammarly: mark on printed version or pdf
\end{itemize}
\end{exampleblock}
\begin{figure}
\centering
\includegraphics[width=.82\linewidth]{Grammarly}
\caption{Grammarly plugin in Microsoft Word.}
\end{figure}
\end{frame}
\subsection{VS Code + TexLive}
\begin{frame}{VS Code}
\begin{exampleblock}{Prepare}
\begin{itemize}
\item Trying to get a clean pdf as shown bellow.
\end{itemize}
\end{exampleblock}
\begin{figure}
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\caption{Remove figures, tables, and big equations to fascinate pd
$\rightarrow$ docx.}
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Spaces: 2
UTF-8
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LaTeX
Fig.: Grammarly plugin in Microsoft Word.
Ming-Ming Cheng Nankai University
Tips of Writing a LaTeX Paper
April 15, 2020
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Tools
Latex
Writing Tips
Rebuttal
Project page
Grammarly
Prepare
Trying to get a clean pdf as shown bellow.
Fig.: Remove figures, tables, big equations to fascinate pdf → docx.
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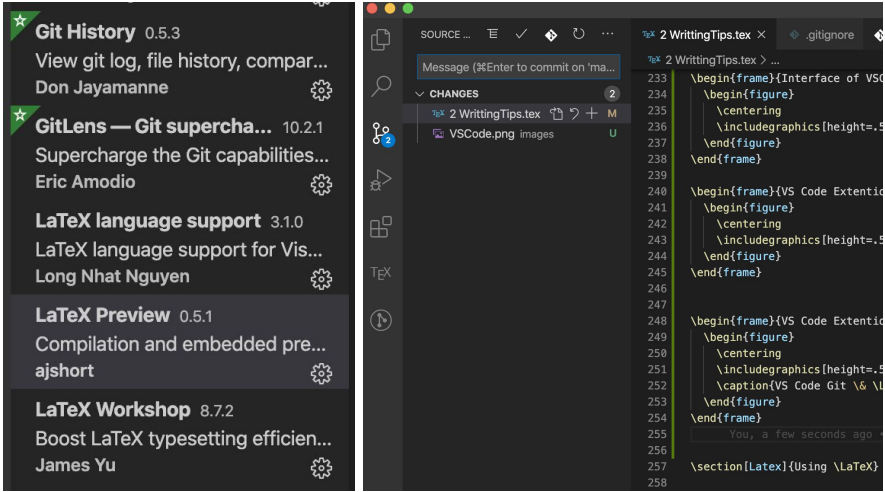
Start with a Sample

VS Code Extensions



VS Code Extensions

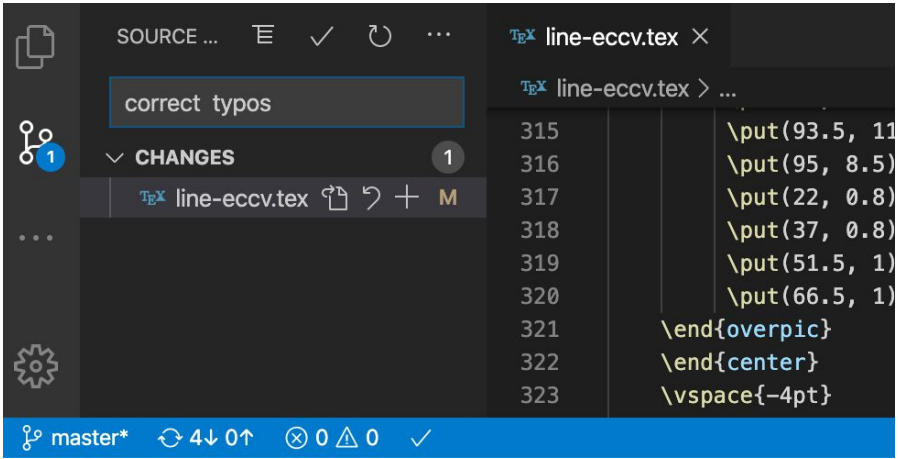


Fig.: VS Code Git & LaTeX Extensions.

