Paperpal Preflight
For Editorial Desk

Enhancing Research Integrity with AI-Powered Validation:

How the American Heart Association used Paperpal Preflight for Editorial Desk to optimize their workflow

Overview

The American Heart Association (“Association”) faced challenges due to the rapid increase in abstract submissions for Scientific Sessions. Ensuring adherence to research integrity standards while maintaining efficiency was an important priority for the Association. To address this, a novel post-review process was designed, integrating a customized version of Paperpal Preflight for Editorial Desk (PPE) into the abstract review process.

The Challenge

Although the nearly 8,500 abstracts submitted underwent traditional peer review, these methods were proving insufficient for identifying inconsistencies in text, reference accuracy, and alignment with established guidelines at scale. Furthermore, cases of prolific authorship and multiple submissions raised additional concerns regarding research integrity.

The challenge was clear:

- Identify potential integrity issues quickly and comprehensively.
- Prioritize high-risk submissions for expert additional human review, beyond peer review, while maintaining efficiency.
- Provide the Association with analysis of trends and submission patterns, and actionable insights to assess suspicious submission volumes.

The Solution

To tackle these challenges, a custom version of PPE's hybrid review model, was implemented for the Association. This solution combines AI-driven screening with expert oversight for nuanced assessment. Key components of the process included:

- **AI-Based Screening** — PPE's AI toolkit analyzed abstracts to flag anomalies in text consistency, reference accuracy, and adherence to reporting guidelines. Abstracts were categorized into PASS, WARNING or CRITICAL levels based on the severity of detected inconsistencies.
- **Expert Human Review** — PPE's team of subject-matter experts reviewed flagged abstracts to provide context-sensitive validation and ensure accuracy.
- **Submission Volume Analysis** — Custom analyses of submission trends by authors, was conducted by PPE's reviewers to help identify patterns of prolific submissions to highlight cases warranting further scrutiny.

Implementation and Methodology

To tackle these challenges, a custom version of PPE's hybrid review model, was implemented for the Association. This solution combines AI-driven screening with expert oversight for nuanced assessment. Key components of the process included:

- A total of **8,477 submitted abstracts** were processed through the AI tool, which flagged **42 abstracts** for potential issues in the WARNING category. These totals represent all abstracts submitted, including those not accepted after peer review.
- Expert human reviewers cleared **3 submissions** upon further evaluation, confirming the accuracy and context of the flagged content.
- The remaining 39 WARNING manuscripts were flagged as CRITICAL.
- The analysis of author submission behavior revealed a high volume of repeated submissions:

167 authors submitted **15** or more abstracts.	**63** authors submitted **20** or more abstracts.	**13** authors submitted **over 30** abstracts.

- A significant number of submitted abstracts (**2,624**) had at least one author with **10+ submissions**, while **1,438 abstracts** included an author with **15+ submissions**. A tailored analysis of submission patterns by authors enabled the Association reviewers to assess suspicious cases more effectively for fraudulent activity.

The data and insights from the analysis, helped improve efficiency and effectiveness for the Association's reviewers with assessing cases that had research integrity concerns.

Results

The hybrid AI-human review process delivered by PPE had the following key outcomes:

Improved Detection

AI effectively flagged abstracts requiring human intervention without overwhelming reviewers with any false positives.

Efficient Use of Reviewer Time

The Association's reviewers could dedicate their expertise to assessing complex cases following initial screening using hybrid Paperpal Preflight AI-human checks of the broader submission pool.

Actionable Insights

Volume-based submission trends provided the Association's reviewers with an additional layer of context to address potential integrity concerns effectively.

Conclusions and Impact

Positive Reviewer Feedback

The Association's reviewers reported increased confidence in the process, thanks to the actionable insights provided by PPE driving efficiencies in the workflow.

The adoption of PPE fundamentally improved the integrity assessment workflow of scientific abstracts for Association's Scientific Sessions, offering:

- **Scalability**

  Handling large submission volumes effectively without compromising quality.

- **Accuracy**

  PPE flagged only cases truly meriting further analysis, minimizing unnecessary workload.

- **Customization**

  The Cactus technology team was able to customize the checks, reporting and analysis to meet the specific requirements of the Association's reviewers.

- **Speed**

  The project was completed in less than 6 weeks (including tool and process customization and additional analyses) to meet the expedited timelines requested by the Association.

- **Trust**

  The process reinforced the credibility of accepted abstracts, contributing to the integrity of conference proceedings.

This methodology highlights the potential for PPE's hybrid tools, where AI checks complement human decision-making, creating a synergistic approach to addressing challenges in scientific research submissions.