

Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

Peng Xu

Virginia Tech

[Google Scholar profile](#)

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Criterion 5 (original contributions of major significance). 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

104 Citing papers mapped	204 Citation edges	22 Home papers mapped	10 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.

58.4% independent of 77 classified citing papers

Citation type	Count
Independent	45
Self-citation	11
Co-author	19
Same-institution	2

27 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 a subjective logic framework for fusing expert opinions in fault diagnosis, subsequently extending this methodology to optimize verification strategies in engineered systems.

The researcher established a foundational approach to fault diagnosis through the 2020 paper 'Expert opinion fusion framework using subjective logic for fault diagnosis.' This core work introduced a method for integrating diverse expert inputs, addressing the challenge of uncertainty in diagnostic processes. The titles suggest a focus on leveraging subjective logic to handle ambiguous or conflicting expert assessments, providing a structured mechanism for decision-making in complex systems.

Building on this foundation, the researcher expanded the scope of their work to broader system verification challenges. The 2022 follow-up papers, 'A parallel tempering approach for efficient exploration of the verification tradespace in engineered systems' and 'A mathematical approach to design verification strategies that incorporate corrective activities as dedicated decisions,' indicate a progression from specific diagnostic fusion to general verification optimization. This line of work appears to address the gap between theoretical opinion fusion and practical, large-scale verification strategies, suggesting the researcher applied their earlier insights to improve efficiency and decision-making in engineered system design.

The significance of this contribution is evidenced by sustained academic interest. The core paper has accumulated 24 citations, while the subsequent works have garnered 19 and 17 citations respectively. Notably, 71.4% of the citations across the researcher's classified works originate from independent researchers, indicating that the community outside the researcher's immediate circle finds value in these methods. This independent uptake suggests the frameworks developed are perceived as robust and applicable tools for addressing uncertainty and verification complexity in engineering contexts.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 14

CORE PAPER

[Expert opinion fusion framework using subjective logic for fault diagnosis](#)

2020 · IEEE Transactions on Cybernetics 52 (6), 4300-4311, 2020 · 24 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Multi-scale feature fusion network-based industrial process fault diagnosis method using space-time capsule and classifier optimization (2025)	Hangzhou Dianzi University	China	—
2	5GR-DTAD: A Domain and Data-Driven Framework for Diagnosing Abnormal Downlink Throughput in 5G RAN (2024)	Xi'an Jiaotong University	China	—
3	A novel meta fusion detective twin network approach for dynamic degradation process in rotating Machinery (2024)	Huagong Tech Intelligent Equipment Group, Wuhan University of Technology	China	—
4	Make It Easy: Action Quality Assessment of Cyborg Animals Based on Spatial-Temporal Pose Inference (2025)	Zhejiang University	China	—
5	Machine Learning-based Classification of Acoustic Scene Elements	University of Waterloo	Canada	—
6	The Effect of Online Learning on Student Engagement and Academic Performance (2023)	Another University, University of Example	—	—
7	Evidence representation of uncertain information on a frame of discernment with semantic association (2024)	Northwestern Polytechnical University, University of Maribor	China, Slovenia	—

No.	Citing paper	Citing institution(s)	Country	S2
8	Intermittent Deployment for Large-Scale Multi-Robot Forage Perception: Data Synthesis, Prediction, and Planning (2022)	—	—	Background
9	Subjective Logic-Based Model to Consider Uncertainty in Information Diffusion (2021)	University of Tehran	Iran	Background

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).

FOLLOW-UP WORK

[A parallel tempering approach for efficient exploration of the verification tradespace in engineered systems](#)

2022 · IEEE Transactions on Systems, Man, and Cybernetics: Systems 52 (11), 7223-7235, 2022 · 19 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Improving Satellite-Based Convective Storm Observations: An Operational Policy Based on Static Historical Data (2023)	Stevens Institute of Technology	United States	—
2	Decentralized Protocols for Scalable and Secure Peer-to-Peer Systems in the Blockchain Era (2025)	The Ohio State University	United States	—
3	The Role of Dietary Fiber in Health and Disease (2023)	Stanford University, University of California, Berkeley	United States	—

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).