VS Code Git Extensions

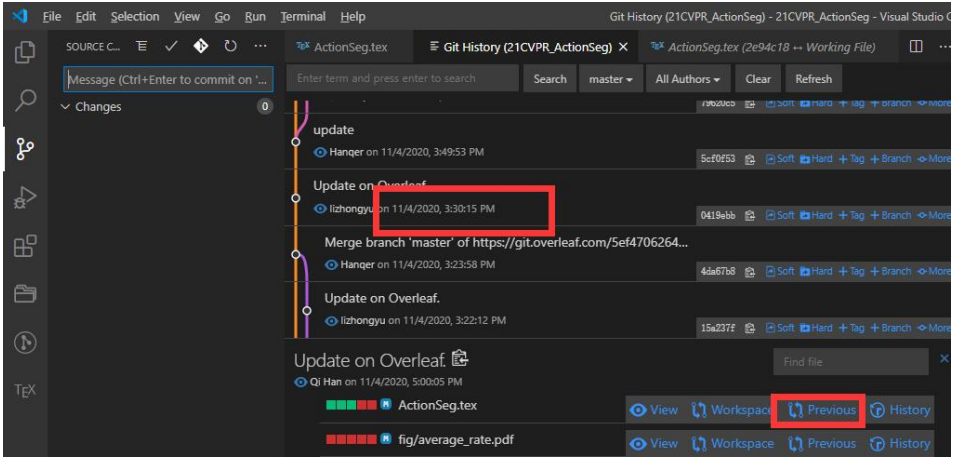


Fig.: VS Code Git extensions for version history.

VS Code Git Extensions

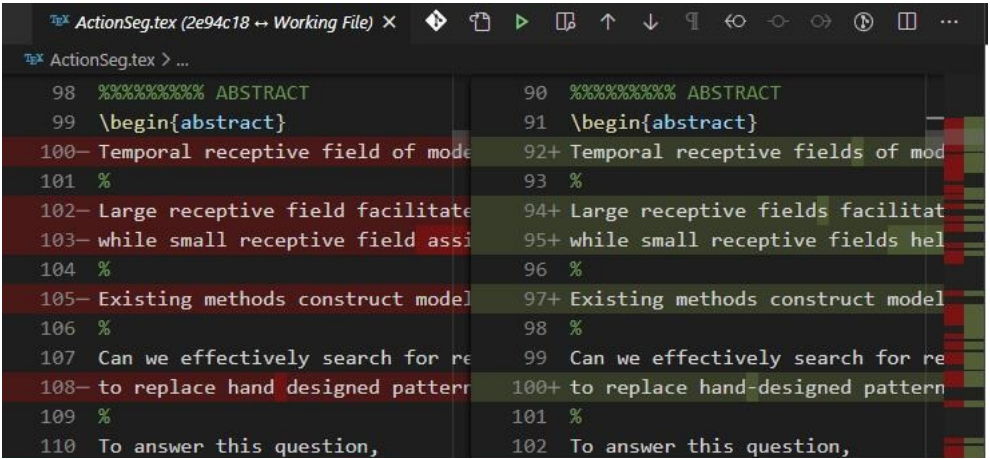


Fig.: VS Code Git extensions for version history.

TexLive

最新TeXLive 环境的安装与配置

Fitten code

Fitten Code: Faster and Better AI Assistan

Fitten Tech | 309,805 | ★★★★☆(42)

Super Fast and accurate AI Powered Automatic Code Generation and Compl...

禁用 卸载 自动更新

细节 功能 更改日志

Fitten Code: Your Professional AI Coding Assistant

English Introduction | 中文介绍

Fitten Code is an AI coding assistant powered by a large-scale code model developed by Fitten Tech. It supports multiple languages, including Python, JavaScript, TypeScript, Java, C, C++, and more. With Fitten Code, you can automatically complete code, generate code, generate comments, edit code, explain code, generate tests, find errors, and more, all within the sidebar of Visual Studio Code.

类别

Programming Languages

Linters Formatters

Data Science

Machine Learning

Education Testing

资源

市场

Start with a Sample

- You don't have to learn Latex carefully
- Simply find some useful examples and start
- You can find Latex sources of many vision papers here:

  `https://mmcheng.net/salobj/` or `https://www.overleaf.com/read/nkyrytybmzcm`

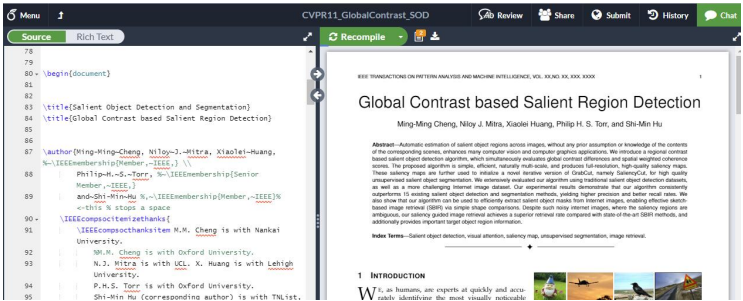


Fig.: A sample paper with online Latex editing.

