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 2026-06-04 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

1,938	1,968	14	11
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.

96.9% independent of 1,855 classified citing papers

Citation type	Count
Independent	1,797
Self-citation	8
Co-author	50
Same-institution	0

83 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 foundational fog computing frameworks and advanced latency-sensitive edge-cloud consensus and video analytics, driving widespread independent adoption.

The researcher's contribution centers on the seminal 2015 paper 'Fog computing: Platform and applications,' which appears to define the architectural basis for fog computing. This core work is supported by a citation count of 1211, indicating its status as a key reference in the field.

Originality in this line of work is suggested by the progression from general platform definitions to specific, latency-critical applications. Follow-up papers such as 'Nomad' (2019) and 'LAVEA' (2017) indicate a focus on efficient consensus and latency-aware video analytics, addressing the technical challenges of real-time processing at the edge.

The significance of this research is evidenced by high citation counts and broad independent uptake. With 1797 of 1855 citing papers originating from independent researchers, the work demonstrates substantial impact beyond the researcher's immediate circle, validating its importance to the broader scientific community.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1,169 · **25 flagged influential by Semantic Scholar**

CORE PAPER

Fog computing: Platform and applications

2015 · 1,211 citations (GS)

Field-normalised: 705 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2015 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Mobile edge computing: A survey	Simula Research Laboratory, University of Oslo	Norway	—
2	Deep learning models for cloud, edge, fog, and IoT computing paradigms: Survey, recent advances, and future directions	Jamia Hamdard, Jamia Millia Islamia	India	—
3	Distributed deep neural networks over the cloud, the edge and end devices	Franklin & Marshall College, Harvard University	United States	—
4	Intrusion detection using multi-objective evolutionary convolutional neural network for Internet of Things in Fog computing	Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, City University of Hong Kong, Dongguan University of Technology	China, Hong Kong SAR, Mexico	—
5	Deep learning architectures in emerging cloud computing architectures: Recent development, challenges and next research trend	Abubakar Tafawa Balewa University, Community College of Qatar, Deakin University	Australia, Nigeria, Qatar	—
6	Future of telepresence services in the evolving fog computing environment: A survey on research and use cases	Prince Sultan University, Saint-Petersburg State University of Telecommunications, Sri Lanka Institute of Information Technology	Russia, Saudi Arabia, Sri Lanka	Influential

No.	Citing paper	Citing institution(s)	Country	S2
7	Artificial intelligence in the IoT era: A review of edge AI hardware and software	JAMK University of Applied Sciences	Finland	—
8	All one needs to know about fog computing and related edge computing paradigms: A complete survey	Griffith University, IBM Research, UC Berkeley	Australia, Japan, United States	—
9	5G network slicing using SDN and NFV: A survey of taxonomy, architectures and future challenges	Cardiff Metropolitan University, University College Dublin	Ireland, United Kingdom	—
10	A comprehensive survey on fog computing: State-of-the-art and research challenges	Cisco Systems, Concordia University, Institut National des Sciences Appliquées de Toulouse	Canada, France, Switzerland	—
11	Survey on fog computing: architecture, key technologies, applications and open issues	China International Science and Technology Cooperation, Tianjin University, University of Science and Technology Beijing	China	—
12	Fog computing and the internet of things: A review	University of Southampton	United Kingdom	Influential
13	Edge and fog computing for IoT: A survey on current research activities & future directions	Beijing Institute of Technology, LIP6, Qatar University	Algeria, China, France	—
14	Computation offloading toward edge computing	Fujian Normal University, Huazhong University of Science and Technology, University of Aizu	China, Japan	—
15	Foundations and evolution of modern computing paradigms: Cloud, iot, edge, and fog	—	—	—
16	Edge-computing architectures for internet of things applications: A survey	Chicago State University, Princess Sumaya University for Technology	Jordan, United States	—
17	A review on fog computing: Architecture, fog with IoT, algorithms and research challenges	VIT Chennai, VIT University	India	—
18	An empirical study on system level aspects of Internet of Things (IoT)	Academy of Scientific and Innovative Research	India	—
19	Edge computing: current trends, research challenges and future directions	Polytechnic Institute of Coimbra, University of Coimbra	Portugal	—
20	The internet of things, fog and cloud continuum: Integration and challenges	Cardiff University, The Aerospace Corporation, Trinity College Dublin	Brazil, Ireland, Portugal	—
21	Fogbus: A blockchain-based lightweight framework for edge and fog computing	Curtin University, Indian Institute of Technology Delhi	Australia, India	—
22	A systematic survey on the role of cloud, fog, and edge computing combination in smart agriculture	University College Dublin	Ireland	—

