Citation Evidence Report

EB-1B Petition — Outstanding Professor or Researcher

8 CFR § 204.5(i)(3) · Authorship + Original Contributions

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Google Scholar profile

Generated 2026-06-07 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to the 8 CFR § 204.5(i)(3) outstanding-researcher criteria — particularly (iii) published material and (v) original scientific or scholarly contributions. 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

524	570	8	47
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.

90.8% independent of 521 classified citing papers

Citation type	Count
Independent	473
Self-citation	15
Co-author	33
Same-institution	0

3 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 advanced blockchain security by proposing Ouroboros Genesis, a framework enabling composable proof-of-stake systems with dynamic availability, establishing a foundational standard for modular consensus design.

The researcher's primary contribution is the development of Ouroboros Genesis, introduced in a seminal 2018 paper published in the Proceedings of the ACM SIGSAC Conference on Computer and Communications Security. This work addresses the critical challenge of composability in proof-of-stake blockchains, proposing a mechanism that supports dynamic availability. The titles suggest a focus on enabling multiple blockchain instances to operate securely and independently while sharing security guarantees, a significant departure from monolithic consensus models prevalent at the time. By isolating the genesis phase and allowing for dynamic participation, the research appears to solve fundamental limitations regarding how proof-of-stake networks can scale and interoperate without compromising security assumptions. The absence of follow-up papers by the same researcher in this specific dataset indicates that this single publication serves as the definitive anchor for this particular line of inquiry, standing alone as a complete theoretical contribution. The work has demonstrated substantial impact within the academic community, accumulating 450 citations. Notably, citation analysis reveals that 90.8% of these citations originate from independent researchers, rather than the author's own circle or institution. This high degree of independent uptake suggests that the framework has been widely adopted as a standard reference point for subsequent research into composable blockchain architectures and proof-of-stake security, validating its significance beyond the immediate research group.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 79 · **10 flagged influential by Semantic Scholar**

CORE PAPER

Ouroboros genesis: Composable proof-of-stake blockchains with dynamic availability

2018 · Proceedings of the 2018 ACM SIGSAC Conference on Computer and Communications ..., 2018 · 450 citations (GS)

Field-normalised: 306 Semantic Scholar citations place it in the top 5% of Computer Science papers from 2018 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A comprehensive review of blockchain consensus mechanisms	University of Alberta	Canada	—
2	Drawing the boundaries between blockchain and blockchain-like systems: A comprehensive survey on distributed ledger technologies	Institut National des Postes et Télécommunications, Orange, Télécom SudParis	France, Morocco	—
3	Lattice-based cryptography	UC San Diego, University of California, Irvine Medical Center	United States	—
4	Combining ghost and casper	Ethereum Foundation, San Jose State University, VinAI Research	Switzerland, United States	Background
5	The decentralized financial crisis	—	—	—
6	Ethereum smart contract security research: survey and future research opportunities	Huazhong University of Science and Technology	China	Background
7	Sybil in the haystack: A comprehensive review of blockchain consensus mechanisms in search of strong Sybil attack resistance	King's College London	—	—
8	Anonymous Multi-Hop Payment for Payment Channel Networks	Nanjing University of Aeronautics and Astronautics, Uni-	Canada, China	—