Use LaTeX Command for Uniform Formatting

More examples in https://www.overleaf.com/read/zqttbzknmjrz

Use \newcommand{\cmd}[]{#1}

```
\newcommand{\figref}[1]{Fig.  \ref{#1}}
\newcommand{\tabref}[1]{Tab.  \ref{#1}}
\newcommand{\eqnref}[1]{Eq.  (\ref{#1})}
\newcommand{\secref}[1]{Sec.  \ref{#1}}
\newcommand{\sArt}[1]{state-of-the-art~}
\newcommand{\AddImg}[1]{\includegraphics[height=.2\linewidth][#1]}
```

Use LaTeX Command for Formatting

Adding many images: `https://www.overleaf.com/read/zqttbzknmjrz`

```
\renewcommand{\AddImg}[1]{\includegraphics[width=.245\linewidth]{samples/#1}}
\newcommand{\AddImgs}[1]{\AddImg{#1-img} \AddImg{#1-gt} \AddImg{#1-rcf}
\AddImg{#1-ucm} \\ \vspace{.02in} }
\begin{figure*}[!t]
    \centering
    \AddImgs{bsds-97010}
    \AddImgs{bsds-368037}
    \AddImgs{nyud-5017}
    \AddImgs{nyud-6233}
    \caption{Some examples of RCF.
        \textbf{Top two rows}: BSDS500 \cite{arbelaez2011contour}.
        \textbf{Bottom two rows}: NYUD \cite{silberman2012indoor}.
        From \textbf{Left} to \textbf{Right}: origin image, ground truth,
        RCF edge map, RCF UCM map.}
    \label{fig:samples}
\end{figure*}
```

Keep proper file size for sharing

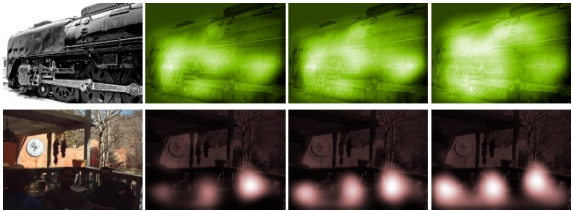


Fig.: The attention maps essentially has low resolution. Resize the length to 100px.

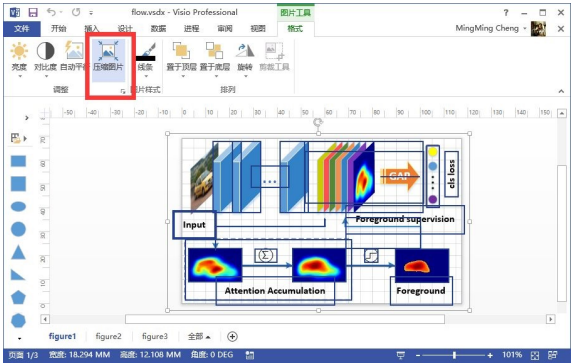


Fig.: Use figure compression in Visio to maintain proper file size.

Keep proper file size for sharing

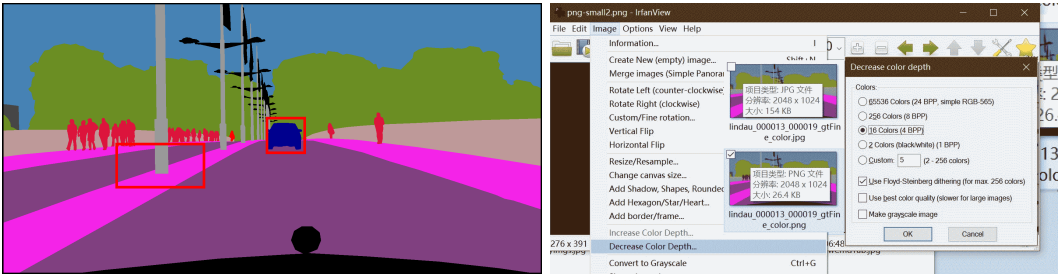


Fig.: For images with few color types, png files are smaller, otherwise, using jpg files instead.

