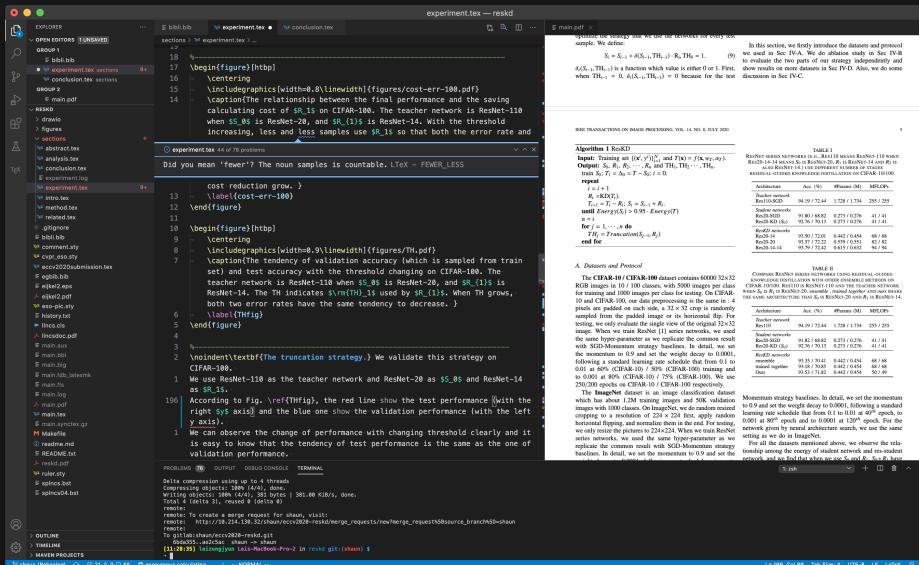


How to write like a computer science major

A solution to a LaTeX IDE



LI Shaun 20200714

experiment.tex — reskd

```

\begin{figure}[htbp]
\centering
\includegraphics[width=0.8\linewidth]{figures/cost-err-100.pdf}
\caption{The relationship between the final performance and the saving calculating cost of \$R\_1\$ on CIFAR-100. The teacher network is ResNet-110 when \$S\_0\$ is ResNet-20, and \$R\_1\$ is ResNet-14. With the threshold increasing, less and less samples use \$R\_1\$ so that both the error rate and

```

Did you mean 'fewer'? The noun samples is countable. LTeX - FEWER_LESS

```

cost reduction grow. }
\label{cost-err-100}
\end{figure}

\begin{figure}[htbp]
\centering
\includegraphics[width=0.9\linewidth]{figures/TH.pdf}
\caption{The tendency of validation accuracy (which is sampled from train set) and test accuracy with the threshold changing on CIFAR-100. The teacher network is ResNet-110 when \$S\_0\$ is ResNet-20, and \$R\_1\$ is ResNet-14. The TH indicates \$\text{rm}(TH)\_1\$ used by \$R\_1\$. When TH grows, both two error rates have the same tendency to decrease. }
\label{THfig}
\end{figure}

\noindent\textbf{The truncation strategy.} We validate this strategy on CIFAR-100.

1 We use ResNet-110 as the teacher network and ResNet-20 as \$S\_0\$ and ResNet-14 as \$R\_1\$.

1 According to Fig. \ref{THfig}, the red line show the test performance (with the right \$y\$ axis) and the blue one show the validation performance (with the left \$y\$ axis).

1 We can observe the change of performance with changing threshold clearly and it is easy to know that the tendency of test performance is the same as the one of validation performance.

```

PROBLEMS 76 OUTPUT DEBUG CONSOLE TERMINAL

```

Delta compression using up to 4 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 381 bytes | 381.00 KiB/s, done.
Total 4 (delta 3), reused 0 (delta 0)
remote:
remote: To create a merge request for shaun, visit:
remote:   https://10.214.130.32/shaun/eccv2020-reskd/merge_requests/new?merge_request%5Bsource_branch%5D=shaun
remote:
To ssh://shaun@10.214.130.32/.git
  0bda355...ae2c5ac shaun -> shaun
[11:28:35] (leizhongyun leizhongyun@LeiZhu's MacBook-Pro-2 in reskd git:(shaun) $
```

main.pdf x

optimizing the strategy that we use the networks for every test sample. We define:

$$S_i = S_{i-1} + \delta(S_{i-1}, TH_{i-1}) \cdot R_i, TH_0 = 1. \quad (9)$$

$\delta(S_{i-1}, TH_{i-1})$ is a function which value is either 0 or 1. First, when $TH_{i-1} = 0$, $\delta(S_{i-1}, TH_{i-1}) = 0$ because for the test