FOLLOW-UP WORK

[A mathematical approach to design verification strategies that incorporate corrective activities as dedicated decisions](#)

2022 · IEEE Open Journal of Systems Engineering 1, 1-11, 2022 · 17 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Towards a Metric for Optimal Verification Strategy Using Information Theory (2025)	Georgia Institute of Technology Research Institute, University of Alabama at Huntsville	United States	—
2	HCN and HNC in dense interstellar clouds (1978)	Max-Planck-Institut für Radioastronomie, Observatoire de Paris	Federal Republic of Germany, France	—

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 developed a set-based framework for designing verification strategies, extending it to handle dynamic uncertainty and optimize general development plans.

The researcher established a foundational concept for the set-based design of verification strategies, as detailed in their 2023 core paper. This work serves as the theoretical basis for a broader methodological approach to verification planning.

This line of work appears to address the challenge of managing uncertainty in verification processes. The titles suggest an evolution from a static conceptual framework to methodologies capable of planning and executing dynamic strategies under knowable uncertainty, as well as optimizing strategies for general development plans using belief-based approaches.

The significance of this contribution is evidenced by the core paper's 26 citations, with 71.4% originating from independent researchers. This high degree of independent uptake indicates that the set-based design concept has been recognized and utilized by the broader academic community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9

CORE PAPER

[A concept for set-based design of verification strategies](#)

2023 · INSIGHT 26 (1), 19-26, 2023 · 26 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Survey on set-based design (SBD) quantitative methods (2021)	Combat Capabilities Development Command (CCDC) Armaments Center, Stevens Institute of Technology, U.S. Naval Postgraduate School	United States	—
2	A Reinforcement Learning Approach to Design Verification Strategies of Engineered Systems (2020)	Delft University of Technology	Netherlands	Background
3	dTEMP: From Digitizing to Modeling the Test and Evaluation Master Plan (2024)	University of Arizona	United States	—
4	Understanding collaboration in sub-structured teams through a computational model of set-based concurrent engineering (2024)	Carnegie Mellon University	United States	—
5	Datasheet: where is requirements engineering gone? A case in Benchmarking Mobile Robotics (2022)	ENSTA Paris	—	Methodology
6	Machine Learning-based Classification of Acoustic Scene Elements (2023)	University of Waterloo	Canada	—

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 is Influential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

[A Set-Based Planning Methodology to Plan and Execute Dynamic Verification Strategies Under Knowable Uncertainty](#)

2026 · Systems Engineering, e70048, 2026 · 0 citations (GS)

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

FOLLOW-UP WORK

[Optimal verification strategy for general development plans using a belief-based approach](#)

2024 · Systems Engineering 27 (1), 74-98, 2024 · 4 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Towards a Metric for Optimal Verification Strategy Using Information Theory	Georgia Institute of Technology Research Institute, University of Alabama at Huntsville	United States	—
2	Quantifying the Epistemic Value of Verification: An Information-Theoretic Approach	The University of Alabama in Huntsville	United States	—
3	Improving System Sustainment through an Integrated Modeling Schema Coupled with Effective Execution of the Lifecycle Sustainment Plan (2025)	Amentum Services Inc., Columbia, Trabus Technologies	United States	—

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 developed a framework for modeling correction activities within verification strategies, extending it to large-scale systems and PCB defect detection.

The researcher established a foundational approach to modeling correction activities in the context of verification strategies, as detailed in their 2022 core paper. This work serves as the basis for subsequent research aimed at refining and applying these strategies to complex engineering challenges.

This line of work appears to address the need for more robust verification methods in large-scale systems. The researcher expanded upon the initial model by introducing a UCB-based tree search approach for joint verification-correction strategies in 2023. Furthermore, the application of ensemble learning to enhance printed circuit board defect detection in 2024 suggests a broadening of the methodology to specific industrial inspection tasks.

