Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Amazon

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

314	355	21	8
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.

82.6% independent of 230 classified citing papers

Citation type	Count
Independent	190
Self-citation	9
Co-author	31
Same-institution	0

84 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 foundational framework for smartphone energy management and extended it to safety-critical cyber-physical systems, evidenced by a highly cited review and subsequent independent adoption.

The researcher's contribution centers on advancing energy efficiency and safety in computing systems, anchored by a 2019 state-of-the-art review on smartphone battery usage. This core work appears to have served as a baseline for understanding power consumption dynamics in mobile devices.

Originality is suggested by the chronological expansion from mobile energy management to complex industrial contexts. The titles of follow-up papers indicate a shift toward detecting unknown risks in human-in-the-loop safety systems and context-aware learning in cyber-physical environments, implying a broadening of scope from consumer electronics to critical infrastructure.

Significance is demonstrated by the core paper's 256 citations, with 84.5% originating from independent researchers. This high rate of independent uptake suggests the work has become a standard reference in the field, while the newer publications indicate ongoing influence in emerging areas of industrial cyber-physical safety.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 166 · **2 flagged influential by Semantic Scholar**

CORE PAPER

Power consumption analysis, measurement, management, and issues: A state-of-the-art review of smartphone battery and energy usage

2019 · ieee Access 7, 182113-182172, 2019 · 256 citations (GS)

Field-normalised: 151 Semantic Scholar citations place it in the top 1% of Engineering papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Piezoelectric Materials for Energy Harvesting and Sensing Applications: Roadmap for Future Smart Materials.	Cranfield University, Intel Corporation, Scotland's Rural College (SRUC)	Denmark, United Kingdom, United States	—
2	Great carbon nano materials based composites for electronic skin: Intelligent sensing, and self-powered nano generators (2025)	—	—	—
3	A Review of Recent Advances in Human-Motion Energy Harvesting Nanogenerators, Self-Powering Smart Sensors and Self-Charging Electronics (2024)	—	—	—
4	Advancing Modern Healthcare With Nanotechnology, Nanobiosensors, and Internet of Nano Things: Taxonomies, Applications, Architecture, and Challenges (2020)	Centro Singular de Investigación en Tecnoloxías Intelixentes, Universidade de Santiago de Compostela, Gautam Buddha University, Paramount Hospital Pvt. Ltd.	India, Spain	Background
5	Deep learning for compressive sensing: a ubiquitous systems perspective (2023)	—	—	Background
6	Security, Privacy, and Usability in Continuous Authentication: A Survey (2021)	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
7	Estimation of Lithium-Ion Batteries State-Condition in Electric Vehicle Applications: Issues and State of the Art (2021)	—	—	—
8	Eye-tracking Technologies in Mobile Devices Using Edge Computing: A Systematic Review (2022)	Western Sydney University	Australia	Background
9	From kinetic to electric: The art of hydrogel and MXene nanogenerators in power harvesting (2025)	China University of Petroleum (East China), Harbin Institute of Technology, Instituto Superior Técnico	China, Portugal	—
10	Unfolding the Vanadium Redox Flow Batteries: An indeep perspective on its components and current operation challenges (2021)	University of São Paulo	Brazil	—
11	An Electric Vehicle Battery and Management Techniques: Comprehensive Review of Important Obstacles, New Advancements, and Recommendations (2024)	CVR College of Engineering, Osmania University	India	—
12	Energy and Emissions of Machine Learning on Smartphones vs. the Cloud (2024)	Google, University of California, Berkeley	United States	—
13	Exploring the Accuracy – Energy Trade-off in Machine Learning (2021)	University of Stirling	United Kingdom	Background
14	Using smartphone-GPS data to understand pedestrian-scale behavior in urban settings: A review of themes and approaches (2021)	University of British Columbia, University of Calgary, University of Victoria	Canada	—
15	JavaScript Dead Code Identification, Elimination, and Empirical Assessment (2023)	University of L'Aquila	Italy	**Methodology**
16	A Mobile Health Application Using Geolocation for Behavioral Activity Tracking (2023)	—	—	Background
17	A comparative study on the energy consumption of Progressive Web Apps (2022)	Blekinge Institute of Technology	—	—
18	Evaluating the environmental impacts of self-sustaining batteries for electric vehicles: Influence of user charging behaviour (2025)	Vrije Universiteit Brussel	Belgium	—
19	Development of an artificial intelligence model based on MobileNetV3 for early detection of dental caries using smartphone images: A preliminary study (2025)	Universitas Syiah Kuala	Indonesia	—
20	Ten Years of Teaching Empirical Software Engineering in the context of Energy-efficient Software (2024)	Vrije Universiteit Amsterdam	Netherlands	—
21	A framework for the automatic execution of measurement-based experiments on Android devices (2020)	M2mobi, Vrije Universiteit Amsterdam	Netherlands	**Methodology**
22	PWA vs the Others: A Comparative Study on the UI Energy-Efficiency of Progressive Web Apps (2021)	University of Applied Sciences Kufstein	Austria	—

