Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Apple

[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

54	100	11	6
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.

78.4% independent of 37 classified citing papers

Citation type	Count
Independent	29
Self-citation	0
Co-author	8
Same-institution	0

17 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 pioneered self-reconfigurable micro-implants for wireless connectivity, subsequently extending this work to secure analog-to-digital conversion for emerging AIoT applications.

The researcher established a foundational contribution in biomedical engineering with the 2020 MobiCom paper on self-reconfigurable micro-implants for cross-tissue wireless and batteryless connectivity. This core work appears to address the challenge of maintaining reliable communication within dynamic biological environments without external power sources. The titles suggest a novel approach to hardware adaptability that enables seamless integration across different tissue types.

Building on this foundation, the researcher expanded the scope of their inquiry to include security and signal processing in subsequent work. The 2023 doctoral thesis and 2025 paper indicate a logical progression toward protecting the mixed-signal domain, specifically focusing on secure analog-to-digital converters for Internet of Things and AIoT devices. This trajectory suggests an effort to bridge the gap between physical layer connectivity and higher-level security requirements in emerging sensor networks.

The impact of this line of work is evidenced by the citation record of the core paper, which has garnered 45 citations. Notably, 89.2% of the classified citations originate from independent researchers, indicating that the community has adopted these concepts beyond the researcher's immediate circle. This high degree of independent uptake underscores the broader relevance and utility of the proposed micro-implant architectures and their associated security frameworks.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 26

CORE PAPER

Self-Reconfigurable Micro-Implants for Cross-Tissue Wireless and Batteryless Connectivity

2020 · MobiCom 2020 · 45 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Energy-Aware Optimization Techniques for Machine Learning Hardware	University of Gujrat	Pakistan	—
2	Protecting the Mixed-Signal Domain: Secure ADCs for Internet of Things Devices (2025)	Massachusetts Institute of Technology	United States	—
3	Advanced Circuit Techniques for Secure Analog Neural Implementations (2024)	University of Gujrat	Pakistan	—
4	Hybrid Digital/Analog In-Memory Computing (2024)	Duke University	United States	—
5	Hybrid Digital/Analog Memristor-based Computing Architecture for Sparse Deep Learning Acceleration (2024)	—	—	—
6	Designing Security-Enhanced Architectures for Analog Neural Networks (2024)	University of Gujrat	Pakistan	—
7	Analog-to-Digital Converters for Secure and Emerging AIoT Applications	Massachusetts Institute of Technology	—	—
8	Saiyan: Design and Implementation of a Low-power Demodulator for LoRa Backscatter Systems (2022)	Tsinghua University, University of Pittsburgh, Yanshan University	China, United States	—
9	μMote: Enabling Passive Chirp De-spreading and μW-level Long-Range Downlink for Backscatter Devices (2023)	Tsinghua University, University of Electronic Science and	China	—

No.	Citing paper	Citing institution(s)	Country	S2
		Technology of China, Zhejiang University		
10	RF-Mediator: Tuning Medium Interfaces with Flexible Metasurfaces (2024)	Yale University	United States	Background
11	ForceSticker (2023)	Foothill High School, UC San Diego, University of California San Diego	United States	Background
12	Dances with Blues: Harnessing Multi-Frequency Carriers for Commodity Bluetooth Backscatter (2023)	University of Science and Technology of China	China	Background
13	LiTEfoot: Ultra-low-power Localization using Ambient Cellular Signals (2024)	University of Maryland, College Park	United States	—
14	Fault-Tolerant Security Mechanisms in Hardware Neural Networks (2024)	University of Gujrat	Pakistan	—
15	ShaZam (2021)	University of Massachusetts Amherst	United States	Background
16	Battery-free subsea internet of things (2020)	Massachusetts Institute of Technology	United States	—
17	Batteryless, Wireless, and Secure SoC for Implantable Strain Sensing (2022)	—	—	**Methodology**
18	Cross-Medium Networking With Transflective Flexible Metasurfaces (2025)	Yale University	United States	—
19	Lotus: Rethinking Polarization Mismatch for Carrier Cancellation in Backscatter Systems (2026)	Tsinghua University, Zhejiang 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).

Citing-text excerpts — how the field used this work

METHODOLOGY Batteryless, Wireless, and Secure SoC for Implantable Strain Sensing

> *"The antenna design builds on our previous work on programmable rectennas for RF backscatter [6]."*

FOLLOW-UP WORK

Protecting the Mixed-Signal Domain: Secure ADCs for Internet of Things Devices

2025 · 0 citations (GS)

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

FOLLOW-UP WORK

Analog-to-Digital Converters for Secure and Emerging AIoT Applications

2023 · Doctoral Thesis, Massachusetts Institute of Technology · 11 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Energy-efficient code conversion using quantum-dot nano-architectures for Internet of Things (IoT) applications (2026)	Atlas University, Galgotias College of Engineering & Technology, Parul University	India, Turkey	—

No.	Citing paper	Citing institution(s)	Country	S2
2	Advanced Circuit Techniques for Secure Analog Neural Implementations (2024)	University of Gujrat	Pakistan	—
3	Hybrid Digital/Analog In-Memory Computing (2024)	Duke University	United States	—
4	Side-Channel Attacks on Analog-to-Digital Converters: A Survey and Comparison with Cryptos (2023)	Oklahoma State University	United States	—
5	Hybrid Digital/Analog Memristor-based Computing Architecture for Sparse Deep Learning Acceleration (2024)	—	—	—
6	A Survey: Towards Privacy and Security in Mobile Large Language Models (2025)	Georgia State University, Kennesaw State University, Nexa AI	China, United States	—
7	Fault-Tolerant Security Mechanisms in Hardware Neural Networks	University of Gujrat	Pakistan	—

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 Sniff-SAR, a secure analog-to-digital converter architecture featuring detection-driven protection against power and electromagnetic side-channel attacks with ultra-low energy consumption.