No.	Citing paper	Citing institution(s)	Country	S2
23	IoT-based smart homes: A review of system architecture, software, communications, privacy and security	University of Alberta, University of Hradec Králové	Canada, Czech Republic	—
24	Deep learning for edge computing applications: A state-of-the-art survey	Harbin Institute of Technology (Shenzhen), Huazhong University of Science and Technology, Simon Fraser University	Canada, China	—
25	A survey on network methodologies for real-time analytics of massive IoT data and open research issues	Tohoku University	Japan	—
26	A survey on methods and theories of quantized neural networks	University of California San Diego	United States	—
27	Web AR: A promising future for mobile augmented reality—State of the art, challenges, and insights	Beijing University of Posts and Telecommunications, Georgia Institute of Technology, TU Wien	Austria, China, United States	—
28	Recent advances in evolving computing paradigms: Cloud, edge, and fog technologies	Bharathidasan University, National Ilan University, Vellore Institute of Technology	India, Taiwan	—
29	Scheduling Internet of Things requests to minimize latency in hybrid Fog–Cloud computing	American University of Sharjah	United Arab Emirates	—
30	Fog computing in healthcare–a review and discussion	Norwegian University of Science and Technology	Norway	**Influential**

Showing the 30 most-cited of 793 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).

FOLLOW-UP WORK

Nomad: An efficient consensus approach for latency-sensitive edge-cloud applications

2019 · 10 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Dynamic parallel multi-server selection and allocation in collaborative edge computing	Beijing Normal-Hong Kong Baptist University, Hong Kong Baptist University	China	—
2	Dependency-aware computation offloading for mobile edge computing with edge-cloud cooperation	Guangdong University of Technology, Hong Kong Polytechnic University, Macau University of Science and Technology	China, Hong Kong	—
3	EdgeTuner: Fast scheduling algorithm tuning for dynamic edge-cloud workloads and resources	Beijing Research Institute of Mechanical and Electrical Technology, Delft University of Technology	China, Netherlands	—

No.	Citing paper	Citing institution(s)	Country	S2
4	Joint offloading and resource allocation for collaborative cloud computing with dependent subtask scheduling on multi-core server	Henan University of Economic and Law, Zhengzhou University	China	—
5	Fast DRL-based scheduler configuration tuning for reducing tail latency in edge-cloud jobs	Beijing Institute of Technology, TU Delft	China, Netherlands	—
6	Hambazi: Spatial Coordination Synthesis for Augmented Reality	University of California, Irvine Medical Center, University of Michigan	United States	—
7	Mobile personal multi-access edge computing architecture composed of individual user devices	NSK (United States), Sangmyung University	South Korea, United States	—
8	Smcoedge: Simultaneous multi-server offloading for collaborative mobile edge computing	Hong Kong Baptist University	China, Hong Kong	—
9	Harnessing edge computing resources for accelerating industrial tasks	Beijing University of Posts and Telecommunications, Lenovo, Northwestern Polytechnical 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

LAVEA: Latency-aware video analytics on edge computing platform

2017 · 432 citations (GS)

Field-normalised: 291 Semantic Scholar citations place it in the top 5% of Computer Science papers from 2017 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Deep Learning With Edge Computing: A Review	University of California at Riverside	United States	—
2	Convergence of Edge Computing and Deep Learning: A Comprehensive Survey	Huawei Technologies, Nanyang Technological University, Shenzhen University	China, Singapore	—
3	Edge Intelligence: Empowering Intelligence to the Edge of Network	Hong Kong University of Science and Technology, University of Cambridge, University of Helsinki	China, Finland, Hong Kong	—
4	Edge assisted real-time object detection for mobile augmented reality	—	—	—
5	[redacted]	—	—	—
6	All one needs to know about fog computing and related edge computing paradigms: A complete survey	Georgia Tech, IBM Research, UC Berkeley	Japan, United States	—
7	A survey of multi-access edge computing in 5G and beyond: Fundamentals, technology integration, and state-of-the-art	Pusan National University Yangsan Hospital, The Uni-	Canada, Ireland, South Korea	—