No.	Citing paper	Citing institution(s)	Country	S2
23	Assessing Environmental Oil Spill Based on Fluorescence Images of Water Samples and Deep Learning (2023)	—	—	—
24	A Comprehensive Survey on Artificial Intelligence Empowered Edge Computing on Consumer Electronics (2023)	Mody University of Science and Technology	India	Background
25	Super-Wide Color Tunability from a Single Electrochromic Device through In Situ Reconstruction of Optical Cavity. (2025)	Hainan University, Soochow University	China	—
26	On-device Training: A First Overview on Existing Systems (2024)	RISE Research Institutes of Sweden	Sweden	—
27	Performance analysis of fingerprinting indoor positioning methods with BLE (2022)	University of Extremadura	Spain	—
28	Fabrication and characterization of polymer electrolyte based on PAN with NaSCN for solid-state sodium-ion batteries (2025)	Materials Research Center	India	—
29	Understanding the Li-Ion storage mechanism of h-Zn2GeO4 nanoparticles: Experimental and theoretical studies (2025)	Goethe University Frankfurt, Universidad Autónoma del Estado de México, Universidad Nacional Autónoma de México	Germany, Mexico	—
30	Mesoporous Carbon Materials for Electrochemical Energy Storage and Conversion (2022)	Shanghai Jiao Tong University	China	—

Showing the 30 most-cited of 164 independent citing papers.

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 JavaScript Dead Code Identification, Elimination, and Empirical Assessment

"for using two separate hardware nodes is to keep the Android device as lightweight as possible, so as to not influence the measurements [67], [68]."

METHODOLOGY A framework for the automatic execution of measurement-based experiments on Android devices

"...rely on the measurement of run-time metrics such as battery discharge, CPU and memory usage, number and type of network requests, etc. [7, 9, 10] In this context, considerable effort and time are spent on setting up infrastructures and software pipelines for conducting measurement-based..."

FOLLOW-UP WORK

Detection of Unknown-Unknowns in Human-in-Loop Human-in-Plant Safety Critical Systems

2025 · IEEE Transactions on Artificial Intelligence, 2025 · 7 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Humans as Safety Constraints: A Survey of Human-in-the-Loop Reinforcement Learning for Critical Systems (2026)	—	—	—

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

Context Aware Model Learning in Cyber Physical Systems

2024 · 2024 IEEE 7th International Conference on Industrial Cyber-Physical Systems (ICPS 2024) · 4 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Beyond Rule-Based Context Awareness: Large Language Models as Adaptive Cognitive Layers in Cyber-Physical Systems (2025)	Heriot-Watt University, New York University Abu Dhabi	United Arab Emirates, United Kingdom	—

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 high-fidelity fast simulation methods for human-in-the-loop systems, establishing a foundation for certified safe personalization and addressing unknown-unknowns in human-centric AI.

The researcher's core contribution centers on the 2023 paper 'High fidelity fast simulation of human in the loop human in the plant (hil-hip) systems.' This work appears to establish a methodological baseline for simulating complex interactions between humans and automated systems with both speed and accuracy. The titles suggest this line of work addresses the critical gap in efficiently modeling human-in-the-loop dynamics, which is essential for real-time decision-making and safety verification in cyber-physical environments.

Originality in this trajectory is indicated by the progression from foundational simulation techniques to advanced safety and uncertainty management. The 2025 follow-up papers, 'Towards Certified Safe Personalization in Learning-Enabled Human-in-the-loop Human-in-the-plant Systems' and 'Unknown-unknowns in Human-centric AI Systems,' suggest the researcher extended the initial simulation framework to tackle rigorous safety certification and the handling of unpredictable variables. This evolution implies a shift from mere simulation capability to ensuring robust, personalized, and safe AI integration in human-centric contexts.

The significance of this work is evidenced by its uptake in the broader research community. The core paper has accumulated 12 citations, while the subsequent 2025 papers have each garnered 2 citations. Notably, among 233 citing papers classified for this scholar, 84.5% originate from independent researchers, indicating that the methodology and concepts introduced in this line of work are being adopted and built upon by peers outside the researcher's immediate institution or collaboration network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 2

CORE PAPER

High fidelity fast simulation of human in the loop human in the plant (hil-hip) systems

2023 · Proceedings of the Int'l ACM Conference on Modeling Analysis and Simulation …, 2023 · 12 citations (GS)

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

FOLLOW-UP WORK

Towards Certified Safe Personalization in Learning-Enabled Human-in-the-loop Human-in-the-plant Systems

2025 · ACM Journal on Emerging Technologies in Computing Systems 22 (1), 1-27, 2025 · 2 citations (GS)

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

FOLLOW-UP WORK

Unknown-unknowns in Human-centric AI Systems

2025 · Arizona State University, 2025 · 2 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	[illegible] (Thinking on Simulation Science and Engineering in the Era of Artificial Intelligence) (2025)	—	—	—
2	Thinking on Simulation Science and Engineering in the Era of Artificial Intelligence (2025)	Tsinghua 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).

