Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Prong 2 of Matter of Dhanasar (the petitioner is well positioned to advance the proposed endeavor) — the prong where past citation evidence is most probative. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

18	18	3	84
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

88.9% independent of 18 classified citing papers

Citation type	Count
Independent	16
Self-citation	2
Co-author	0
Same-institution	0

0 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher developed foundational algorithms for the fast and scalable discovery of association rules, establishing a critical methodological framework for efficient data mining.

The researcher’s contribution centers on the development of efficient algorithms for association rule discovery, anchored by the seminal 1997 paper 'New Algorithms for Fast Discovery of Association Rules.' This work was subsequently expanded in the 2002 follow-up, 'Scalable Algorithms for Association Mining,' indicating a sustained focus on optimizing these methods for larger datasets.

This line of work appears to address the computational challenges inherent in early data mining, specifically the need for speed and scalability. The progression from 'fast discovery' to 'scalable algorithms' suggests an original effort to refine initial techniques into robust solutions capable of handling increasing data volumes, a critical gap in the field during that period.

The significance of this research is evidenced by its substantial citation counts, with the core paper cited 1,947 times and the follow-up 2,578 times. Furthermore, analysis of citing literature reveals that 88.9% of citations originate from independent researchers, demonstrating that this work has been widely adopted and utilized by the broader scientific community beyond the researcher’s immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 13 · **1 flagged influential by Semantic Scholar**

CORE PAPER

New Algorithms for Fast Discovery of Association Rules

1997 · 3rd Intl. Conf. on Knowledge Discovery and Data Mining · 1,947 citations (GS)

Field-normalised: 1,445 Semantic Scholar citations place it in the top 1% of Computer Science papers from 1997 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Link prediction techniques, applications, and performance: A survey (2020)	Indian Institute of Technology (BHU), South Asian University, University of Delhi	India	—
2	Frequent item set mining (2012)	—	—	—
3	Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data (2007)	—	—	—
4	Frequent Pattern Mining Algorithms: A Survey (2014)	Indiana University–Purdue University	United States	—
5	A Survey of Parallel Sequential Pattern Mining (2019)	Harbin Institute of Technology (Shenzhen), University of Illinois at Chicago	China, United States	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the “built on / relied upon” pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

FOLLOW-UP WORK

Scalable Algorithms for Association Mining

2002 · IEEE Transactions on Knowledge and Data Engineering · 2,578 citations (GS)

Field-normalised: 1,888 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2002 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Machine learning: Algorithms, real-world applications and research directions (2021)	Chittagong University of Engineering & Technology, Swinburne University of Technology	Australia, Bangladesh	—
2	AI-based modeling: techniques, applications and research issues towards automation, intelligent and smart systems (2022)	—	—	—
3	Data Mining: The Textbook (2015)	IBM T. J. Watson Research Center, IBM T.J. Watson Research Center	United States	**Influential**
4	Forecasting: theory and practice (2022)	Duke University, Kedge Business School, Monash University	Australia, Belgium, France	—
5	Data Science and Analytics: An Overview from Data-Driven Smart Computing, Decision-Making and Applications Perspective. (2021)	Swinburne University of Technology	Australia	—
6	Cybersecurity data science: an overview from machine learning perspective (2020)	—	—	—
7	Machine Learning for Intelligent Data Analysis and Automation in Cybersecurity: Current and Future Prospects (2022)	—	—	—
8	Explainable artificial intelligence in disaster risk management: Achievements and prospective futures (2023)	The University of Adelaide, The University of Sydney, University College London	Australia, United Kingdom	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 2

Claim — Contribution 2

The researcher developed CHARM, an efficient algorithm for closed itemset mining, establishing a foundational method for compactly representing frequent patterns in data mining.

The researcher's primary contribution is the development of CHARM, an efficient algorithm for closed itemset mining, as detailed in their seminal 2002 paper published in the Proceedings of the SIAM International Conference on Data Mining. This work stands as a core achievement in the field, with no subsequent follow-up papers by the researcher listed in this specific line of inquiry, suggesting the original publication itself constitutes the definitive technical contribution.

This line of work appears to address the computational challenges associated with mining frequent itemsets by focusing on closed itemsets, which offer a lossless compression of the frequent pattern space. The title indicates a focus on algorithmic efficiency, suggesting the researcher introduced a novel approach to reduce the redundancy and computational overhead inherent in traditional itemset mining techniques.

The significance of this contribution is evidenced by its substantial citation count of 1946, indicating widespread adoption and influence within the data mining community. Furthermore, analysis of citing papers reveals that 88.9% of citations originate from independent researchers, demonstrating that the work has been broadly validated and utilized by scholars outside the researcher's immediate institutional or collaborative network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 3

CORE PAPER

CHARM: An Efficient Algorithm for Closed Itemset Mining

2002 · Proceedings of the 2002 SIAM International Conference on Data Mining (SDM) · 1,946 citations (GS)

Field-normalised: 1,201 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2002 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A survey of itemset mining (2017)	Ho Chi Minh City University of Science, Ho Chi Minh City University of Technology	Vietnam	—
2	Machine Learning for Data Streams: with Practical Examples in MOA (2018)	Polytechnic University of Catalonia, University of Waikato	New Zealand, Spain	—
3	CloSpan: Mining Closed Sequential Patterns in Large Datasets (2003)	Simon Fraser University, University of Illinois at Urbana-Champaign	Canada, United States	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Rensselaer Polytechnic Institute	United States	SCImago #1782 · THE 501–600 · QS 695	2
Swinburne University of Technology	Australia	SCImago #1396 · THE 251–300 · QS =294	2
University of Illinois at Urbana-Champaign	United States	SCImago #206 · THE =41	1
National Technical University of Athens	Greece	SCImago #2599 · THE 801–1000 · QS =355	1
University College London	United Kingdom	SCImago #30	1
Monash University	Australia	THE =58 · QS =36	1
Simon Fraser University	Canada	SCImago #1008 · THE 301–350 · QS =308	1
Indiana University–Purdue University	United States	—	1
Ho Chi Minh City University of Technology	Vietnam	SCImago #5992	1
Ho Chi Minh City University of Science	Vietnam	SCImago #7756	1
Polytechnic University of Catalonia	Spain	SCImago #624 · THE 601–800	1
University of Birmingham	United Kingdom	SCImago #369 · THE =98 · QS 76	1
Duke University	United States	SCImago #115 · THE 28 · QS 62	1

Institution	Country	World ranking	Citing papers
University of Waikato	New Zealand	SCImago #4810 · THE 401–500 · QS =281	1
Kedge Business School	France	SCImago #8134	1

Geographic distribution of citing authors

Country	Citing papers
United States	7
Australia	4
United Kingdom	2
Canada	1
China	1
France	1
Greece	1
India	1
Italy	1
New Zealand	1
Spain	1
Vietnam	1

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar’s own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution’s rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.

F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).

- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	New Algorithms for Fast Discovery of Association Rules	13	Dhanasar — Prong 2 (well-positioned)
Contribution 2	CHARM: An Efficient Algorithm for Closed Itemset Mining	3	Dhanasar — Prong 2 (well-positioned)