Open Science in the Humanities: Galaxy as a Flexible and yet Reproducible Platform

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Challenges for digital Research

- Installing programs only with Admin access
- Low programming skills
- Software and hardware costs
- Where do I start?
- How do I share my data?



Galaxy^{1,2} – data analysis and workflow

- Unified and intuitive web User Interface for FAIR data analyses
- Extensive Open Educational Resources for self-study
- 3000+ tools from standard to scientific software

Developed by a large research community

Contributions from many scientific disciplines





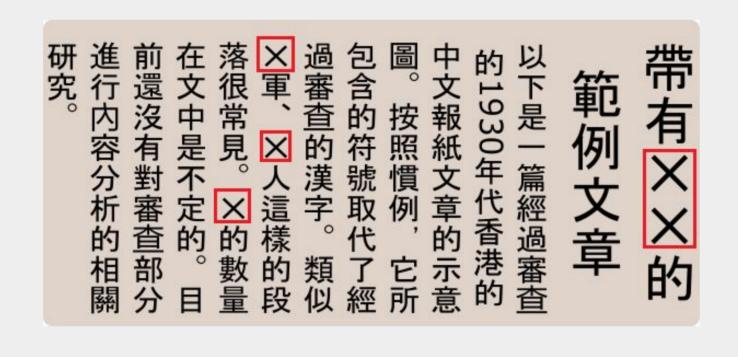
Overwhelmed?⁷

Datei Bearbeiten Ansicht Suchen Te	erminal Hilfe
jan@kraehe:~\$ diffhelp	
Aufruf: diff [OPTION] DATEIEN	
DATEIEN Zeile für Zeile vergleich	hen.
	nen sind auch für kurze Optionen nötig.
normal	Ein normales Diff ausgeben (Vorgabe).
-q,brief	Nur ausgeben, ob die Dateien verschieden sind
<pre>-s,report-identical-files</pre>	Zurückgeben, ob zwei Dateien gleich sind.
-c, -C ZAHL,context[=ZAHL]	<pre>ZAHL Zeilen des kopierten Kontexts ausgeben (Vorgabe: 3).</pre>
-u, -U ZAHL,unified[=ZAHL]	ZAHL Zeilen des vereinheitlichten Kontexts ausgeben (Vorgabe: 3).
-e,ed	Ein ed-Skript ausgeben.
-n,rcs	Im RCS-Format ausgeben.
-y,side-by-side	In zwei Spalten ausgeben.
-W,width=ZAHL	<pre>Maximal ZAHL Druckspalten pro Zeile ausgeben (Vorgabe: 130).</pre>
left-column	Nur linke Spalte der gemeinsamen Zeilen ausgeben.
suppress-common-lines	Keine gemeinsamen Zeilen ausgeben.
-p,show-c-function	Für jede Änderung zeigen, in welcher C-Funktion sie ist.
-F,show-function-line=RE	Die vorangehende Zeile zeigen, die dem Muster RE entspricht.
label LABEL	LABEL statt des Dateinamens und Zeitstempels benutzen (kann wiederholt werden).

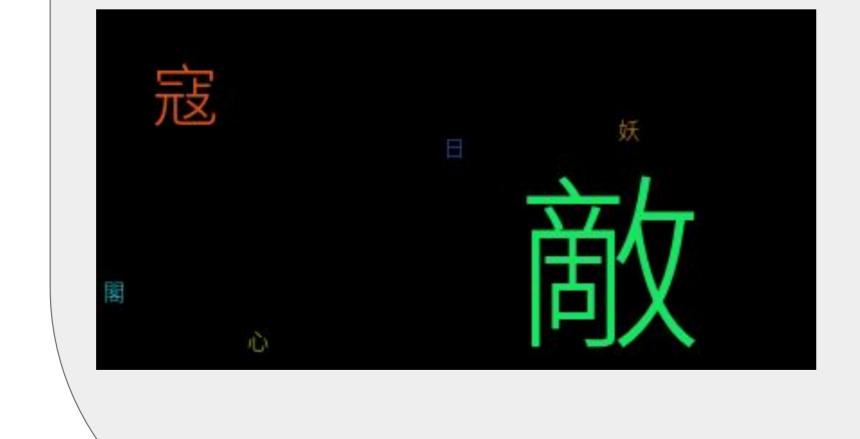
diff as single-user CLI

Example - uncovering censorship in Chinese newspapers

What content was censored in a Chinese newspaper? How can I find out without automatically?



104	旭	1/9 旭	
185	言	180 言	
186	之	181 之	
187	- ,	182 + .	
188	- ×	183 + 敵	
189	- ×	184 + 寇	
190	此	185 此	
191	- 舉	186 + 擧	
192	- 🕠	187 +	
193	其	188 其	
194	用	189 用	
195	意	190 意	



Example of a censored Chinese article from the 1930s. "x" marks cut-out characters.³

We uncovered a second, uncensored version of the same article.