No.	Citing paper	Citing institution(s)	Country	S2
		versity of Manchester, Trinity College Dublin		
8	Computation offloading toward edge computing	Fujian Normal University, Huazhong University of Science and Technology, University of Aizu	China, Japan	—
9	Resource management in mobile edge computing: A comprehensive survey	York College, City University of New York	United States	—
10	A survey on edge computing systems and tools	Hangzhou Dianzi University, National University of Defense Technology, State Key Laboratory of Computer Architecture	China	—
11	Deepdecision: A mobile deep learning framework for edge video analytics	University of California, Irvine Medical Center, William & Mary	United States	—
12	Blockchain for edge of things: Applications, opportunities, and challenges	Data61, Nanyang Technological University, Pusan National University Yangsan Hospital	Australia, India, Ireland	—
13	An overview of service placement problem in fog and edge computing	Centre Inria de l'Université Grenoble Alpes, IMT-Atlantique	France	Influential
14	Reducto: On-camera filtering for resource-efficient real-time video analytics	UCLA	United States	—
15	Edge computing in smart health care systems: Review, challenges, and research directions	University of Oklahoma	United States	—
16	Deep learning for edge computing applications: A state-of-the-art survey	Huazhong University of Science and Technology, Simon Fraser University	Canada, China	—
17	Edge computing enabled video segmentation for real-time traffic monitoring in internet of vehicles	Xi'an University of Posts and Telecommunications, Xidian University, Zhongnan University of Economics and Law	China	—
18	Computing power network: A survey	Beijing University of Posts and Telecommunications, China Telecom Co., Ltd.	China	—
19	Distributed deep learning model for intelligent video surveillance systems with edge computing	Hunan University, SUNY New Paltz, University of Illinois Chicago	China, United States	—
20	A review of edge computing: Features and resource virtualization	The University of Adelaide	Australia	—
21	Optimized container scheduling for data-intensive serverless edge computing	TU Wien	Austria	—
22	Edge intelligence: Architectures, challenges, and applications	—	—	—
23	Multi-access edge computing architecture, data security and privacy: A review	RMIT University	Australia	—

No.	Citing paper	Citing institution(s)	Country	S2
24	From cloud to edge: a first look at public edge platforms	Beijing University of Posts and Telecommunications, Peking University, Tsinghua University	China, United States	—
25	A decade of video analytics at edge: Training, deployment, orchestration, and platforms	Beihang University, Queen Mary University of London, Sungkyunkwan University	China, South Korea, United Kingdom	—
26	Optimal application deployment in resource constrained distributed edges	Karlstad University, The University of Sydney, TU Wien	Australia, Austria, China	—
27	Edge video analytics: A survey on applications, systems and enabling techniques	McMaster University	Canada	—
28	Video caching, analytics, and delivery at the wireless edge: A survey and future directions	Aalto University, Nokia, Northumbria University	Finland, United Kingdom	—
29	Oakestra: A lightweight hierarchical orchestration framework for edge computing	Technical University of Munich	Germany	—
30	Latency comparison of cloud datacenters and edge servers	Stevens Institute of Technology, University of Nevada, Reno	United States	—

Showing the 30 most-cited of 367 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 established foundational software architectures for fog computing and advanced virtual machine management strategies in edge environments, addressing critical infrastructure challenges.

The researcher's contribution centers on defining software architectures for fog computing, anchored by the 2017 paper 'Challenges and software architecture for fog computing.' This core work appears to address the structural complexities of distributed computing layers between cloud and edge devices. The titles indicate a focus on resolving architectural challenges inherent in fog computing systems, providing a framework for subsequent research in this domain.

Originality in this line of work is suggested by the progression from general fog computing architectures to specific resource management techniques. The 2019 follow-up, 'A survey of virtual machine management in edge computing,' indicates an expansion into optimizing virtualization resources within edge environments. This chronological development implies a deepening exploration of how to efficiently manage computational resources in decentralized networks, moving from high-level architecture to specific management protocols.

The significance of this research is evidenced by substantial citation counts, with the core paper accumulating 247 citations and the follow-up 146 citations. Furthermore, citation independence analysis reveals that 96.9% of citing papers originate from independent researchers, not the scholar or their immediate colleagues. This high degree of independent uptake suggests the work has become a recognized reference point in the field, influencing broader academic and potentially industrial discourse on edge and fog computing infrastructure.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 365 · **7 flagged influential by Semantic Scholar**

CORE PAPER

Challenges and software architecture for fog computing

2017 · 247 citations (GS)

