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MONASH ENGINEERING

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FINAL YEAR PROJECT

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Researcher Profiler - A Data Fushion Approach

INTRODUCTION

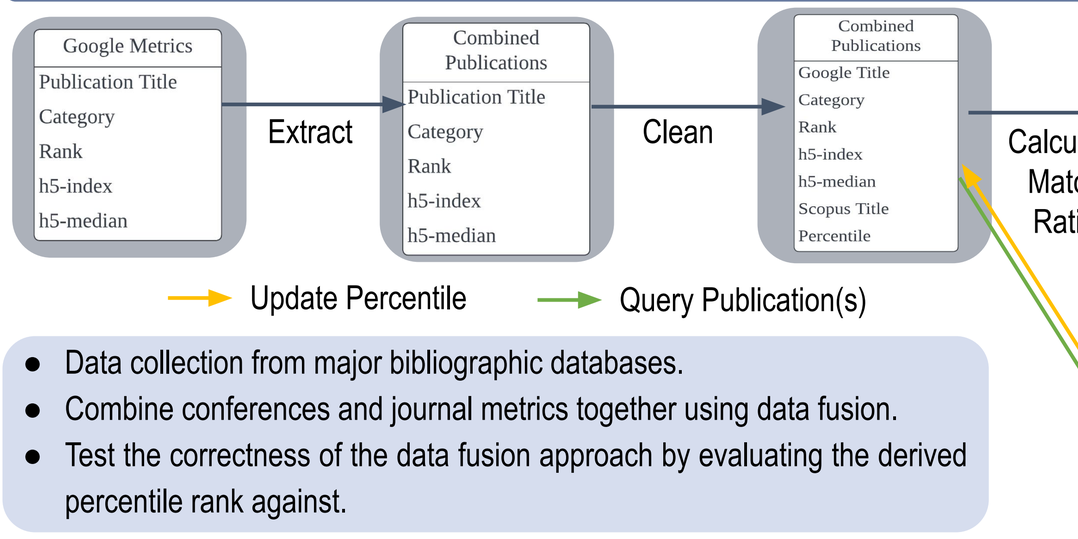
In academic research, evaluating performance matters to researchers, institutions, publishers, and other stakeholders. Metrics like CiteScore and h-index, accessed through academic search engines like Scopus and Google Scholar, are critical for this assessment. However, when it comes to ranking conferences and journals in a together, these metrics lack a standardised approach. This discrepancy is noticeable in computer science & software engineering, where conference papers hold similar significance to journal publications. Hence, this project focuses on creating a profile research tool that utilises a data fusion approach to integrate academic databases to create a standardised platform to determine the quality of academic works.

CITESCORE + H-INDEX → H-INDEX

AIMS & OBJECTIVES

- Extract & analyse profile data, classifying academic publications into relevant categories, including journals and conference proceedings.
- Rank conference proceedings and evaluate data fusion approach.
- Create a standardised platform to rank conferences and journals together.
- Automated assessment of academic work quality using publication data.

METHODOLOGY



- Data collection from major bibliographic databases.
- Combine conferences and journal metrics together using data fusion.
- Test the correctness of the data fusion approach by evaluating the derived percentile rank against.

DATA EXTRACTION

PROFILING PROCESS

Search author using Scopus ID

Get author details & list of publications

Get Percentile ranking for all journals & conferences using the combined publication list

Create a summary report

RESULTS & DISCUSSION

Category	Ranking	Google Title	h5-index	h5-median	Percentile
Engineering & Computer Science (general)	1	IEEE Access	233	350	92.0
Engineering & Computer Science (general)	2	Chemical engineering journal	206	258	98.0
Engineering & Computer Science (general)	3	Sensors	168	218	84.0
Engineering & Computer Science (general)	4	ACS Energy Letters	166	231	98.0
Engineering & Computer Science (general)	5	IEEE Transactions on Industrial Informatics	162	206	99.0

Figure 1: Example of Publications Ranked Using H5-index

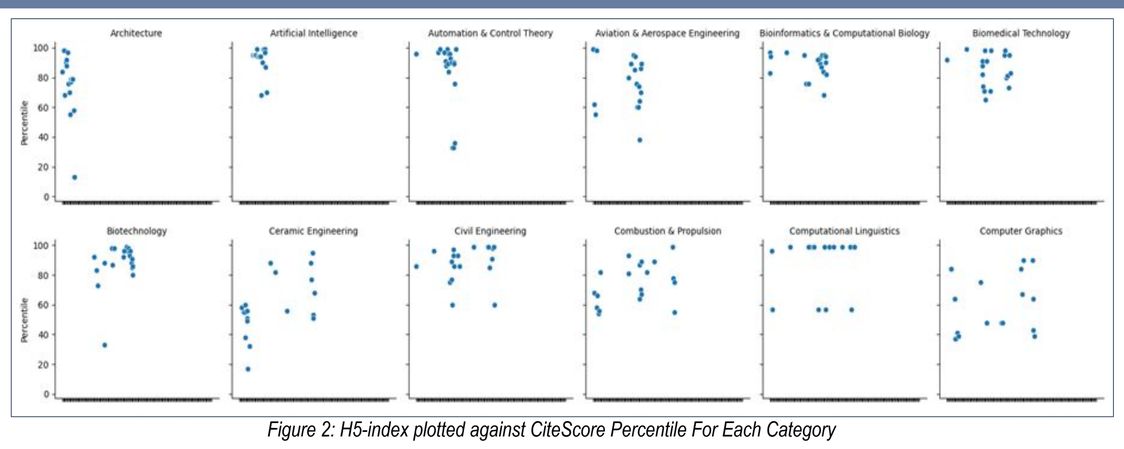


Figure 2: H5-index plotted against CiteScore Percentile For Each Category

Caveat to the data fusion approach - publications with higher h5-index doesn't necessarily correspond to a higher CiteScore percentile. This is a very common phenomenon as you can see on the table and plots.

H5-index and CiteScore percentiles are two distinct metrics, operating on different principles, relying on unique sources and evaluation methods. H5-index reflects the impact of individual publications while CiteScore percentiles assesses the performance of entire journals.

To streamline our research evaluation process and provide a reference point for our assessments, we've made a simplification. We treat a conference proceeding's CiteScore Percentile as equally good as the immediate journal below it in the h5-index ranking.

		rank	percentile
Title	**Subject**		
Engineering Applications of Artificial Intelligence	**Electrical and Electronic Engineering**	46	93.0
	Control and Systems Engineering	19	93.0
	Artificial Intelligence	32	89.0
Computer Networks	**Computer Networks and Communications**	28	92.0
Expert Systems with Applications	**Engineering (all)**	11	96.0
	Computer Science Applications	40	95.0

Figure 3: Overview of An Author's Publication

This table provides an overview of an author's publications obtained through data fusion from Google Scholar and Scopus. It includes the publication's subject areas, ranking within those subject areas, and its percentile relative to its rank. Automating this process can save significant manual labour, as obtaining each publication's metrics is labour-intensive.

CONCLUSION

We have created a proof of concept data fusion approach to create a profiling tool to evaluate authors. Furthermore, we have also provided a level playing field for conference proceedings and journals rankings. This aligns well with our projected aims, which marks our success.