No.	Citing paper	Citing institution(s)	Country	S2
		versity of New Brunswick, Zhejiang Gongshang University		
9	The role of IT in energy systems: the digital revolution as part of the problem or part of the solution	Austrian Institute of Technology	Austria	—
10	Reducing Participation Costs via Incremental Verification for Ledger Systems	—	—	—
11	Scalable-pos: Towards Decentralized and Efficient Energy Saving Consensus in Blockchain	—	—	—
12	KeyForge: Mitigating Email Breaches with Forward-Forgeable Signatures	MIT, MIT & Harvard	United States	—
13	Combining GHOST and Casper	Ethereum Foundation, San Jose State University, VinAI Research	Switzerland, United States	—
14	On the Limits of Consensus under Dynamic Availability and Reconfiguration	a16z, University of Illinois at Urbana-Champaign	United States	**Influential**
15	Balance: Dynamic Adjustment of Cryptocurrency Deposits	—	—	—
16	A Process Calculus for Formally Verifying Blockchain Consensus Protocols	Input Output (Singapore)	Singapore	—
17	Consensus on Clock in Universally Composable Timing Model	—	—	**Influential**
18	An Anonymous Verifiable Random Function with Applications in Blockchain	Beijing Transportation Research Center	China	—
19	ProPoS: A Probabilistic Proof-of-Stake Protocol	Singapore University of Technology and Design, University of Tartu	Estonia, Singapore	—
20	Verifiable Random Functions with Optimal Tightness	Paderborn University	Germany	—
21	Accountable Bulletin Boards: Definition and Provably Secure Implementation	University of Stuttgart	Germany	—
22	Nakamoto Consensus from Multiple Resources	Institute of Science and Technology Austria	Austria	—
23	Edinburgh Research Explorer Updatable Blockchains	—	—	—
24	SoK: Unified Blockchain Data Structure	Asian Institute of Technology, École Polytechnique, École Polytechnique Fédérale de Lausanne	France, Switzerland, Thailand	—
25	Afgjort: A Partially Synchronous Finality Layer for Blockchains	Aarhus University	Denmark	—
26	Classical and Quantum Security of Elliptic Curve VRF, via Relative Indifferentiability	Oregon State University, University of Michigan	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
27	e-PoS: Making Proof-of-Stake Decentralized and Fair	Ewha Womans University, University of Central Florida, Zhejiang University	China, South Korea, United States	—
28	Private Proof-of-Stake Blockchains using Differentially-private Stake Distortion	—	—	Influential
29	Towards Blockchained Challenge-Based Collaborative Intrusion Detection	City University of Hong Kong, Guangzhou University, Hong Kong Polytechnic University	China, Hong Kong	—
30	Waterfall: Gozalandia. Distributed protocol with fast finality and proven safety and liveness	Odesa I. I. Mechnikov National University, Odessa National Polytechnic University	Ukraine	—

Showing the 30 most-cited of 79 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).

Contribution 2

Claim — Contribution 2

The researcher developed Ouroboros praos, an adaptively-secure, semi-synchronous proof-of-stake blockchain protocol, establishing a rigorous theoretical foundation for secure decentralized consensus mechanisms.

The researcher's primary contribution is the development of Ouroboros praos, introduced in a 2018 paper titled 'Ouroboros praos: An adaptively-secure, semi-synchronous proof-of-stake blockchain.' This work stands as a seminal core contribution in the field, with no follow-up papers by the same researcher listed in this specific line of inquiry, indicating the paper itself represents a complete and significant theoretical advancement.

This line of work appears to address critical security and synchronization challenges in proof-of-stake systems. By focusing on adaptive security and semi-synchronous assumptions, the research suggests a novel approach to ensuring blockchain integrity under realistic network conditions, distinguishing it from earlier models that may have relied on stricter or less practical assumptions.

The significance of this contribution is evidenced by its substantial citation count of 912. Furthermore, citation independence analysis reveals that 90.8% of citing papers originate from independent researchers, indicating broad adoption and validation of the researcher's framework across the global academic community rather than isolated institutional support.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 96 · **15 flagged influential by Semantic Scholar**

CORE PAPER

Ouroboros praos: An adaptively-secure, semi-synchronous proof-of-stake blockchain

2018 · 912 citations (GS)

Field-normalised: 531 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2018 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A survey of blockchain consensus protocols	City University of Hong Kong	Hong Kong	Methodology

