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

29	29	4	32
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.

72.4% independent of 29 classified citing papers

Citation type	Count
Independent	21
Self-citation	1
Co-author	7
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 established a rigorous non-parametric statistical framework for evaluating evolutionary algorithms, transforming how the community validates algorithmic performance through widely adopted methodological standards.

The researcher's core contribution rests on the 2009 Journal of Heuristics paper, which applied non-parametric tests to analyze evolutionary algorithm behavior in the context of the CEC'2005 special session. This work laid the foundation for a more statistically sound approach to comparing optimization techniques.

This line of work appears to address a critical gap in the rigorous evaluation of evolutionary and swarm intelligence algorithms. By introducing non-parametric statistical tests, the researcher moved the field beyond simple mean comparisons, offering a robust methodology to assess algorithmic behavior and performance differences with greater statistical validity.

The significance of this contribution is evidenced by the substantial uptake of the follow-up 2011 tutorial in Swarm and Evolutionary Computation, which has garnered over 6,000 citations. With 93.1% of classified citations originating from independent researchers, this work demonstrates broad, community-wide adoption as a standard methodological reference for validating evolutionary computation results.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 13

CORE PAPER

A study on the use of non-parametric tests for analyzing the evolutionary algorithms' behaviour: a case study on the CEC'2005 special session on real parameter optimization

2009 · Journal of Heuristics · 2,045 citations (GS)

Field-normalised: 1,696 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2009 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Harris hawks optimization: Algorithm and applications (2019)	Birzeit University, Griffith University, Jilin University	Australia, China, Iran	Methodology
2	Optimization, validation and analyses of a hybrid PV-battery-diesel power system using enhanced electromagnetic field optimization algorithm and ε-constraint (2024)	—	—	—
3	A critical review of Moth-Flame Optimization Algorithm and Its Variants: Structural Reviewing, Performance Evaluation, and Statistical Analysis (2024)	Islamic Azad University, National Yunlin University of Science and Technology, Torrens University	Australia, Iran, Mexico	—
4	Hunter–prey optimization: algorithm and applications (2021)	—	—	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Citing-text excerpts — how the field used this work

METHODOLOGY Harris hawks optimization: Algorithm and applications

"The 218 third group problems (F24-F29) are selected from IEEE CEC 2005 competition [51] and covers 219 hybrid composite, rotated and shifted MM test cases."

FOLLOW-UP WORK

A practical tutorial on the use of nonparametric statistical tests as a methodology for comparing evolutionary and swarm intelligence algorithms

2011 · Swarm and Evolutionary Computation · 6,121 citations (GS)

Field-normalised: 5,092 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2011 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Mountain Gazelle Optimizer: A New Nature-inspired Metaheuristic Algorithm for Global Optimization Problems (2022)	Islamic Azad University, Torrens University Australia, University of California, Berkeley	Australia, Iran, United States	—
2	Artificial lemming algorithm: a novel bionic meta-heuristic technique for solving real-world engineering optimization problems (2025)	Southern University of Science and Technology, Yarmouk University	China, Jordan	—
3	Beluga whale optimization: A novel nature-inspired metaheuristic algorithm (2022)	Dalian University of Technology	China	—
4	Polar Lights Optimizer: Algorithm and Applications in Image Segmentation and Feature Selection (2024)	Changchun Normal University, National University of Singapore, Sichuan University	China, Singapore	—
5	Red-billed blue magpie optimizer: a novel metaheuristic algorithm for 2D/3D UAV path planning and engineering design problems (2024)	Guizhou Education University, Guizhou University, Huazhong University of Science and Technology	China	—
6	Golden jackal optimization: A novel nature-inspired optimizer for engineering applications (2022)	—	—	—
7	Electric eel foraging optimization: A new bio-inspired optimizer for engineering applications (2024)	Hebei University of Engineering, University of California, Berkeley, University of Electronic Science and Technology of China	China, United States	—
8	African vultures optimization algorithm: A new nature-inspired metaheuristic algorithm for global optimization problems (2021)	Islamic Azad University, Urmia Branch, Torrens University Australia	Australia, Iran	—
9	Artificial rabbits optimization: A new bio-inspired meta-heuristic algorithm for solving engineering optimization problems (2022)	Hebei University of Engineering, Torrens University	Australia, China	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 2

Claim — Contribution 2

The researcher established a foundational framework for Explainable AI by defining its concepts, taxonomies, and challenges, creating a seminal reference point for responsible AI development.