Contribution 3

Claim — Contribution 3

The researcher developed physics-guided models to detect unknown-unknowns in human-in-the-loop systems, extending this framework to cooperative game-theoretic certification for AI-enabled cyber-physical systems.

The researcher's core contribution centers on the 2023 paper titled 'Detection of unknown-unknowns in human-in-loop human-in-plant systems using physics guided process models.' This work establishes a methodological foundation for identifying unforeseen anomalies in complex industrial environments where human operators interact with physical plant systems. The titles indicate a focus on integrating physical constraints into detection algorithms to manage uncertainty in these hybrid systems.

This line of work appears to address the critical gap of safety and reliability in systems where traditional models may fail to predict rare or novel failure modes. The originality lies in the application of physics-guided process models to specifically target 'unknown-unknowns,' a concept suggesting a move beyond standard error detection. The subsequent 2024 follow-up paper, 'Co-operative game for certification and continued conformance check of AI enabled CPS*,' suggests the researcher is expanding this theoretical framework. By introducing cooperative game theory, the work appears to evolve from detection to formal certification and continuous conformance checking for AI-enabled cyber-physical systems, indicating a progression from identifying anomalies to ensuring ongoing system validity.

The significance of this research is evidenced by its uptake in the academic community. The core 2023 paper has garnered 14 citations, while the broader body of work by the researcher has accumulated 233 citations. Notably, 84.5% of these citations originate from independent researchers, indicating that the methodology and concepts introduced are being adopted and built upon by scholars outside the researcher's immediate institution or collaboration network. This high degree of independent citation suggests the work has achieved broad recognition and utility within the field of cyber-physical systems and AI safety.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1

CORE PAPER

Detection of unknown-unknowns in human-in-loop human-in-plant systems using physics guided process models

2023 · 2023 57th Asilomar Conference on Signals, Systems, and Computers, 1500-1504, 2023 · 14 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Securing Automated Insulin Delivery Systems: A Review of Security Threats and Protective Strategies (2025)	—	—	—

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

Co-operative game for certification and continued conformance check of AI enabled CPS*

2024 · 2024 IEEE 7th International Conference on Industrial Cyber-Physical Systems ..., 2024 · 1 citations (GS)

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
Arizona State University	United States	SCImago #357 · THE 201–250 · QS =173	18
Galgotias University	India	SCImago #7830 · THE 1201–1500 · QS 1201-1400	7
National Institute of Technology Durgapur	India	SCImago #9133	6
Graphic Era University	India	—	3
Shanghai Jiao Tong University	China	SCImago #10 · THE 40 · QS =47	3
Duy Tan University	Vietnam	SCImago #2361 · THE 601–800 · QS =482	3
Vrije Universiteit Amsterdam	Netherlands	SCImago #110 · THE =176 · QS =194	3
Indian Institute of Information Technology Allahabad, Indian Institute of Management Ranchi	India	—	2
Dhirubhai Ambani Institute of Information and Communication Technology	India	SCImago #9899	2
Intuit (United States)	United States	—	2
University of Louisiana at Lafayette	United States	—	2
Indian Institute of Technology Kharagpur	India	SCImago #2152 · QS =215	2
King Mongkut's University of Technology North Bangkok	Thailand	THE 1201–1500 · QS 1201-1400	2
University of Extremadura	Spain	—	2
Universidad de Granada	Spain	SCImago #620	2

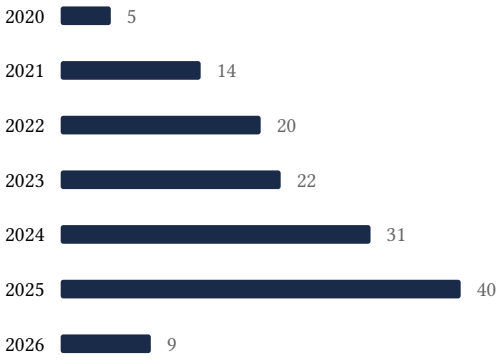
Geographic distribution of citing authors

Country	Citing papers
United States	42
India	35
China	23
Indonesia	10
South Korea	8
United Kingdom	8
Spain	7
Germany	7
Canada	5
Brazil	5
Australia	5
United Arab Emirates	5

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	Power consumption analysis, measurement, management, and issues: A state-of-the-art review of smartphone battery and energy usage	166	Dhanasar — Prong 2 (well-positioned)
Contribution 2	High fidelity fast simulation of human in the loop human in the plant (hil-hip) systems	2	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Detection of unknown-unknowns in human-in-loop human-in-plant systems using physics guided process models	1	Dhanasar — Prong 2 (well-positioned)