In this section, we firstly introduce the datasets and protocol we used in Sec IV-A. We do ablation study in Sec IV-B to evaluate the two parts of our strategy independently and show results on more datasets in Sec IV-D. Also, we do some discussion in Sec IV-C.

IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 14, NO. 8, JULY 2005

Algorithm 1 ResKD

Input: Training set $(x^i, y^i)_{i=1}^N$ and $T(x) = f(x, w_T, \alpha_T)$.
Output: $S_0, R_1, R_2, \dots, R_n$ and TH_1, TH_2, \dots, TH_n .
train $S_0, T_1 = \Delta_0 = T - S_0; i = 0$.
repeat
 $i = i + 1$
 $R_i = KDT(T_i)$.
 $T_{i+1} = T - R_i; S_i = S_{i-1} + R_i$.
until $Energy(S_i) > 0.95 \cdot Energy(T)$
 $n = i$
for $j = 1, \dots, n$ do
 $H_j = Truncation(S_{j-1}, R_j)$
end for

TABLE I
RESNET SERIES NETWORKS (E.G., RES110 MEANS RESNET-110 WHEN RES20-14-14 MEANS S_0 IS RESNET-20, R_1 IS RESNET-14 AND R_2 IS ALSO RESNET-14.) USE DIFFERENT NUMBER OF STAGES RESIDUAL-GUIDED KNOWLEDGE DISTILLATION ON CIFAR-10/100.

Architecture	Acc. (%)	#Params (M)	MFLOPs
Teacher network	94.19 / 72.44	1.728 / 1.734	255 / 255
Res110-SGD	94.19 / 72.44	1.728 / 1.734	255 / 255
Student networks	91.80 / 68.82	0.273 / 0.276	41 / 41
Res20-KD (S_0)	92.76 / 70.13	0.273 / 0.276	41 / 41
ResKD networks			
Res20-10	93.50 / 72.01	0.442 / 0.454	68 / 68
Res20-20	93.57 / 72.22	0.539 / 0.551	82 / 82
Res20-14-14	93.79 / 72.42	0.615 / 0.632	94 / 94

TABLE II
COMPARE RESNET SERIES NETWORKS USING RESIDUAL-GUIDED KNOWLEDGE DISTILLATION WITH OTHER ENSEMBLE METHODS ON CIFAR-10/100. RES110 IS RESNET-110 AND THE TEACHER NETWORK WHEN S_0 IS R_1 IS RESNET-20. ensemble, trained together and ours SHARE THE SAME ARCHITECTURE THAT S_0 IS RESNET-20 AND R_1 IS RESNET-14.

Architecture	Acc. (%)	#Params (M)	MFLOPs
Teacher network	94.19 / 72.44	1.728 / 1.734	255 / 255
Res110	94.19 / 72.44	1.728 / 1.734	255 / 255
Student networks	91.82 / 68.82	0.273 / 0.276	41 / 41
Res20-SGD	91.82 / 68.82	0.273 / 0.276	41 / 41
Res20-KD (S_0)	92.76 / 70.13	0.273 / 0.276	41 / 41
ResKD networks			
ensemble	93.35 / 70.41	0.442 / 0.454	68 / 68
trained together	93.18 / 70.85	0.442 / 0.454	68 / 68
Ours	93.53 / 71.82	0.442 / 0.454	50 / 49

Momentum strategy baselines. In detail, we set the momentum to 0.9 and set the weight decay to 0.0001, following a standard learning rate schedule that from 0.1 to 0.01 at 40^{th} epoch, to 0.001 at 80^{th} epoch and to 0.0001 at 120^{th} epoch. For the network given by neural architecture search, we use the same setting as we do in ImageNet.