Use LaTeX Command for Formatting

Adding pretty table `https://www.overleaf.com/read/zqttbzknmjrz`

```
\newcommand{\gPbUCM}{gPb-UCM \cite{arbelaez2011contour}}
\newcommand{\MCG}{MCG \cite{arbelaez2014multiscale}}
\newcommand{\gPbNG}{gPb+NG \cite{gupta2013perceptual}}
\newcommand{\SENG}{SE+NG+ \cite{gupta2014learning}}
\newcommand{\COB}{COB \cite{maninis2016convolutional}}
\newcommand{\RCFResNet}{RCF-ResNet50}
\begin{figure}[!ht]
    \centering
    \begin{tabular}{c||c|c|c|c} \hline
        \multirow{2}*{Methods} & \multicolumn{2}{c|}{Boundaries ($F_b$)}
            & \multicolumn{2}{c}{Regions ($F_{op}$)} \\ \cline{2-5}
            & ODS & OIS & ODS & OIS \\ \hline
        \gPbUCM     & 0.631 & 0.661 & 0.242 & 0.283 \\
        \MCG        & 0.651 & 0.681 & 0.264 & 0.300 \\
        \gPbNG      & 0.687 & 0.716 & 0.286 & 0.324 \\
        \SENG       & 0.706 & 0.734 & 0.319 & 0.359 \\
```

Use Strings for Journal/Conference Names

Use @String

- @string(CVPR = "IEEE CVPR")
- @string(CVPR= "IEEE Conf. Comput. Vis. Pattern Recog.")
- @string(CVPRW= "IEEE Conf. Comput. Vis. Pattern Recog. Worksh.")
- @string(NIPS= "Adv. Neural Inform. Process. Syst.")
- @string(IJCV = "Int. J. Comput. Vis.")
- @string(PAMI = "IEEE Trans. Pattern Anal. Mach. Intell.")

```
%More examples in https://www.overleaf.com/read/pcznwnthsprs
@inproceedings {arbelaez2014multiscale,
  title="Multiscale combinatorial grouping",
  author="Marques, Ferran and Malik, Jitendra",
  booktitle=CVPR,
  pages="328–335",
  year="2014"
}
```

Reference - Formats

Consist.: Use @String to ensure consistency.

Types: Use “@inproceedings” for conference, and “@Article” for journal.

Warning: Don’t directly copy a bibtex from Google Sch.

Author: Use “and” instead of “,” to separate names.

Priority: **Important**: Journal > conference > arXiv.

Using Chinese in LaTeX

Refer to the demo in `http://mmcheng.net/salobj/`

图 1. 给定输入图像（上），可以通过全局对比度分析得到高分辨率的视觉显著性图（中）。这种视觉显著性图可以进一步被用来获取感兴趣物体区域（下）。

Avoid Large Boring Figure

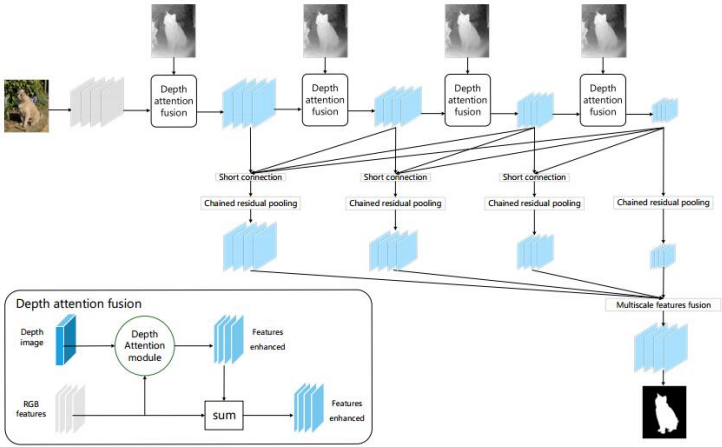
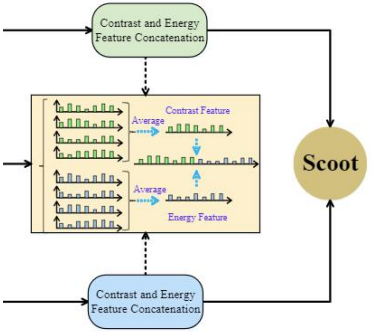


Fig.: Use smaller figure size or add more information.

Keep Figure Fonts Similar to the Main Text



en synthesis and GT sketch. We first quantize into K*K (K=4 by default) blocks. Thirdly, the lock-level" co-occurrence texture statistics (*e.g.*,

Fig.: Avoid too small/big fonts. Many reviewers read printed papers.

