



A Paradigm Shift In Integrated Plastic Surgery Residency Applications: One In Five Letters Of Recommendation Are Now Modified By Artificial Intelligence

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Introduction

Transformations such as pass/fail grading¹, novel curriculums², and publication inflation³ have placed greater emphasis on qualitative and holistic factors in resident selection.

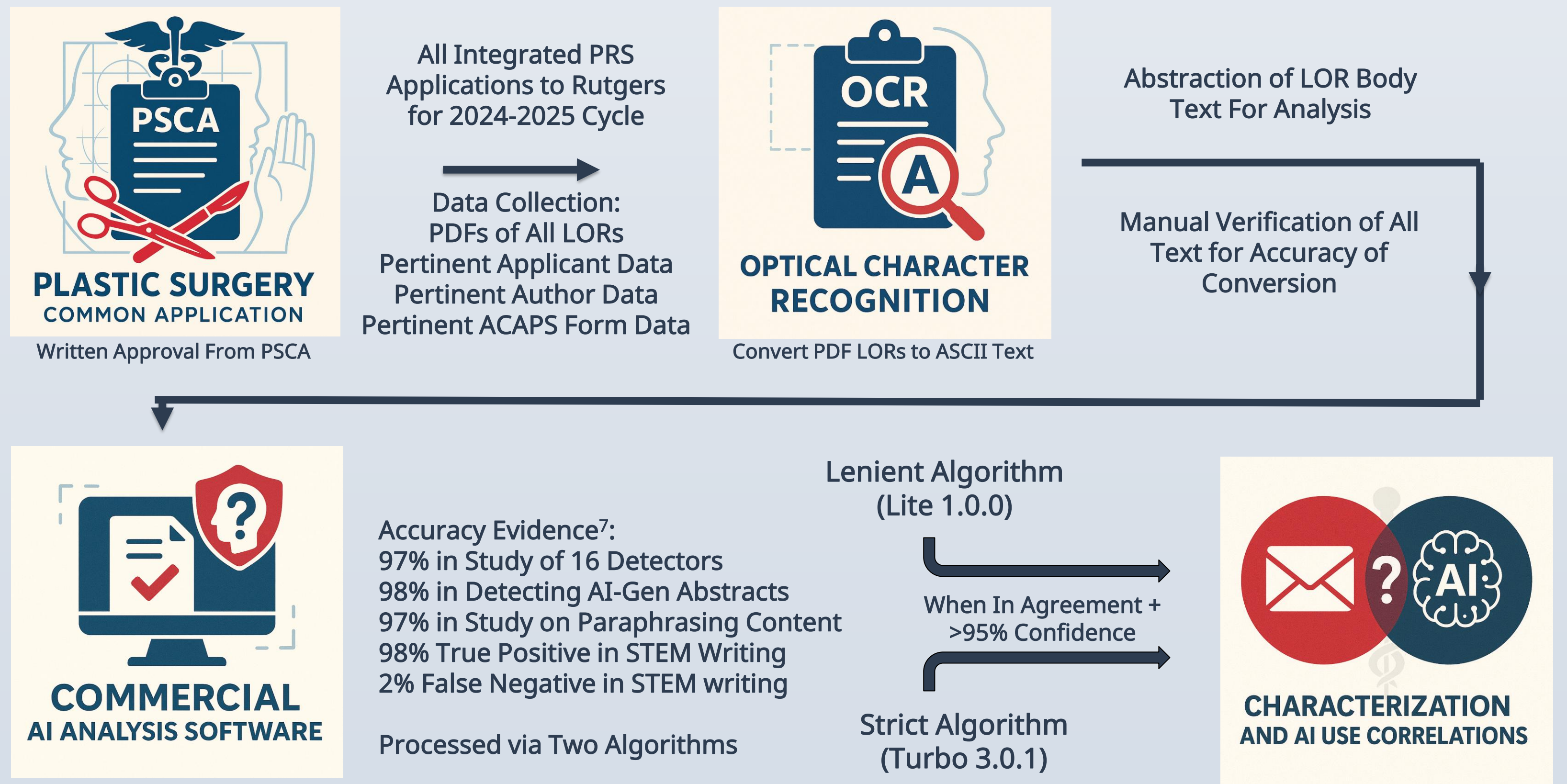
Sub-internship performance⁴ and letters of recommendation⁵ (LORs) often serve as a central relationally-focused differentiating criteria. LORs uniquely lie largely outside the applicant's control and represent additional responsibility to many overtasked surgeons.

Artificial intelligence (AI) has shown potential to streamline a multitude of tasks⁶. The characteristics of LOR writers for the Plastic Surgery Integrated Match as well as the prevalence of AI-tool assistance in authoring such LORs are wholly uncharacterized.

Purpose

1. Characterize the contemporary cohort of authors for letters of recommendation (LORs) submitted for the Integrated PRS residency match.
2. Evaluate the possible prevalence of artificial intelligence (AI) assistance in LOR composition, and identify factors independently associated with its use.