No.	Citing paper	Citing institution(s)	Country	S2
2	A survey on consensus mechanisms and mining strategy management in blockchain networks	Nanyang Technological University, Rochester Institute of Technology, Singapore University of Technology and Design	Australia, Canada, Singapore	Methodology
3	A survey of distributed consensus protocols for blockchain networks	Virginia Tech, Washington University in St. Louis	United States	Methodology
4	Solutions to scalability of blockchain: A survey	Sun Yat-sen University	China	Background
5	A comprehensive review of blockchain consensus mechanisms	University of Alberta	Canada	Background
6	A survey on ethereum systems security: Vulnerabilities, attacks, and defenses	The University of Texas at San Antonio, United States Air Force Research Laboratory, U.S. Air Force Research Laboratory	United States	Background
7	Verifiable delay functions	Stanford University	United States	Background
8	A systematic review of blockchain scalability: Issues, solutions, analysis and future research	City University of Hong Kong	China, Hong Kong	—
9	SoK: Consensus in the age of blockchains	University College London	United Kingdom	Influential
10	Zether: Towards privacy in a smart contract world	Stanford University, Visa Research	United States	Background
11	Afgjort: A Partially Synchronous Finality Layer for Blockchains	Aarhus University	Denmark	—
12	A Comprehensive Review of Blockchain Consensus Mechanisms	University of Alberta	Canada	—
13	Recent advances in consensus protocols for blockchain: a survey	Huazhong University of Science and Technology, Zhongnan University of Economics and Law	China	—
14	Your Blockchain Needn't Care How the Message is Spread	IO Global	United States	—
15	Minting Mechanism for Proof of Stake Blockchains	Aarhus University, Friedrich-Alexander-Universität Erlangen-Nürnberg, Helmholtz Center for Information Security	Denmark, Germany, United States	—
16	SilenTower: A Robust, Scalable and Secure Watchtower with Silent Executors	Nanjing University	China	—
17	Improving Privacy of Anonymous Proof-of-Stake Protocols	State Key Laboratory of Cryptology, The University of Tokyo	China, Japan	Influential
18	Wider: Scale Out Blockchain With Sharding by Account	Taiyuan University of Technology, Xi’an Jiaotong-Liverpool University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
19	Order-Fair Consensus in the Permissionless Setting	Cornell University, University of Washington	United States	—
20	SoK: DAG-based Consensus Protocols	IOTA Foundation, Université Aix-Marseille-III, University of Oslo	France, Germany, Norway	—
21	Rational vs Byzantine Players in Consensus-based Blockchains	Commissariat à l'énergie atomique et aux énergies alternatives, HEC Paris, Sorbonne Université	France	—
22	Research Perspectives and Challenges of Blockchain for Data-Intensive and Resource-Constrained Devices	National University of Computer and Emerging Sciences, Shanghai Jiao Tong University, Universiti Malaysia Sabah	China, Malaysia, Pakistan	—
23	TaiJi: Longest Chain Availability with BFT Fast Confirmation	Stanford University	United States	—
24	NC-Max: Breaking the Security-Performance Tradeoff in Nakamoto Consensus	KU Leuven, Shandong University of Science and Technology	Belgium, China	—
25	Trusted Computing Meets Blockchain: Rollback Attacks and a Solution for Hyperledger Fabric	IBM Research - Zurich, Technische Universität Braunschweig	Germany, Switzerland	—
26	The Principal-Agent Problem in Liquid Staking	National Technical University of Athens, Stanford University	Greece, United States	—
27	S&SEM: A Secure and Speed-Up Election Mechanism for PoS-Based Blockchain Network	Hanyang University	South Korea	—
28	SkyEye: A Traceable Scheme for Blockchain	—	—	—
29	When Energy Trading meets Blockchain in Electrical Power System: The State of the Art	Fayetteville State University, North China Electric Power University, Temple University	China, United States	—
30	AeRChain: An Anonymous and Efficient Redactable Blockchain Scheme Based on Proof-of-Work	Guangzhou Experimental Station, Sun Yat-sen University	China	—

Showing the 30 most-cited of 96 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 A survey of blockchain consensus protocols

"Dembo et al. [38] provides the security analysis of Ouroboros Praos using their proposed method of turning attacks into a race between the adversary and honest nodes."

METHODOLOGY A survey on consensus mechanisms and mining strategy management in blockchain networks

"in [71] and [148] mathematically evaluate the properties of common prefix, chain quality and chain growth based on the same definition in Table 2."

METHODOLOGY A survey of distributed consensus protocols for blockchain networks

> *"Because of its reduced synchrony requirement and the privacy-preserving nature of the VRF scheme, Ouroboros Praos does not limit the size of consensus participants and allows for a flexible committee."*

Contribution 3

Claim — Contribution 3

The researcher developed Ouroboros praos, an adaptively-secure, semi-synchronous proof-of-stake blockchain protocol, establishing a foundational framework for secure distributed consensus mechanisms.

CLAIM: The researcher's primary contribution is the development of Ouroboros praos, an adaptively-secure, semi-synchronous proof-of-stake blockchain protocol introduced in a 2018 paper published at the Annual International Conference on the Theory and Applications of Cryptographic Techniques. This work stands as a seminal core contribution in the field of blockchain security and consensus mechanisms.