Figure Path and Intermediate Files

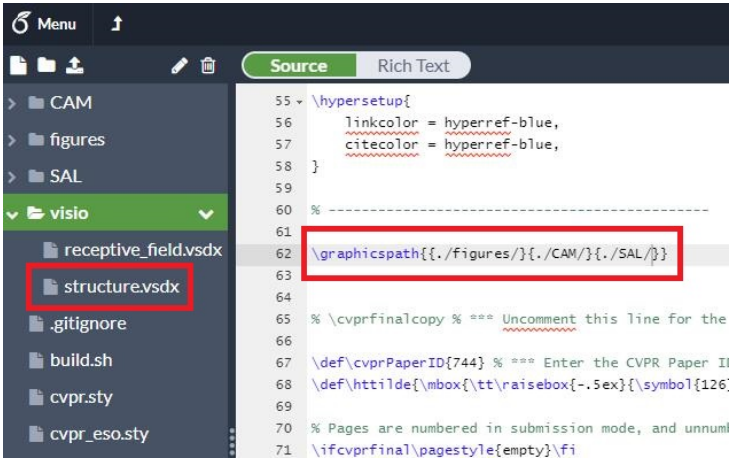


Fig.: Set figure path. Key all intermediate files for re-editing.

Avoid Descriptions without Actual Content

- Our method is better than Wang et al. [1].
  'is better' → '**produces more accurate results**'.
- We propose a novel method XXX.
  'propose' imply '**novel**'.
- We propose a~~n essential~~ XXX method . . .

Checklist: limited novelty

- This method is a simple combination of [A] and [B]

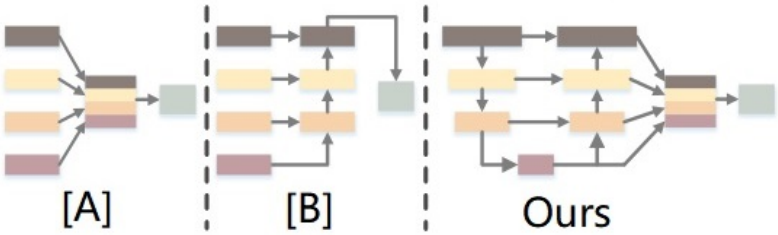
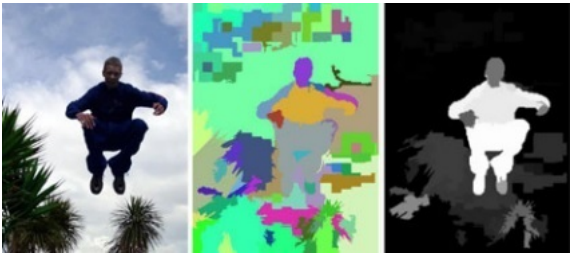


Fig.: Properly describe/illustrate your contribution.

Checklist: limited novelty

- Limited novelty, straightforward extension of xxx.



$$S(r_k) = w_s(r_k) \sum_{r_k \neq r_i} e^{\frac{D_s(r_k, r_i)}{-\sigma_s^2}} w(r_i) D_r(r_k, r_i),$$

Fig.: Explain why our **elegant/simple** approach is not straightforward/naive [Cheng et al., PAMI'15].

Checklist: show results in a better way.

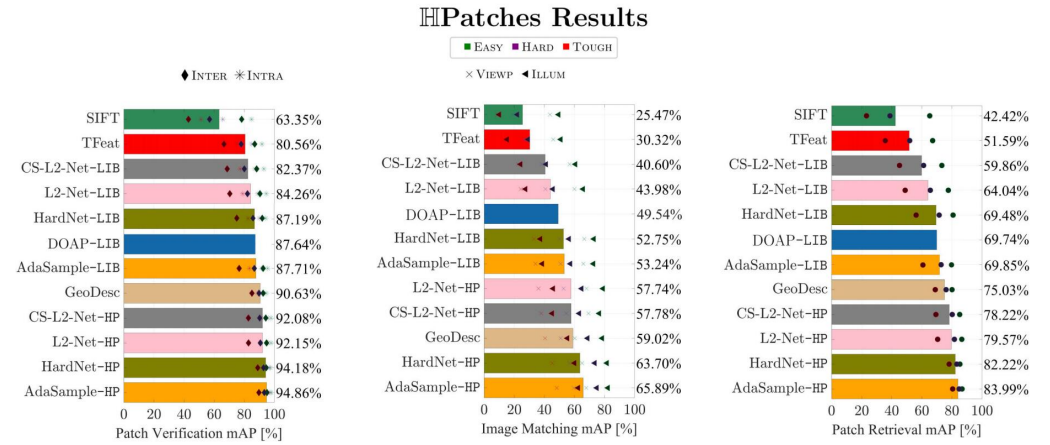


Fig.: Presents figures in a proper way.

Checklist: missing experiments to clarify

The performance gain could

- also come from ...
- due to ...
- come with the cost of ...
- how well does this and that ...
- sensitive to key parameters ...