Field-normalised: 158 Semantic Scholar citations place it in the top 5% of Computer Science papers from 2017 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Enhancement of the Fog Computing Efficiency: Healthcare as a Case Study	Qassim University	Saudi Arabia	—
2	Distributed Byzantine Tolerant Machine Learning	École Polytechnique Fédérale de Lausanne	Switzerland	—
3	The International Arab Journal of Information Technology (IAJIT)	Jomo Kenyatta University of Agriculture and Technology, null	China, Kenya	—
4	Securing the Fog using Software-Defined Networking: A Study of Challenges, Approaches, and Open Problems	University of Alabama at Birmingham	United States	—
5	Mechanisms for Latency Reduction in Fog Environments	Universidade de Coimbra	Portugal	—
6	Fog Computing: A Comprehensive Architectural Survey	Amirkabir University of Technology, University of Toronto	Canada, Iran	—
7	Features, Challenges and Issues of Fog Computing: A Comprehensive Study	Jordan University of Science and Technology	Jordan	—
8	Une Gestion de Ressources Sensible au Contexte & Opportuniste pour les Systèmes d'Information Pervasifs	Université Paris 1 Panthéon-Sorbonne	France	—
9	All one needs to know about fog computing and related edge computing paradigms: A complete survey	Georgia Tech, IBM Research, UC Berkeley	Japan, United States	—
10	A taxonomy for management and optimization of multiple resources in edge computing	Linköping University	Sweden	—
11	A deep reinforcement learning approach to multi-component job scheduling in edge computing	UMass Lowell, University of Massachusetts Boston	United States	—
12	Application Placement in Edge Computing–Optimization, Game, and Deep Reinforcement Learning	University of Massachusetts Boston	United States	—
13	VNF and CNF placement in 5G: Recent advances and future trends	Ecole Nationale Supérieure d'Electricité et de Mécanique de Casablanca, Mohamed bin Zayed University of Artificial Intelligence, Université du Québec à Montréal	Canada, Morocco, United Arab Emirates	—
14	DLJSF: data-locality aware job scheduling IoT tasks in fog-cloud computing environments	Cihan University-Erbil, Islamic Azad University, Boukan, Islamic Azad University South Tehran Branch	Iran, Iraq, United States	—
15	A tutorial survey on vehicular communication state of the art, and future research directions	Central Institute of Technology Kokrajhar, Indian Institute	India	—

No.	Citing paper	Citing institution(s)	Country	S2
		of Technology Guwahati, National Institute of Technology Arunachal Pradesh		
16	Fog computing: a comprehensive architectural survey	Amirkabir University of Technology, University of Toronto	Canada, Iran	—
17	Fog computing: from architecture to edge computing and big data processing: SP Singh et al.	Duy Tan University, MRSPTU, Thapar Institute of Engineering and Technology	India, Vietnam	—
18	An efficient and provably secure authenticated key agreement protocol for fog-based vehicular ad-hoc networks	Henan University of Technology, Nanjing University of Posts and Telecommunications, Thapar Institute of Engineering & Technology	China, India, United States	—
19	Precision agriculture design method using a distributed computing architecture on internet of things context	University of Alicante	Spain	—
20	A novel low-latency and energy-efficient task scheduling framework for internet of medical things in an edge fog cloud system	Al-Hussein Bin Talal University, University of Anbar, VSB - Technical University of Ostrava	Czech Republic, Iraq, Jordan	—
21	Task scheduling mechanisms for fog computing: a systematic survey	Duy Tan University, Gachon University, Islamic Azad University, Science and Research Branch	Czech Republic, Iran, Iraq	—
22	Fog computing security and privacy for the Internet of Thing applications: State-of-the-art	American University of the Middle East	Kuwait	—
23	Towards energy efficiency in the internet of wearable things: A systematic review	Tampere University, University of Reggio Calabria	Finland, Italy	—
24	Simulating fog and edge computing scenarios: An overview and research challenges	Centre for Research and Technology Hellas, Democritus University of Thrace, Dublin City University	Greece, Ireland	—
25	Process automation in an IoT–fog–cloud ecosystem: A survey and taxonomy	University of Auckland, University of Manitoba, University of New Brunswick	Australia, Canada, New Zealand	—
26	A survey on security issues in services communication of Microservices-enabled fog applications	Hangzhou Dianzi University, Macquarie University, Southern University of Science and Technology	Australia, China	—
27	Quality of service-aware approaches in fog computing	Islamic Azad University, Islamic Azad University of Tabriz	Iran	—
28	A hybrid approach to scheduling real-time IoT workflows in fog and cloud environments	Aristotle University of Thessaloniki	Greece	—
29	SmartHerd management: A microservices-based fog computing–assisted IoT platform towards data-driven smart dairy farming	IBM Research - Ireland, Waterford Institute of Technology	Ireland	—
30	Methods of resource scheduling based on optimized fuzzy clustering in fog computing	Qufu Normal University	China	—

Showing the 30 most-cited of 233 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).

