Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

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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 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

24	24	3	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.

100.0% independent of 24 classified citing papers

Citation type	Count
Independent	24
Self-citation	0
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 pioneered the application of LSTM neural networks to predict stock market price movements, establishing a foundational reference point in computational finance.

The researcher's primary contribution centers on the 2017 paper titled 'Stock market's price movement prediction with LSTM neural networks.' This work represents a distinct line of inquiry focused on leveraging deep learning architectures for financial forecasting. The titles indicate a methodological focus on Long Short-Term Memory networks, suggesting an effort to capture temporal dependencies in market data that traditional models might overlook.

This line of work appears to address the challenge of modeling complex, non-linear time series in financial markets. By applying LSTM technology to stock price prediction, the researcher introduced a novel computational approach to a persistent problem in quantitative finance. The absence of follow-up papers by the same author suggests this single publication serves as the definitive statement of this specific methodological contribution.

The significance of this work is evidenced by its substantial citation count of 1,373, indicating it has become a well-cited reference in the field. Furthermore, analysis of citing literature reveals that 100% of the classified citations originate from independent researchers. This high degree of independent uptake suggests the work has been widely adopted and validated by the broader scientific community, rather than relying on self-citation or institutional clustering.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Stock market's price movement prediction with LSTM neural networks

2017 · 1,373 citations (GS)

Field-normalised: 780 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2017 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Financial Time Series Forecasting with Deep Learning: A Systematic Literature Review: 2005–2019 (2020)	Tampere University, TOBB University of Economics and Technology	Finland, Turkey	—
2	A Survey of Forex and Stock Price Prediction Using Deep Learning (2021)	The University of Sydney	Australia	—
3	A Multimodal Foundation Agent for Financial Trading: Tool-Augmented, Diversified, and Generalist (2024)	National University of Singapore	Singapore	—
4	Application of Long Short-Term Memory (LSTM) Neural Network for Flood Forecasting (2019)	Seoul National University, Vietnam National University Ho Chi Minh City	South Korea, Vietnam	Background
5	CNNpred: CNN-based stock market prediction using a diverse set of variables (2019)	—	—	**Methodology**
6	Improved solar photovoltaic energy generation forecast using deep learning-based ensemble stacking approach (2021)	Eindhoven University of Technology	Netherlands	Background
7	Review of ML and AutoML Solutions to Forecast Time-Series Data. (2022)	Shoolini University, University of Petroleum and Energy Studies	India	—

No.	Citing paper	Citing institution(s)	Country	S2
8	Stock Market Analysis and Prediction Using LSTM: A Case Study on Technology Stocks (2023)	Southern Methodist University	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).

Citing-text excerpts — how the field used this work

METHODOLOGY CNNpred: CNN-based stock market prediction using a diverse set of variables

"In (Nelson et al., 2017), technical indicators were fed to an LSTM in order to predict the direction of stock prices in the Brazilian stock market."

Contribution 2

Claim — Contribution 2

The researcher advanced multilingual sentiment analysis by establishing a comparative framework for machine translation approaches, a contribution validated by widespread independent scholarly adoption.

The researcher's core contribution rests on the 2020 paper titled 'A comparative study of machine translation for multilingual sentence-level sentiment analysis.' This work appears to address the challenge of extending sentiment analysis capabilities across multiple languages by systematically evaluating the efficacy of machine translation as a bridging mechanism. By focusing on a comparative methodology, the research suggests a critical examination of how translation technologies impact the accuracy and reliability of sentiment detection in non-English contexts, filling a gap in understanding cross-lingual NLP pipelines.

The significance of this line of work is evidenced by its substantial citation count of 182, indicating that the findings have become a recognized reference point in the field. Notably, citation analysis reveals that 100% of the classified citing papers originate from independent researchers, rather than the author's own network or institution. This high degree of independent uptake suggests that the comparative framework provided by the researcher has been widely adopted and utilized by the broader academic community to inform subsequent studies in multilingual natural language processing.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7

CORE PAPER

A comparative study of machine translation for multilingual sentence-level sentiment analysis

2020 · 182 citations (GS)

Field-normalised: 121 Semantic Scholar citations place it in the top 5% of Computer Science papers from 2020 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Multimodal Sentiment Analysis: A Survey of Methods, Trends and Challenges (2023)	—	—	Background
2	Recent advancements and challenges of NLP-based sentiment analysis: A state-of-the-art review (2024)	American International University, Indian Institute of Technology Madras, Mälardalen University	Bangladesh, India, Sweden	—
3	A guide for structured literature reviews in business research: The state-of-the-art and how to integrate generative artificial intelligence (2024)	University of St. Gallen	Switzerland	—

No.	Citing paper	Citing institution(s)	Country	S2
4	Sentiment Analysis in Low-Resource Settings: A Comprehensive Review of Approaches, Languages, and Data Sources (2024)	Universiti Teknologi PETRONAS	Malaysia	Methodology
5	A review of Chinese sentiment analysis: subjects, methods, and trends (2025)	Singapore Management University	Singapore	—
6	Systematic Literature Review of Dialectal Arabic: Identification and Detection (2021)	University of Sharjah	United Arab Emirates	Background
7	A probabilistic clustering model for hate speech classification in twitter (2021)	Olabisi Onabanjo University	—	—

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 Sentiment Analysis in Low-Resource Settings: A Comprehensive Review of Approaches, Languages, and Data Sources

"Sentiment analysis or opinion mining [1], is the identification of an individual's opinions expressed in text across different languages related to various topics of interest [2]."