Checklist: good practice

- Source code will be released upon paper acceptance.
- Discuss of the limitations.
- Theoretical proof regarding what could (not) happen.
- Analysis the computational/memory cost.
- Try to keep your ideas SHARP.
- Avoid defining many unnecessary terms.
- Be fair (at lease in form).
- Verified every design decision (try to keep simple).

Analysis reviewer comments

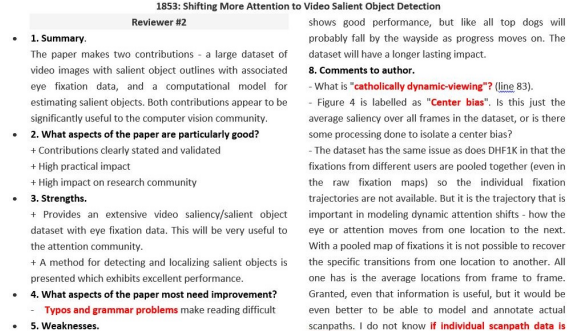
Keep claim and make a rebuttal[1]

- What is peer review?
- How to rebuttal?
- Does rebuttal matter?

[1] https://zhuanlan.zhihu.com/p/104298923

Analysis reviewer comments

- Save comments. No access after rebuttal period!
- Suggestion: size 5, Calibri, single line space, no space before&after paragraph.



1853: Shifting More Attention to Video Salient Object Detection

Reviewer #2

- **1. Summary.**
  The paper makes two contributions - a large dataset of video images with salient object outlines with associated eye fixation data, and a computational model for estimating salient objects. Both contributions appear to be significantly useful to the computer vision community.
- **2. What aspects of the paper are particularly good?**
  + Contributions clearly stated and validated
  + High practical impact
  + High impact on research community
- **3. Strengths.**
  + Provides an extensive video saliency/salient object dataset with eye fixation data. This will be very useful to the attention community.
  + A method for detecting and localizing salient objects is presented which exhibits excellent performance.
- **4. What aspects of the paper most need improvement?**
  - **Typos and grammar problems** make reading difficult
- **5. Weaknesses.**

shows good performance, but like all top dogs will probably fall by the wayside as progress moves on. The dataset will have a longer lasting impact.

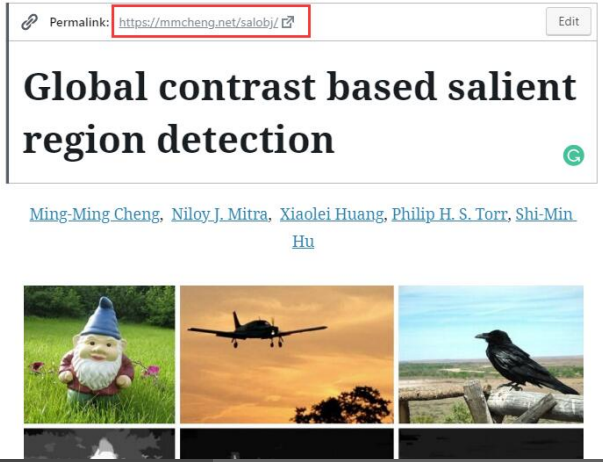
8. Comments to author.

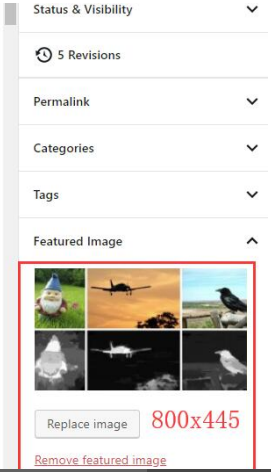
- What is "**catholically dynamic-viewing**"? (line 83).
- Figure 4 is labelled as "**Center bias**". Is this just the average saliency over all frames in the dataset, or is there some processing done to isolate a center bias?
- The dataset has the same issue as does DHF1K in that the fixations from different users are pooled together (even in the raw fixation maps) so the individual fixation trajectories are not available. But it is the trajectory that is important in modeling dynamic attention shifts - how the eye or attention moves from one location to the next. With a pooled map of fixations it is not possible to recover the specific transitions from one location to another. All one has is the average locations from frame to frame. Granted, even that information is useful, but it would be even better to be able to model and annotate actual scanpaths. I do not know **if individual scanpath data is**

Fig.: Highlight key issues with **bold&red** for better printing.