For all the datasets mentioned above, we observe the relationship among the energy of student network and res-student network, and we find that when we use S_0 and R_1 , $S_0 + R_1$ have

WHAT MAKES A GOOD IDE FOR LATEX?

- Smart completion and snippets for LaTeX code
- Spelling and grammar checking for text
- PDF-TeX sync support
- Embedded git

SOLUTION

Visual Studio Code with plug-ins





The most popular developer environment tool (2019)

- Free and open-source software (FOSS)
- A variety of languages
- A plethora of extensions
- Lightweight

The screenshot shows a code editor with multiple tabs open. The left sidebar lists files and folders, including 'main.md' which is currently selected. The main pane displays the content of 'main.md', which is a reveal.js presentation. The terminal at the bottom shows the command 'gulp serve' being run, and the output indicates that a server is started on port 35729.

```
main.md — reveal.js
index.html
tech > writing > main.md ... /200609-Image-Manipulation > main.md .../writing X
main.md .../writing X
width="550" --->
16
15 *LI Shaun* 20200713
14
13 ===
12
11 ! [overview](slides-dir/images/overview.png) <!-- .element:
width="1500" -->
10
9
8 ===
7
6 ## What makes a good IDE for LaTeX?
5 - Smart completion and snippets for LaTeX code
4 - Grammar checking for text
3 - PDF-Tex sync support
2 - Embedded `git` ~
1
21 ===
1
2 Solution: Visual Studio Code with plug-ins
3
4 ! [vs code](slides-dir/images/128px-Visual_Studio_Code_1.
35_icon.svg.png) <!-- .element: width="128" -->
5
6
7 ==
8 ! [vs code](slides-dir/images/128px-Visual_Studio_Code_1.
35_icon.svg.png) <!-- .element: width="128" -->
9
10
11 The most popular developer environment tool (2019)
12 <!-- .element: style="font-size:25pt" -->
13
14 - Free and open-source software (FOSS)
15 - Language support
16 - Extension support
17

PROBLEMS 34 OUTPUT DEBUG CONSOLE TERMINAL 1: node,zsh
documents/reveal.js
> gulp serve
[12:41:58] leizungiyun Leis-MacBook-Pro-2 in
reveal.js git:(master) x $ +
```



Developing slides

Extensions for a LaTeX IDE

- LaTeX Workshop
- LTeX
- Grammarly (unofficial)
- Vim (optional)

LaTeX Workshop

The screenshot shows the LaTeX Workshop interface. On the left is a code editor window titled "TeX demo.tex" containing the following LaTeX code:

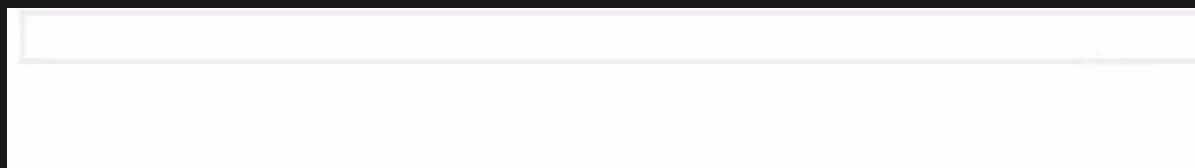
```
1 \documentclass[12pt, a4paper]{article}
2
3 \title{Demo Document}
4 \author{tecosaur}
5
6 \begin{document}
7
8 \maketitle
9
10 \section{Section}
11 Content
12 \subsection{Subsection}
13 More Content
14 \section{Section 2}
```

On the right is a PDF viewer window titled "demo.pdf" showing the generated document. The PDF contains the following structure:

- 1 Section
 - Content
 - 1.1 Subsection
 - More Content
- 2 Section 2
 - Content

```
4 \begin{figure}
5   \label{fig:example}
6 \end{figure}
7
8
```

LaTeX Workshop



Some of this text needs **emphasis**.

```
\[ (f\ast g) = \int_{-\infty}^{\infty} f(\tau) g(t-\tau) \, d\tau
```



LanguageTool Grammar Checking for VS Code with LATEX Support

A screenshot of the Visual Studio Code interface. The main editor window shows a snippet of LATEX code:

```
b and translation), it suffices to
7 precompute and implement the polynomial
8 pieces of $\mathit{cardbspl}[p]$ to enable
9 evaluations of all hierarchical B-splines
10 $\mathit{bspl}[l,i][p]$ ($l \in \mathit{natz}$,
11 $i \in \mathit{hiset}[l]$). This \textbf{are} a
```

The word "are" is underlined with a red squiggly line, indicating a grammar error. A tooltip above the line says "The verb 'are' is plural. Did you mean: 'This is'?"