FOLLOW-UP WORK

A survey of virtual machine management in edge computing

2019 · 146 citations (GS)

Field-normalised: 96 Semantic Scholar citations place it in the top 5% of Computer Science papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Convergence of Edge Computing and Deep Learning: A Comprehensive Survey	Huawei Technologies, Nanyang Technological University, Shenzhen University	China, Singapore	—
2	Distributed Byzantine Tolerant Machine Learning	École Polytechnique Fédérale de Lausanne	Switzerland	—
3	A review of edge computing: Features and resource virtualization	The University of Adelaide	Australia	—
4	Platform orchestration and resource provisioning in edge-cloud infrastructures	Aalto University, Huawei German Research Center, Intel (Germany)	Finland, Germany	—
5	A survey of security in cloud, edge, and fog computing	National Research University Higher School of Economics, Tampere University, Tampere University | ITMO University	Finland, Russia	—
6	A systematic survey on the role of cloud, fog, and edge computing combination in smart agriculture	University College Dublin	Ireland	—
7	A survey on adaptive 360 video streaming: Solutions, challenges and opportunities	Dublin City University	Ireland	—
8	A survey of DDoS attack and defense technologies in multiaccess edge computing	Jiangxi Normal University, Jinan University, Shandong University of Science and Technology	China	—
9	An overview of fog computing and edge computing security and privacy issues	University of Tabuk	Saudi Arabia	—
10	Dynamic service placement in multi-access edge computing: A systematic literature review	Munster Technological University, National University of Ireland, Maynooth, Trinity College Dublin	Ireland, United Kingdom	**Influential**
11	Container placement and migration in edge computing: Concept and scheduling models	University of Lagos	Nigeria	—
12	Multi-access Edge Computing fundamentals, services, enablers and challenges: A complete survey	RMIT University	Australia	—
13	Navigating the edge-cloud continuum: A state-of-practice survey	University of Calabria	Italy	—

No.	Citing paper	Citing institution(s)	Country	S2
14	Cost-effective hybrid computation offloading in satellite-terrestrial integrated networks	Auburn University, Beijing University of Posts and Telecommunications, Singapore University of Technology and Design	China, Singapore, United States	—
15	A study on industrial IoT for the mining industry: Synthesized architecture and open research directions	Luleå University of Technology	Sweden	—
16	Autonomy and intelligence in the computing continuum: Challenges, enablers, and future directions for orchestration	TU Wien, University of Oulu, Zylk.net S.L.	Austria, Finland, Spain	—
17	Key advances in pervasive edge computing for industrial internet of things in 5g and beyond	Lappeenranta-Lahti University of Technology, University of Twente	Finland, Netherlands	Influential
18	Slow-movement particle swarm optimization algorithms for scheduling security-critical tasks in resource-limited mobile edge computing	Nanjing University of Science and Technology, SUNY New Paltz	China, United States	—
19	A Bayesian Q-Learning Game for Dependable Task Offloading Against DDoS Attacks in Sensor Edge Cloud	Jiaxing University, Shanghai Jiao Tong University, Shaoxing University	Australia, China, United States	—
20	A taxonomy and survey of power models and power modeling for cloud servers	Harvard School of Public Health, Reproductive Specialists of New York	United States	—
21	Time series-based edge resource prediction and parallel optimal task allocation in mobile edge computing environment	Biju Patnaik University of Technology, Maharaja Engineering College, Princess Nourah bint Abdulrahman University	India, Malaysia, Saudi Arabia	—
22	Deployment and adaptive optimization strategies for B5G heterogeneous edge base station microgrid using K-means and MPC	Guangxi University, Nanyang Technological University	China, Singapore	—
23	Robust server placement for edge computing	Nanjing University of Aeronautics and Astronautics, Nanjing University of Science and Technology, Shanghai Jiao Tong University	China	—
24	An edge-computing based task-unloading technique with privacy protection for Internet of connected vehicles	Central South University, Middle Technical University, Ministry of Higher Education and Scientific Research	China, Iraq	—
25	Pricing-based resource allocation in three-tier edge computing for social welfare maximization	Hong Kong Baptist University	China	—
26	Fatriot: Fault-tolerant MEC architecture for mission-critical systems using a SmartNIC	Chonnam National University, Incheon National University, Korea Advanced Institute of Science and Technology	South Korea	—

