

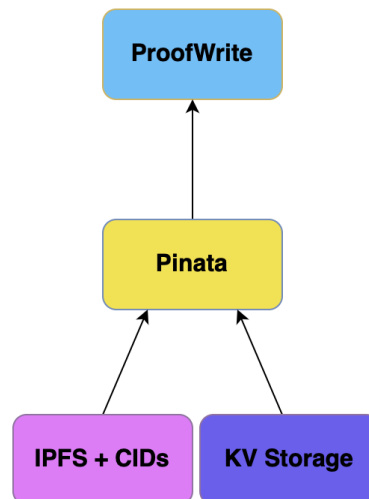
ProofWrite: Bringing Verifiability to College Essays in the Age of AI

In an era where generative AI tools are just a few keystrokes away, verifying the authenticity of student writing has become more difficult than ever - especially for college essays. How can universities ensure that what a student submits reflects their true voice, effort, and personality, rather than the output of an AI model?

Enter ProofWrite.

ProofWrite is a platform that empowers universities to verify the originality of student submissions by tracking the essay-writing process over time. Built on top of IPFS and Pinata, ProofWrite stores immutable snapshots of a student's writing over time, making it nearly impossible to paste in AI-generated content undetected, or plagiarize the writing of someone else.

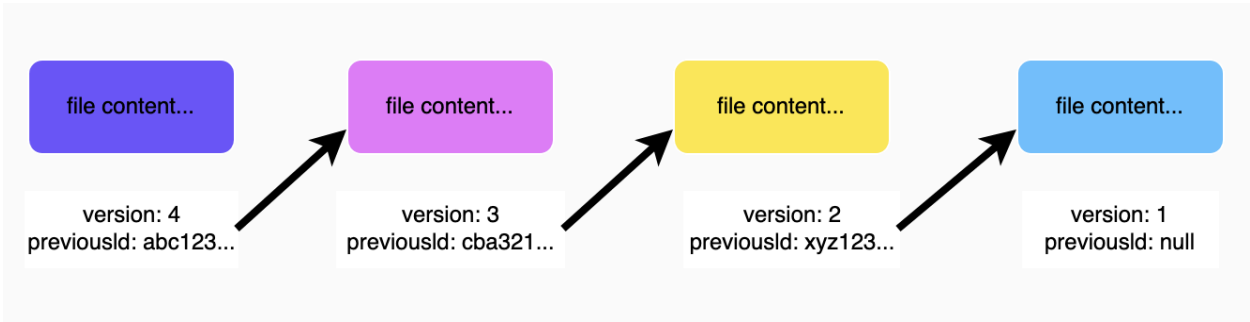
How It Works



At the core of ProofWrite is the use of CIDs (Content Identifiers), a feature of IPFS (InterPlanetary File System) that uniquely identifies the content of a file. Every time an essay is updated in ProofWrite, it's saved privately to IPFS through Pinata, and a new CID is generated. This provides a verifiable history of the document - similar to Google Docs version history, but decentralized and tamper-proof.

- As a student types, the document auto-saves every few seconds.
- Each version of the essay is uploaded to IPFS with a new CID, forming a transparent timeline of edits.
- Instructors or administrators can inspect this timeline to see how the essay evolved over time.
- Since Pinata offers private IPFS, the student's writing is securely stored and not publicly visible.
- In addition to IPFS, ProofWrite uses Pinata KV (Key-Value) storage to store essential metadata for each version - including the current version number and the ID of the

previous version. These entries are structured like a linked list, where each version knows the one before it, creating a connected chain of changes that reinforces verifiability and prevents tampering.



This combination of CID-based versioning and metadata linking ensures both content integrity and decentralized traceability.

Student Dashboard View:

ProofWrite

Manage your essays

⚙️ Admin

🔍 Search documents...

📁

☰

+ New Document

📄 First essay

📅 Last modified Aug 7, 2025

Essay 1, title - changed again

📄 2nd essay!

📅 Last modified Aug 7, 2025

This is just the second essay for testing!

📄 Blog

📅 Last modified Aug 7, 2025

ProofWrite: Bringing Verifiability to College Essays in the Age of AI In an er...

📄 Blog 2

📅 Last modified Aug 7, 2025

As a student types, the document auto-saves every 10 seconds. Each version i..