Below the editor, a status bar shows "Untitled-1 1 of 3 problems".

At the bottom of the screen, there is a "Problem" panel with a single item:

Problem	Quick Fix...
18 See sec:443fundamentalSplines .	
19 \cref{sec:443fundamentalSplines}).	
20 Additionally, odd degrees include the hat	
21 function case~(\$p = 1\$) and the most	
22 commonly applied cubic degree~(\$p = 3\$).	
23 Therefore, it is conceivable to construct	

- Insensitive to subject-verb agreement
- Ignorant about the use of articles

LTeX's story

.tex file (Support for LaTeX) #7

 Open

flocomkoko opened this issue on Jun 26, 2017 · 19 comments



flocomkoko commented on Jun 26, 2017 • edited

Hi @adamvoss

I am really happy with your extension. I am trying to use vs code as a latex suite but .tex files.

Other files work fine

RIP adamvooss
7/11/2018

adamvooss commented on Jun 26, 2017 • edited

Contributor ...

I looked into supporting `.tex` files when I was first developing this. The problem is the mix of syntax and natural language text. LaTeX is not simple to parse and [reportedly you'd need to implement the whole language just to be able to successfully distinguish between markup and final content](#). I looked at Texlipse as suggested there, but it is defunct. For LanguageTool solutions for LaTeX, you may want to check out: <http://wiki.languagetool.org/checking-la-tex-with-languagetool>

The ability to parse LaTeX is important so only the natural language pieces are assembled to sent to LanguageTool. While the Markdown implementation still has some rough edges where it can be improved, it uses a [full-fledged Markdown parser](#) to be able to tell what is Markdown syntax versus actual content to avoid LanguageTool giving false positives because of syntax.

If someone implements a suitable parser, I'd be happy to add support to this extension.

The other option would be to let users ignore the lower quality checking by not using a parser. In the lower right-hand corner you can click the language and manually change your document to "Plain Text". You will lose your syntax highlighting, but it will let you see how LanguageTool would respond to your LaTeX document. If you find the behavior acceptable, I could add configuration allowing LanguageTool to run against LaTeX documents (which would let you keep the syntax highlighting).



1

Adam Voss

adamvoss

This is a note from Adam's father. I
regret to inform you that Adam died
on July 11, 2018.

LanguageTool Extension for Visual Studio Code - ARCHIVED

Project Archival

[Adam Voss](#), originator of this project, passed away on July 11, 2018. I ([David Day](#)) inherited his [languagetool-language-server](#) projects. I didn't know Adam at all, and I spent about a year trying to figure out what to do with this gift. I've ultimately decided to archive the LanguageTool Extension and related repositories. This extension will no longer be maintained, and will likely be removed from the [Extension Marketplace](#). However, I am still pursuing the idea of contributing Adam's server-side LSP code back to the [LangugeTool](#) project.