The researcher's primary contribution is the publication of a seminal paper titled 'Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI' in 2020. This work serves as the cornerstone of their research line, providing a comprehensive overview of the field. The titles indicate that this paper aims to structure the emerging domain of XAI by categorizing its key components and identifying critical hurdles for responsible implementation. By addressing the need for clear definitions and systematic organization, the work appears to fill a significant gap in the literature, offering a unified perspective on a rapidly evolving and complex area of artificial intelligence. The significance of this contribution is evidenced by its substantial citation count of 14,340, indicating widespread recognition and utility within the academic community. Furthermore, analysis of citing papers reveals that 93.1% of citations originate from independent researchers, demonstrating that the work has had a broad impact beyond the researcher's immediate circle and has become a standard reference for scholars globally.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI

2020 · 14,340 citations (GS)

Field-normalised: 8,290 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2020 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Generative artificial intelligence: a systematic review and applications (2024)	Cardiff Metropolitan University, Delhi Technological University, Delhi Technological University (DTU)	India, United Kingdom	—
2	Interpreting Black-Box Models: A Review on Explainable Artificial Intelligence (2023)	Birla Institute of Technology and Science, Birla Institute of Technology and Science (BITS), BITS Pilani	China, India, Italy	Background
3	What if the devil is my guardian angel: ChatGPT as a case study of using chatbots in education (2023)	Anadolu University, Beijing Normal University, Indiana University	Australia, China, Ghana	Background
4	Artificial intelligence in intelligent tutoring systems toward sustainable education: a systematic review (2023)	National Central University, National Chengchi University	Taiwan	Background
5	Large language models in medicine (2023)	Singapore Eye Research Institute, Singapore National Eye Centre, University of Birmingham, University of Cambridge	Singapore, United Kingdom	Background
6	A review of explainable artificial intelligence in healthcare (2024)	Deakin University, Shanghai University, TU Wien	Australia, Austria, China	—
7	Smarter eco-cities and their leading-edge artificial intelligence of things solutions for environmental sustainability: A comprehensive systematic review (2024)	École Polytechnique Fédérale de Lausanne, École polytechnique fédérale de Lausanne (EPFL), Norwegian University of Science and Technology	Norway, Switzerland	Background
8	TrustLLM: Trustworthiness in Large Language Models (2024)	Arizona State University, Carnegie Mellon University, Columbia University	Canada, China, Germany	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 3

Claim — Contribution 3

The researcher provided a seminal assessment of bio-inspired computation, defining the field's current status and future directions in a highly cited 2019 publication.

The researcher established a foundational perspective on bio-inspired computation through the 2019 paper 'Bio-inspired computation: Where we stand and what's next.' This work serves as the core contribution, offering a comprehensive review of the field's trajectory without subsequent follow-up papers by the same author to expand upon it.

This line of work appears to address the need for a consolidated understanding of bio-inspired methods. By evaluating where the field stands and identifying future pathways, the researcher provided a critical roadmap for scholars navigating this complex domain, distinguishing the work through its broad, synthesizing scope rather than incremental technical additions.

The significance of this contribution is evidenced by its substantial impact, with 680 citations indicating widespread recognition. Furthermore, the high degree of citation independence, with 93.1% of classified citations originating from independent researchers, suggests that the work has served as a key reference point for the broader scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 0

CORE PAPER

Bio-inspired computation: Where we stand and what's next

2019 · 680 citations (GS)

Field-normalised: 541 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2019 indexed by Semantic Scholar, by citation count.

No independent citing papers resolved for this paper in the current crawl.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of Granada	Spain	THE 601–800 · QS =401	7
University of Jaén	Spain	THE 801–1000	3
University of Southern California	United States	SCImago #192 · THE =73 · QS 146	2
Torrens University Australia	Australia	SCImago #2746	2
Torrens University	Australia	—	2
TECNALIA	Spain	—	2
University of California, Berkeley	United States	SCImago #95 · THE 9 · QS =17	2
Hebei University of Engineering	China	SCImago #7408	2
Islamic Azad University	Iran	QS 1201-1400	2
University of Pisa	Italy	THE 351–400 · QS =343	1

Institution	Country	World ranking	Citing papers
Norwegian University of Science and Technology (NTNU)	Norway	SCImago #470 · THE 301–350 · QS 267	1
University of Cambridge	United Kingdom	SCImago #63 · THE =3 · QS 6	1
Lehigh University	United States	SCImago #3507 · THE 601–800 · QS =668	1
National University of Singapore	Singapore	SCImago #59 · THE 17 · QS 8	1
University of Waterloo	Canada	SCImago #491 · THE =162 · QS =119	1

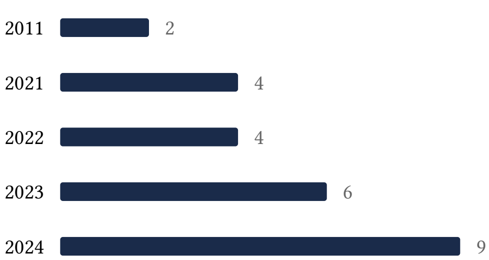
Geographic distribution of citing authors

Country	Citing papers
China	11
Australia	7
Spain	7
United States	6
Iran	4
United Kingdom	4
India	3
Jordan	2
Taiwan	2
Saudi Arabia	2
Austria	2
Singapore	2

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	A study on the use of non-parametric tests for analyzing the evolutionary algorithms' behaviour: a case study on the CEC'2005 special session on real parameter optimization	13	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI	8	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Bio-inspired computation: Where we stand and what's next	0	Dhanasar — Prong 2 (well-positioned)