📄 Blog 3

📅 Last modified Aug 7, 2025

ProofWrite: Bringing Verifiability to College Essays in the Age of AI In an er...

📄 Personal Essay

📅 Last modified Aug 7, 2025

My childhood story: it began in India.

📄 Essay 1

📅 Last modified Aug 7, 2025

Essay 1

Essay Editing Page View:

Blog 3

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ProofWrite is a platform that empowers universities to verify the originality of student submissions by transparently tracking the essay-writing process over time. Built on top of IPFS and Pinata, ProofWrite stores immutable, timestamped snapshots of a student's writing - making it nearly impossible to fake authorship or paste in AI-generated content undetected.

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In addition to IPFS, ProofWrite uses KV (Key-Value) storage to store essential metadata for each version - including the essay's id and version and the text. These entries are structured like a linked list, where each version knows the one before it, creating a connected chain of changes that reinforces verifiability and prevents tampering.

Admin Dashboard View:

← Back to Dashboard

Admin View

Student Essay Verification History

👤 Student: John Doe

7
Total Essays

17
IPFS Versions

4
Pending Essays

14%
Verified

First essay

pending

Created Aug 7, 2025 at 01:22 PM

Current Word Count: 6IPFS Versions: 3

View Version History

2nd essay!

pending

Created Aug 7, 2025 at 01:26 PM

Current Word Count: 8IPFS Versions: 1

View Version History

Blog

verified

Created Aug 7, 2025 at 02:57 PM

Current Word Count: 670IPFS Versions: 3

View Version History

Blog 2

flagged

Created Aug 7, 2025 at 02:58 PM

Current Word Count: 480IPFS Versions: 1

View Version History

Blog 3

flagged

Created Aug 7, 2025 at 02:59 PM

Current Word Count: 670IPFS Versions: 3

View Version History

Personal Essay

pending

Created Aug 7, 2025 at 04:03 PM

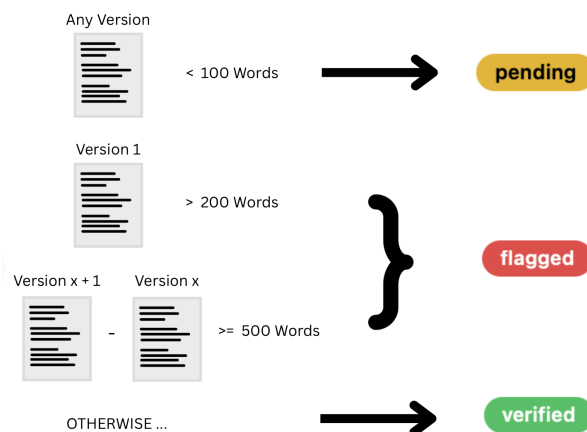
Current Word Count: 7IPFS Versions: 5

View Version History

Smart Flags for Academic Integrity

In addition to tracking versions, ProofWrite also flags suspicious behavior based on typing patterns:

- Pending: All new essays start in a "pending" state. If a document has fewer than 100 words at any given version, it remains pending.
- Flagged:
 - If the very first version of an essay exceeds 200 words, it's flagged, since this suggests a copy-paste.
 - Also, if there's a sudden spike in word count between versions, the essay is flagged for review.
- Verified: Otherwise, if the essay shows consistent growth over time without suspicious activity, it is marked as verified.



These simple yet effective checks help universities identify potential misuse of AI, without accusing students unfairly. Additionally, future verifications can easily be added that use more intelligent mechanisms to analyze the typing patterns, like machine learning models.

Built for Universities (and Beyond)

ProofWrite is designed with scalability in mind. Universities can use it to manage and store hundreds of versions per assignment per student, making it ideal for enterprise use. Thanks to Pinata's private IPFS features, all data remains secure and inaccessible to the public.

In the future, ProofWrite could integrate with university grading systems or LMS platforms, making it an even more seamless part of the academic process. Further, while ProofWrite focuses on college essays today, the core idea can be expanded to any domain that values originality: journalism, research, contracts, and more.

AI Isn't the Enemy, but Authenticity Matters

We're not anti-AI. In fact, we believe AI can be a powerful tool for brainstorming, editing, and feedback. But when it comes to expressing your own understanding, especially in something like college essay assignments, your own voice should come through.

ProofWrite isn't here to punish students for using AI. It's here to encourage them to own their ideas, put in the work, and showcase their genuine self in their writing.