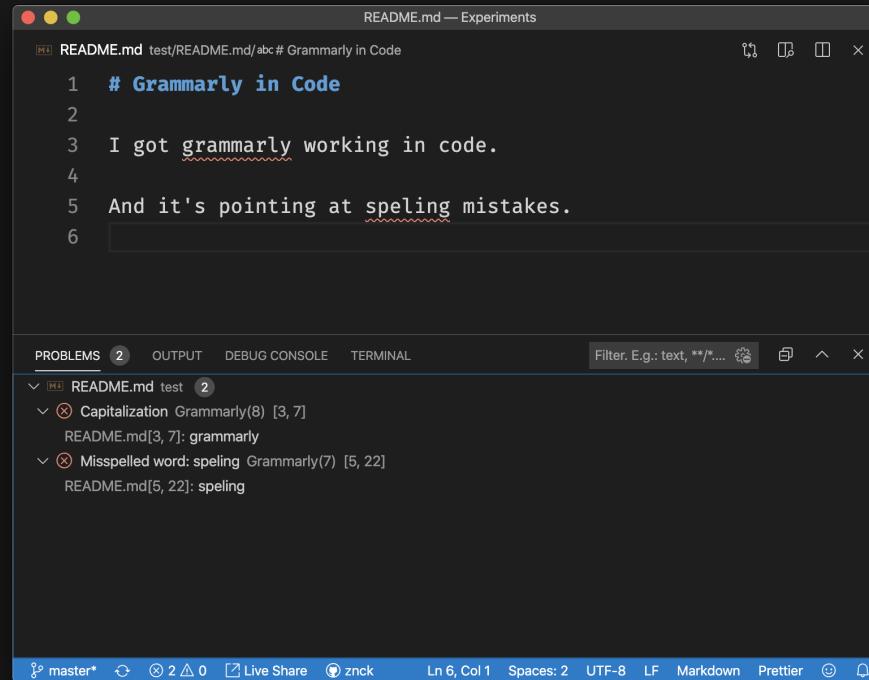
Here are some alternative extensions:

1. [LT_EX](#), which is a fork of @adamvoss original work by @valentjn and thus is preserving his code and memory, which was the most important thing that kept me hanging on to these projects.
2. [LanguageTool Linter](#), which is a new extension I've authored based on the [Atom Linter LanguageTool](#) extension.
3. [languagetool](#), which I know nothing about.

Good luck, and Peace.

RIP Adam Voss, July 11, 2018.

Grammarly (unofficial)



A screenshot of a dark-themed code editor window titled "README.md — Experiments". The editor displays the following Markdown content:

```
1 # Grammarly in Code
2
3 I got grammarly working in code.
4
5 And it's pointing at speling mistakes.
6
```

The "PROBLEMS" tab is selected, showing two issues:

- Capitalization Grammarly(8) [3, 7]
README.md[3, 7]: grammarly
- Misspelled word: speling Grammarly(7) [5, 22]
README.md[5, 22]: speling

At the bottom, the status bar shows: master*, 2 △ 0, Live Share, znck, Ln 6, Col 1, Spaces: 2, UTF-8, LF, Markdown, Prettier.

- LaTeX-unaware

The best practice: use both

```
1 I'm student.  
2 less and less examples  
3  
4
```

LaTeX in **cyan** and Grammarly in **red**

Embedded git

```
114 %
113 \noindent\textbf{The truncation strategy.} We validate this strategy on CIFAR-100.  
112 We use ResNet-110 as the teacher network and ResNet-20 as  $\$S_0\$$  and ResNet-14 as  $\$R_1\$$ .  
111 According to Fig. \ref{THfig}, the red line shows the test performance (with the right  $\$y\$$  axis) and the blue one show the validation performance (with the left  $\$y\$$  axis).  
110 We can observe the change of performance with changing threshold clearly and it is easy to know that the tendency of test performance is the same as the one of validation performance.  
Accept Current Change | Accept Incoming Change | Accept Both Changes | Compare Changes  
109 <<<<< HEAD (Current Change)  
108 It is reasonable that we use the validation performance to decide the value of threshold and it can be expected that the value of threshold is also effective on test set.  
107 =====  
106 It is reasonable that we use the validation performance to decide the value of the threshold and it can be expected that the value of the threshold is also effective on the test set.  
105 >>>>> origin/tip (Incoming Change)  
104 Furthermore, we research the change of error rate and calculating the cost reduction of  $\$R_1\$$ .  
103 According to Fig. \ref{cost-err-100}, we can observe that we can earn a considerable saving of calculating cost with the cost of little performance.  
102  
101 \begin{table}  
100 \begin{center}  
99 \caption{Performance of ResNet series networks (e.g., Res110 means ResNet-110 when Res20-20-20 means  $\$S_0\$$  is ResNet-20,  $\$R_1\$$  is ResNet-20 and  $\$R_2\$$  is also ResNet-20.) with different KD method (normal KD or DML) different  $\$mathcal{L}_KD\$$  ( $\$L_2\$$  or KL) on CIFAR-10}  
98 \label{tab:L2_KL}
```

SUMMARY

- LaTeX support
 - LaTeX Workshop
- Text checking
 - LTeX
 - Grammarly
- git (embedded)