Project page is useful for publish & discuss

- Login: `https://mmcheng.net/salobj/`





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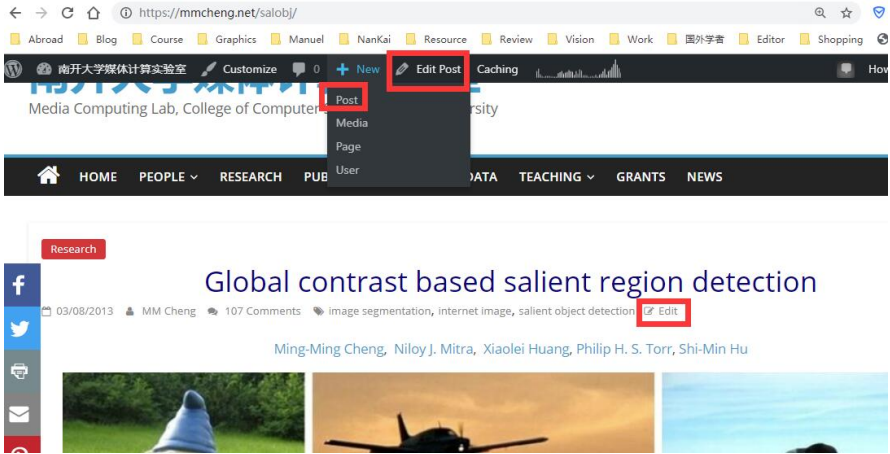
- An example: `https://mmcheng.net/wp-login.php`



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- An example: `https://mmcheng.net/salobj/`

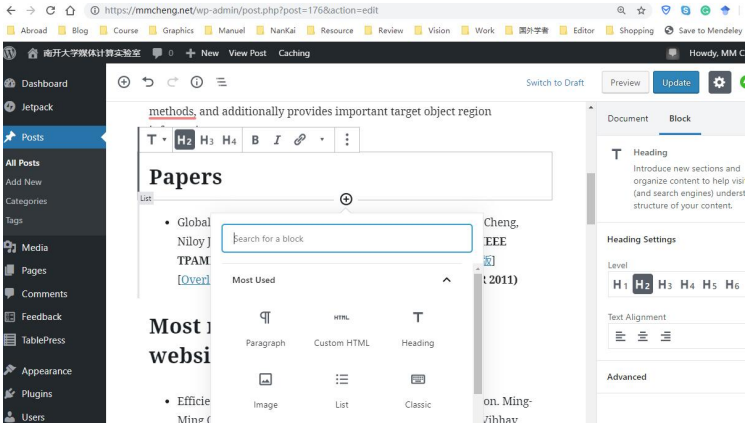

Fig.: Online editing using WordPress.

Project page is useful for publish & discuss

- Useful plug-ins: e.g. table press

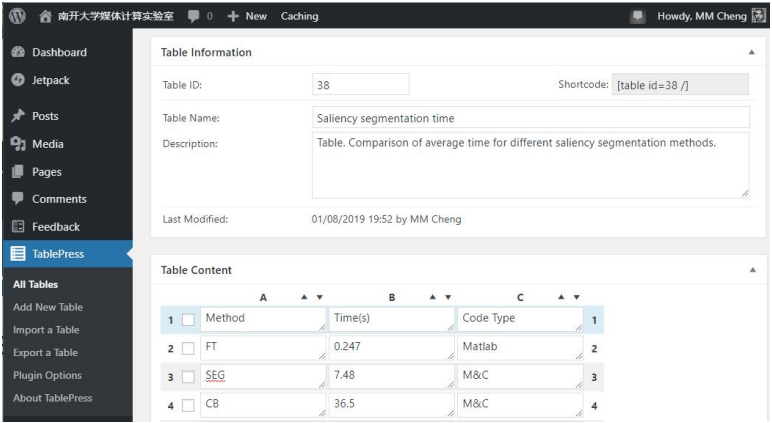

Fig.: Online editing using WordPress Table Press plug-in.

Project page is useful for publish & discuss

- Useful plug-ins: e.g. table press

Performance: AUC & MAE

Show 40 entries Search:

Method	T-AUC	T-MAE	J-AUC	J-MAE	D-AUC	D-MAE	S-AUC	S-MAE	M-AUC	M-MAE	E-AUC	E-MAE
MBD	0.915	0.162	0.838	0.225	0.903	0.168	0.922	0.137	0.964	0.107	0.917	0.172
ST	0.911	0.179	0.806	0.240	0.895	0.182	0.922	0.145	0.961	0.122	0.914	0.193
QCUT	0.907	0.128	0.831	0.178	0.897	0.119	0.860	0.148	0.956	0.118	0.909	0.171
HDCT	0.878	0.177	0.771	0.209	0.869	0.164	0.898	0.162	0.941	0.143	0.866	0.199
RBD	0.887	0.15	0.826	0.212	0.894	0.144	0.899	0.13	0.955	0.108	0.894	0.173
GR	0.829	0.256	0.747	0.311	0.846	0.259	0.854	0.189	0.925	0.198	0.831	0.285
MNP	0.854	0.255	0.768	0.286	0.835	0.272	0.888	0.215	0.895	0.229	0.82	0.307
UFO	0.853	0.165	0.775	0.216	0.839	0.173	0.845	0.18	0.938	0.15	0.875	0.207
MC	0.895	0.184	0.823	0.231	0.887	0.186	0.877	0.182	0.951	0.145	0.91	0.204
DSR	0.902	0.142	0.826	0.196	0.899	0.139	0.915	0.14	0.959	0.121	0.914	0.173