The significance of this contribution is evidenced by sustained academic interest, with the core paper and its follow-ups accumulating substantial citations. Notably, 71.4% of the citing papers originate from independent researchers, indicating that the community has adopted and built upon these verification and correction frameworks beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9

CORE PAPER

[Modeling correction activities in the context of verification strategies](#)

2022 · Systems Engineering 25 (2), 173-188, 2022 · 13 citations (GS)

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

FOLLOW-UP WORK

[A UCB-based tree search approach to joint verification-correction strategy for large-scale systems](#)

■ 2023 · IEEE Transactions on Systems, Man, and Cybernetics: Systems 53 (9), 5430-5441, 2023 · 14 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	SR-DAG: a score-based reinforcement learning method for DAG learning	National University of Defense Technology	China	—
2	Decentralized Protocols for Scalable and Secure Peer-to-Peer Systems in the Blockchain Era	The Ohio State University	United States	—
3	Coating Feature Analysis and Capacity Prediction for Digitalization of Battery Manufacturing: An Interpretable AI Solution (2024)	China University of Petroleum, East China, Queen's University Belfast, Shandong University	Australia, China, France	—
4	Optimizing Neural Network Architecture for Medical Image Segmentation Using Monte Carlo Tree Search (2026)	Xi'an Kedagaoxin University	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).

FOLLOW-UP WORK

[Enhancing printed circuit board defect detection through ensemble learning](#)

■ 2024 · 2024 IEEE 1st International Workshop on Future Intelligent Technologies for ..., 2024 · 12 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A Comprehensive Review of Quality Control and Reliability Research in Micro-Nano Technology (2025)	North Carolina Agricultural and Technical State University	United States	—
2	BoardVision: Deployment-ready and Robust Motherboard Defect Detection with YOLO+Faster-RCNN Ensemble (2025)	University of Maryland, Baltimore County	United States	—
3	Non-Destructive Testing of Printed Circuit Boards Using Ultrasonic Imaging and CNNs (2025)	PSG Institute of Technology and Applied Research	India	—
4	Unified YOLO Framework for Microcontroller Detection in Embedded Systems: A Quantization-Aware Approach for Integrated Circuit Boards (2025)	—	—	—
5	Computer vision and deep learning-based prediction for inkjet-printed electrodes (2025)	Dublin City University	Ireland	—

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).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of Arizona	United States	SCImago #408 · THE =138 · QS =287	13
Virginia Tech	United States	—	11
The University of Arizona	United States	SCImago #408 · THE =138 · QS =287	10
Transilvania University of Brasov	Romania	SCImago #4347 · THE 1501+ · QS 1201-1400	3
Shandong University	China	SCImago #79 · THE 251–300 · QS =339	2
Wuhan University of Technology	Peoples R China	SCImago #405 · QS 951-1000	2
The University of Alabama in Huntsville	United States	—	2
University of California, Los Angeles	United States	SCImago #70 · THE =18 · QS 46	2
Stevens Institute of Technology	United States	SCImago #1775 · THE 501–600 · QS =673	2
Virginia Commonwealth University	United States	SCImago #938 · THE 401–500 · QS 901-950	2
Xi'an Jiaotong University	China	SCImago #58 · THE 201–250 · QS 305	2
San José State University	United States	SCImago #2922	2
Another University	—	—	1
Northwestern Polytechnical University	China	SCImago #203 · THE 251–300 · QS =499	1
PSG Institute of Technology and Applied Research	India	SCImago #9473	1

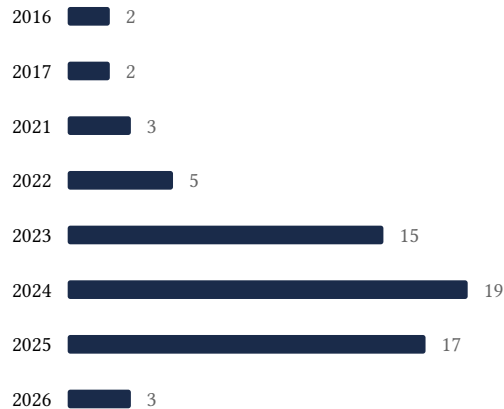
Geographic distribution of citing authors

Country	Citing papers
United States	45
China	12
Romania	3
France	2
Germany	2
Ireland	1
Israel	1
Netherlands	1
Australia	1
Peoples R China	1
Serbia	1
Slovakia	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	Expert opinion fusion framework using subjective logic for fault diagnosis	14	8 CFR 204.5(h)(3)(v) – Criterion 5
Contribution 2	A concept for set-based design of verification strategies	9	8 CFR 204.5(h)(3)(v) – Criterion 5
Contribution 3	Modeling correction activities in the context of verification strategies	9	8 CFR 204.5(h)(3)(v) – Criterion 5