Methodology



Characterization of Contemporary LOR Authorship Cohort

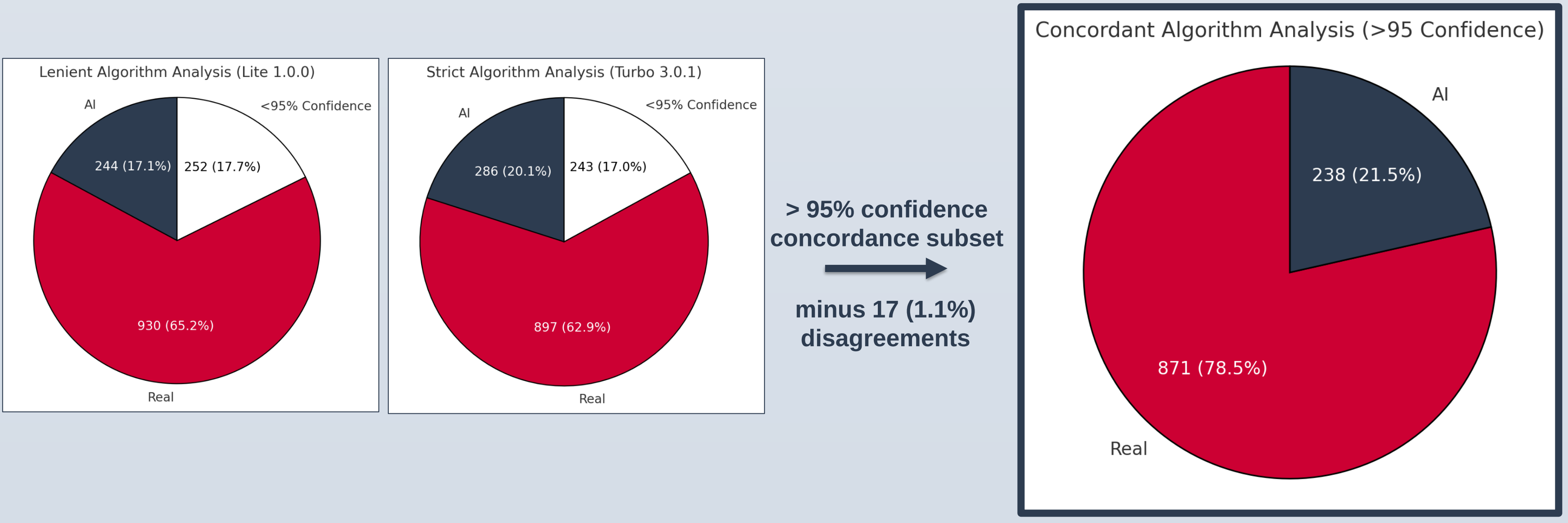
1,426 LORs from 381 applications were evaluated. Reapplicants comprised 12.1%.

Most authors were plastic surgeons (90.4%) with academic practices (96.2%). Program directors authored 32.7% and chairs/chiefs authored 42.2% of letters. Multiple authors were noted for 268 (18.8%) letters. Letters were 451 ± 188 words long. Plurality of applicants ranked Rank 2-5 (44.4%), then Rank 1 (22.9%) and Rank 5-10 (17.7%).

Table 1. Descriptive Applicant Data, 2024-2025	Table 2. Descriptive LOR Author Data, 2024-2025
Application-Derived Applicant Characteristics	Author Characteristics
Number of unique applicants, n	Specialty, n (%)
Number of unique LORs, n	Plastic and Reconstructive Surgery 1285 (9.2)
LORs per applicant, mean ± SD	Non-PRS 1422 (90.4)
Reapplicant, n (%)	Practice Type, n (%)
	Academic 1372 (96.2)
LOR Author-Reported Applicant Characteristics	Private 50 (3.5)
Relationship Length in months, mean ± SD	Position, n (%)
Relative ranking of Applicant, n (%)	Chair/Chief 602 (42.2)
Rank 1 326 (22.9)	Program Director 467 (32.7)
Rank 2-5 633 (44.4)	Number of Authors, n (%)
Rank 5-10 253 (17.7)	Single 1158 (80.2)
Rank 10-20 84 (5.9)	Multiple 268 (18.8)
Do Not Rank 1 (0.1)	Letter of Recommendation Characteristics
No Response 129 (9.0)	Length in words, mean ± SD
	451 ± 188
*LOR, letter of recommendation; SD, standard deviation.	*LOR, letter of recommendation; SD, standard deviation.

Results of AI-Use Screening Algorithm Analysis

Lenient algorithm found 17.1% of LORs were AI-assisted with >95% confidence. Strict algorithm found 20.1% of LORs were AI-assisted with > 95% confidence. Both agreed with >95% confidence on 1,109 letters. Real/AI disagreement was low (17, 1.1%). Overall, of scans with >95% confidence, we found 238 (21.5%) letters as AI-assisted. Most conservatively, when considering all LORs, 238/1426 (16.7%) were likely AI-Assisted.



Inferential Analysis of Independent Factors for Likely AI-Use

Non-Significant Predictors of AI Usage (all p>0.1)
Reapplicant Status
Author Specialty
Author Practice Setting
Program Director Status
Length of Relationship with Applicant
Reported Applicant Ranking

Significant Predictors of AI Usage:
Letter Length (494±156 vs. 388±147 words, p<.001)
Multiple Authorship (Odds Ratio = 1.48, p<.05)
Chief/Chair Authorship (Odds Ratio = 1.35, p=.06)



Limitations

Limited to single institution applications, but should be representative of the population: NRMP Match Data⁸ - 353 PRS rank list submissions vs. 381 PSCA applications in study
Validity/accuracy of chosen commercial AI-detection algorithm: low-confidence LORs?

Conclusions

We present the previously uncharacterized cohort of Integrated Plastic Surgery letter of recommendation authors. We demonstrate that with one of the best current methods of detection available, up to 21.5% of LORs likely used AI-tools in the 2024-2025 cycle.

While the integrity and implications of AI-use in academic promotion are yet unresolved, this novel insight calls for transparent AI guidelines and questions if traditional metrics in residency selection need recalibration.

Citations

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