Fig.: Online editing using WordPress Table Press plug-in.

Project page is useful for publish & discuss

- Useful plug-ins: e.g. Slides Show

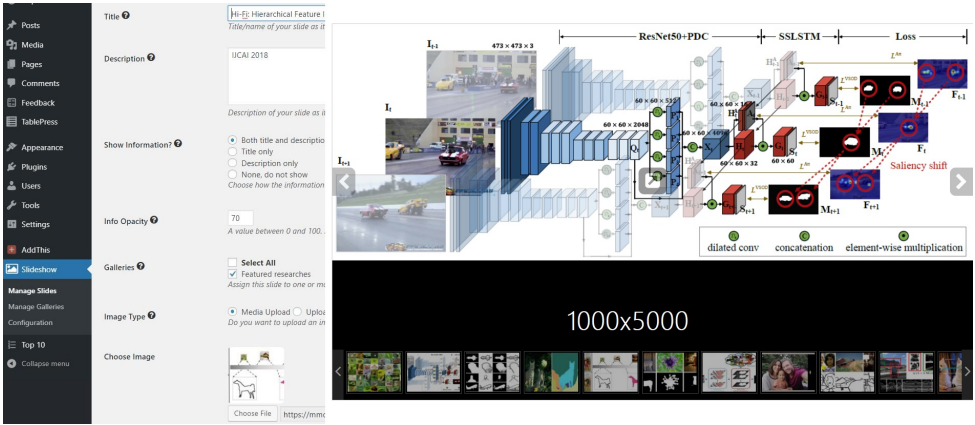

Fig.: Online editing using WordPress Slides Show plug-in.

Project page is useful for publish & discuss

- Useful plug-ins: e.g. Slides Show

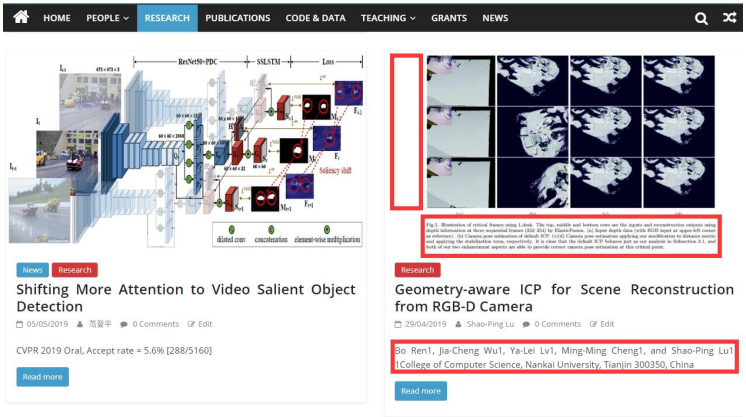

Fig.: A good vs. bad example.

Project page is useful for publish & discuss

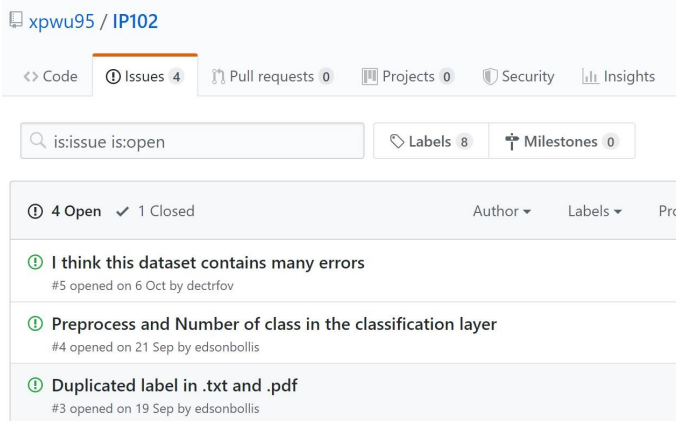

Fig.: All questions, issues, etc. **must** be replied on time.

Q & A?