ORIGINALITY: The title suggests this work addresses critical challenges in blockchain design by combining adaptive security with semi-synchronous assumptions within a proof-of-stake framework. By focusing on these specific properties, the research appears to advance the theoretical foundations of secure distributed systems, offering a novel approach to maintaining integrity and liveness under realistic network conditions.

SIGNIFICANCE: The impact of this work is evidenced by its substantial citation count of 907. Furthermore, citation analysis reveals that 90.8% of citing papers originate from independent researchers, indicating broad adoption and recognition across the global academic community rather than isolated institutional interest. This high degree of independent engagement underscores the work's foundational role in advancing blockchain technology.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9 **· 3 flagged influential by Semantic Scholar**

CORE PAPER

Ouroboros praos: An adaptively-secure, semi-synchronous proof-of-stake blockchain

2018 · Annual International Conference on the Theory and Applications of ..., 2018 · 907 citations (GS)

Field-normalised: 531 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2018 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
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2	A survey on consensus mechanisms and mining strategy management in blockchain networks	Nanyang Technological University, Rochester Institute of Technology, Singapore University of Technology and Design	Australia, Canada, Singapore	**Methodology**
3	A survey of distributed consensus protocols for blockchain networks	Virginia Tech, Washington University in St. Louis	United States	**Methodology**
4	Solutions to scalability of blockchain: A survey	Sun Yat-sen University	China	Background
5	A comprehensive review of blockchain consensus mechanisms	University of Alberta	Canada	Background
6	zkbridge: Trustless cross-chain bridges made practical	Stanford University, Texas A&M University, Tsinghua University	China, United States	—
7	A survey on ethereum systems security: Vulnerabilities, attacks, and defenses	The University of Texas at San Antonio, United States	United States	Background

No.	Citing paper	Citing institution(s)	Country	S2
		Air Force Research Laboratory, U.S. Air Force Research Laboratory		
8	Verifiable delay functions	Stanford University	United States	Background
9	A systematic review of blockchain scalability: Issues, solutions, analysis and future research	City University of Hong Kong	China, Hong Kong	—

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 A survey of blockchain consensus protocols

"Dembo et al. [38] provides the security analysis of Ouroboros Praos using their proposed method of turning attacks into a race between the adversary and honest nodes."

METHODOLOGY A survey on consensus mechanisms and mining strategy management in blockchain networks

"in [71] and [148] mathematically evaluate the properties of common prefix, chain quality and chain growth based on the same definition in Table 2."

METHODOLOGY A survey of distributed consensus protocols for blockchain networks

"Because of its reduced synchrony requirement and the privacy-preserving nature of the VRF scheme, Ouroboros Praos does not limit the size of consensus participants and allows for a flexible committee."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Stanford University	United States	SCImago #18 · THE =5 · QS 3	24
University of Edinburgh	United Kingdom	SCImago #182 · THE 29 · QS 34	23
University of California, Irvine Medical Center	United States	—	15
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	14
Weizmann Institute of Science	Israel	SCImago #739	12
University of Connecticut	United States	THE 351–400 · QS 534	10
Princeton University	United States	SCImago #386 · THE =3 · QS =25	9
Aarhus University	Denmark	SCImago #293 · THE 101 · QS 131	8
Tel Aviv University	Israel	SCImago #507 · THE 201–250 · QS 223	7
Cornell University	United States	SCImago #61 · THE =18 · QS 16	7
Imperial College London	United Kingdom	SCImago #69 · THE 8 · QS 2	7
Input Output (Singapore)	Singapore	—	7
University of Washington	United States	SCImago #45 · THE 25 · QS 81	7
Beihang University	China	SCImago #160 · THE 251–300 · QS =388	6
Weizmann Institute of Science	—	—	6

Geographic distribution of citing authors

Country	Citing papers
United States	170
China	70
United Kingdom	49
Germany	24
Israel	24
Canada	23
France	19
Australia	18
Switzerland	17
Singapore	16
Japan	15
Denmark	15

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.

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	Ouroboros genesis: Composable proof-of-stake blockchains with dynamic availability	79	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	Ouroboros praos: An adaptively-secure, semi-synchronous proof-of-stake blockchain	96	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Ouroboros praos: An adaptively-secure, semi-synchronous proof-of-stake blockchain	9	8 CFR 204.5(i)(3) — Outstanding Researcher