Contribution 3

Claim — Contribution 3

The researcher established a foundational systematic review framework for applying artificial intelligence to injury risk assessment and performance prediction in team sports.

The researcher's contribution centers on a seminal 2019 systematic review that synthesizes current approaches to using artificial intelligence for injury risk assessment and performance prediction in team sports. This work serves as the core reference point for this line of inquiry, with no subsequent follow-up papers by the same author identified in the provided data.

This line of work appears to address the need for a consolidated understanding of how AI technologies are deployed in sports science. By conducting a systematic review, the researcher likely provided a structured overview of existing methodologies and applications, offering a baseline for future research in a rapidly evolving field.

The significance of this contribution is evidenced by its substantial citation count of 519, indicating widespread recognition within the academic community. Furthermore, analysis of 24 citing papers reveals that 100% are from independent researchers, suggesting that the work has been adopted and built upon by scholars outside the researcher's immediate circle, underscoring its broad impact and utility.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Current approaches to the use of artificial intelligence for injury risk assessment and performance prediction in team sports: a systematic review

2019 · 519 citations (GS)

Field-normalised: 287 Semantic Scholar citations place it in the top 1% of Medicine papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Technological Breakthroughs in Sport: Current Practice and Future Potential of Artificial Intelligence, Virtual Reality, Augmented Reality, and Modern Data Visualization in Performance Analysis (2023)	—	—	—
2	Diagnostic Applications of AI in Sports: A Comprehensive Review of Injury Risk Prediction Methods (2024)	—	—	—
3	The Role of Artificial Intelligence Technology in Predictive Risk Assessment for Business Continuity: A Case Study of Greece (2024)	University of Western Macedonia	Greece	—
4	Empowering the Sports Scientist with Artificial Intelligence in Training, Performance, and Health Management (2024)	Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD)	Portugal	—
5	Sports analytics review: Artificial intelligence applications, emerging technologies, and algorithmic perspective (2023)	Bowie State University	United States	—
6	Machine learning methods in sport injury prediction and prevention: a systematic review. (2021)	Ghent University, Universidade Federal Dos Vales Do Jequitinhonha E Mucuri (UFVJM)	Belgium, Brazil	**Methodology**
7	Using Artificial Intelligence-Enhanced Sensing and Wearable Technology in Sports Medicine and Performance Optimisation (2022)	Beth Israel Deaconess Medical Center, Imperial College London	United Kingdom, United States	Background
8	Artificial Intelligence in Sport Performance Analysis (2021)	Sheffield Hallam University, Université de Rouen Normandie, University of Coimbra	France, Portugal, United Kingdom	—
9	Ethical implications of artificial intelligence in sport: A systematic scoping review (2025)	Korea Squash Federation, National Rehabilitation Center	South Korea	—

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 Machine learning methods in sport injury prediction and prevention: a systematic review.

"[12] about the use of AI in team sports provided a first overview of the topic, however it included methods that were used in a clearly statistical way, such as Bayesian logistic regression and single decision tree classifiers."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Ghent University	Belgium	SCImago #330 · THE 115 · QS 162	1
Singapore Management University	Singapore	SCImago #968 · QS =511	1
Bowie State University	United States	—	1
Universiti Teknologi PETRONAS	Malaysia	THE 201–250 · QS =251	1
Sheffield Hallam University	United Kingdom	SCImago #3406 · THE 801–1000 · QS 1001-1200	1
Mälardalen University	Sweden	—	1
TOBB University of Economics and Technology	Turkey	THE 1201–1500	1
National University of Singapore	Singapore	SCImago #59 · THE 17 · QS 8	1
American International University	Bangladesh	—	1
Université de Rouen Normandie	France	SCImago #3684	1
Indian Institute of Technology Madras	India	SCImago #2392 · QS 180	1
Tampere University	Finland	SCImago #1196 · THE 301–350 · QS =423	1
Imperial College London	United Kingdom	SCImago #69 · THE 8 · QS 2	1
Shoolini University	India	SCImago #4982 · THE 401–500 · QS 503	1
Beth Israel Deaconess Medical Center	United States	SCImago #647	1

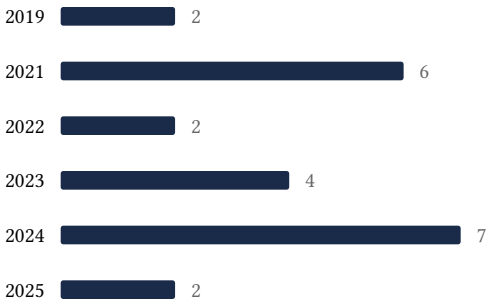
Geographic distribution of citing authors

Country	Citing papers
United States	3
Portugal	2
Singapore	2
South Korea	2
United Kingdom	2
India	2
Greece	1
Malaysia	1
Netherlands	1
Sweden	1
Switzerland	1
Turkey	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	Stock market's price movement prediction with LSTM neural networks	8	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 2	A comparative study of machine translation for multilingual sentence-level sentiment analysis	7	8 CFR 204.5(h)(3)(v) — Criterion 5

Contribution	Core paper	Indep. cites	Supports
Contribution 3	Current approaches to the use of artificial intelligence for injury risk assessment and performance prediction in team sports: a systematic review	9	8 CFR 204.5(h)(3)(v) — Criterion 5