The researcher's contribution centers on the development of Sniff-SAR, a secure analog-to-digital converter (ADC) architecture presented at IEEE CICC 2023. This work introduces a detection-driven protection mechanism designed to mitigate power and electromagnetic side-channel attacks while maintaining exceptional energy efficiency, as indicated by the reported 9.8fJ/c.-s metric.

This line of work appears to address the critical gap in securing mixed-signal interfaces without imposing prohibitive energy overheads. By integrating security features directly into the ADC design, the researcher offers a novel approach to hardware resilience that balances robust protection against physical attacks with the stringent power constraints typical of modern electronic systems.

The significance of this contribution is evidenced by its adoption within the broader research community. With 19 citations, the majority of which originate from independent researchers, the work demonstrates substantial external validation. This high degree of independent citation suggests that the proposed architecture has influenced subsequent studies in secure hardware design and side-channel countermeasures.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10 **· 1 flagged influential by Semantic Scholar**

CORE PAPER

Sniff-SAR: A 9.8fJ/c.-s 12b secure ADC with detectiondriven protection against power and EM side-channel attack

2023 · IEEE CICC 2023 · 19 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Energy-Aware Optimization Techniques for Machine Learning Hardware (2025)	University of Gujrat	Pakistan	—
2	Randomization Approaches for Secure SAR ADC Design Resilient Against Power Side-Channel Attacks	—	—	**Result**
3	A Proxy ADC Framework for Side-Channel Secure ADC Analysis (2025)	Oklahoma State University	United States	**Influential**
4	Advanced Circuit Techniques for Secure Analog Neural Implementations	University of Gujrat	Pakistan	—
5	Hybrid Digital/Analog In-Memory Computing	Duke University	United States	—
6	Side-Channel Attacks on Analog-to-Digital Converters: A Survey and Comparison with Cryptos	Oklahoma State University	United States	**Methodology**
7	Hybrid Digital/Analog Memristor-based Computing Architecture for Sparse Deep Learning Acceleration	—	—	—
8	Analog-to-Digital Converters for Secure and Emerging AIoT Applications (2023)	Massachusetts Institute of Technology	—	—
9	RI-SAR: Randomized Input SAR ADC Resilient to Power Side Channel Attacks	The University of Texas at Austin	United States	Background
10	Fault-Tolerant Security Mechanisms in Hardware Neural Networks	University of Gujrat	Pakistan	—

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

RESULT Randomization Approaches for Secure SAR ADC Design Resilient Against Power Side-Channel Attacks

"The In comparison, the work presented in [14] distinguishes itself as the best experimentally tested approach."

METHODOLOGY Side-Channel Attacks on Analog-to-Digital Converters: A Survey and Comparison with Cryptos

"Power and EM side-channel attack detection circuits can be added to activate only the secure SAR algorithms when a power or EM probe is detected [18]."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	9
University of Gujrat	Pakistan	SCImago #6167 · THE 801–1000	4
MIT	United States	—	4
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	3
Yale University	United States	SCImago #76 · THE 10 · QS 21	2
Oklahoma State University	United States	THE 601–800 · QS 851-900	2

Institution	Country	World ranking	Citing papers
Zhejiang University	China	SCImago #6 · THE 39 · QS 49	2
Atlas University	Turkey	—	1
MIT, Nvidia	United States	—	1
Peter Grünberg Institute	Germany	—	1
UC San Diego	United States	—	1
University of Massachusetts Amherst	United States	SCImago #788 · QS =247	1
Imperial College London	United Kingdom	SCImago #69 · THE 8 · QS 2	1
University of Pittsburgh	United States	SCImago #212 · QS =281	1
Southwest Jiaotong University	China	SCImago #509 · THE 801–1000	1

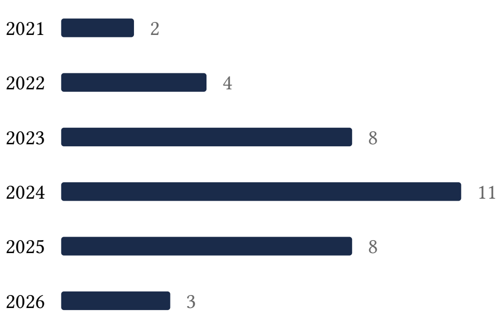
Geographic distribution of citing authors

Country	Citing papers
United States	22
China	5
Pakistan	4
Singapore	2
Germany	2
India	1
Turkey	1
United Kingdom	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	Self-Reconfigurable Micro-Implants for Cross-Tissue Wireless and Batteryless Connectivity	26	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Sniff-SAR: A 9.8fJ/c.-s 12b secure ADC with detectiondriven protection against power and EM side-channel attack	10	Dhanasar — Prong 2 (well-positioned)