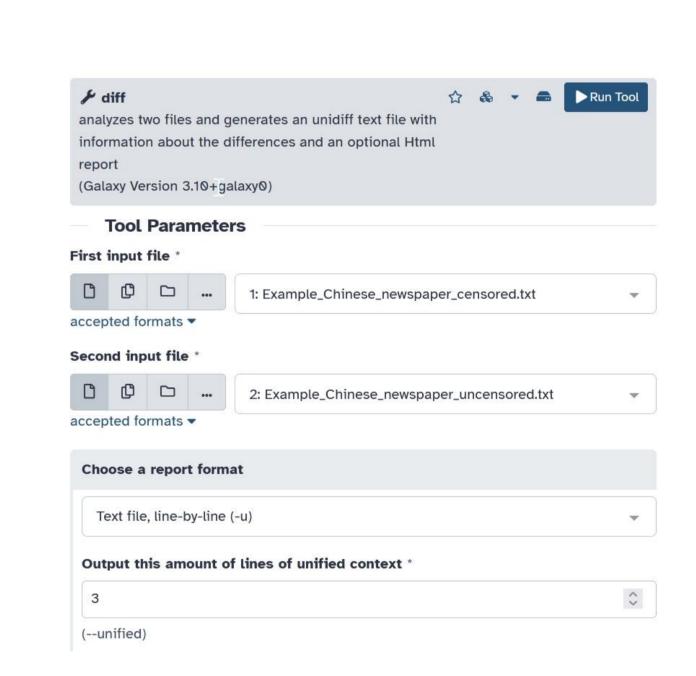
Text cleaning

Text comparison with diff-tool. The censored text is on the left, the uncensored one on the right. "x" marks derogatory terms for Japanese (enemy, brave, etc.)

The last step extracts the censored parts of the article. One possible visualisation is a word cloud.



Training material available on training.galaxyproject.org⁸



diff as GUI in Galaxy



Finished OER text mining9

References

[1] The Galaxy Community. The Galaxy platform for accessible, reproducible, and collaborative data analyses: 2024 update, Nucleic Acids Research, 2024;, gkae410, https://doi.org/10.1093/nar/gkae410

[2] https://usegalaxy.eu

[3] Adapted from: Schneider, D., 2024 Passed by the Censor. Press Censorship in the British Empire With a Special Focus on Hong Kong, 1938–1941 [Unpublished Dissertation]: Albert Ludwigs Universität Freiburg im Breisgau, p. 19.

[4] https://wissenschaftliche-integritaet.de/

[5] https://www.go-fair.org/resources/go-fair-workshop-series/gofair_logo_rgb/

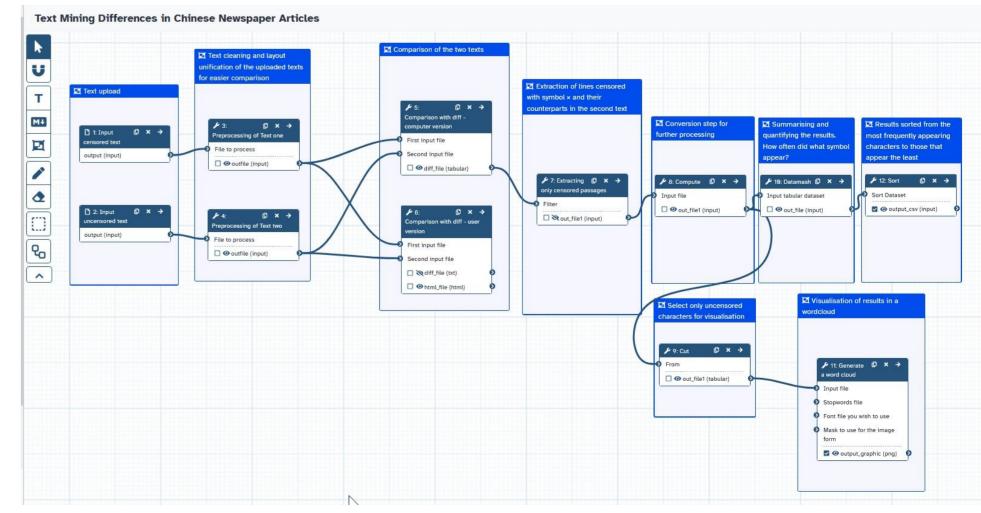
[6] https://github.com/elixir-europe/rdmkit/blob/master/LICENSE

[7] Image generated with the prompt "Create a picture of a desperate researcher in the humanities. On the desk are large piles of books. The researcher is exhausted and overwhelmed with all the Chinese texts in front of her." by OpenAI, ChatGPT, 03/2025 (https://chatgpt.com/).

[8] Hiltemann, Saskia, Rasche, Helena et al., 2023 Galaxy Training: A Powerful Framework for Teaching! PLOS Computational Biology 10.1371/journal.pcbi.1010752

[9] Schneider, D., Text-Mining Differences in Chinese Newspaper Articles (Galaxy Training Materials).

https://training.galaxyproject.org/training-material/topics/statistics/tutorials/text_mining_chinese/tutorial.html Online; accessed Tue Mar 04 2025.



Reusable workflow