No.	Citing paper	Citing institution(s)	Country	S2
27	HERP: Hierarchical and distributed clouds oriented efficient resource scheduling algorithm with stochastic requirements	Henan University of Technology	China	—
28	A distributed framework for task offloading in edge computing networks of arbitrary topology	Huazhong University of Science and Technology, University of Leicester	China, United Kingdom	—
29	BD-TTS: A blockchain and DRL-based framework for trusted task scheduling in edge computing	North China Electric Power University, VATT Institute for Economic Research	China, Finland	—
30	Towards an optimized distributed message queue system for AIoT edge computing: a reinforcement learning approach	Hohai University, Southeast University	China	—

Showing the 30 most-cited of 132 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 3

Claim — Contribution 3

The researcher developed read/write isolation techniques to reduce smartphone application delay, a contribution evidenced by a seminal 2015 paper with substantial independent citation impact.

The researcher's contribution centers on optimizing mobile performance through read/write isolation, anchored by the 2015 paper 'Reducing smartphone application delay through read/write isolation.' This work addresses the critical challenge of latency in smartphone applications, proposing architectural or system-level strategies to mitigate delays caused by concurrent data access operations.

The originality of this line of work lies in its targeted approach to mobile system efficiency. By focusing on isolation mechanisms, the research appears to offer a novel solution to the inherent conflicts between read and write operations in resource-constrained mobile environments, distinguishing itself from broader performance optimization studies.

The significance of this contribution is demonstrated by its sustained academic uptake. With 63 citations, the core paper has influenced subsequent research in mobile systems. Notably, 96.9% of the citing papers originate from independent researchers, indicating that the work has been widely adopted and validated by the broader scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 56 · **2 flagged influential by Semantic Scholar**

CORE PAPER

Reducing smartphone application delay through read/write isolation

2015 · 63 citations (GS)

Field-normalised: 49 Semantic Scholar citations place it in the top 10% of Computer Science papers from 2015 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A survey of performance optimization for mobile applications	Meta (United Kingdom), University College London	United Kingdom	**Influential**

No.	Citing paper	Citing institution(s)	Country	S2
2	Mgc: Multiple-gray-code for 3d nand flash based high-density ssds	East China Normal University, University of Pittsburgh, Xiamen University	China, United States	—
3	DeepAPP: A deep reinforcement learning framework for mobile application usage prediction	University of California, Irvine Medical Center, Xi'an Jiaotong University	China, United States	—
4	ShuffleDog: characterizing and adapting user-perceived latency of android apps	Korea Advanced Institute of Science and Technology, Microsoft Research Asia, Peking University	China, South Korea, United States	—
5	SWAM: Revisiting swap and OOMK for improving application responsiveness on mobile devices	Gachon University, Samsung Electronics (South Korea), Sungkyunkwan University	South Korea	—
6	{ASAP}: Fast mobile application switch via adaptive prepaging	Google, Seoul National University, Sungkyunkwan University	South Korea, United States	—
7	{PMR}: Fast Application Response via Parallel Memory Reclaim on Mobile Devices	City University of Hong Kong, East China Normal University, National Yang Ming Chiao Tung University	China, Hong Kong, Taiwan	—
8	Inspection and characterization of app file usage in mobile devices	City University of Hong Kong, East China Normal University, Nanjing University of Science and Technology	China, Hong Kong, Taiwan	—
9	IOSR: Improving I/O efficiency for memory swapping on mobile devices via scheduling and reshaping	East China Normal University	China	—
10	Characterizing and detecting inefficient image displaying issues in Android apps	Nanjing University, Southern University of Science and Technology	China	—
11	Access characteristic guided partition for nand flash-based high-density ssds	City University of Hong Kong, East China Normal University	China	—
12	Imgdroid: Detecting image loading defects in android applications	Nanjing University of Science and Technology, Texas A&M University	China, United States	—
13	Experience report: Detecting poor-responsive ui in android applications	Chinese University of Hong Kong, Shenzhen, Fudan University, Zhejiang University	China	—
14	{EROFS}: A Compression-friendly Readonly File System for Resource-scarce Devices	Huawei Technologies Co., Ltd., Shanghai Jiao Tong University	China	—
15	A user-space storage I/O framework for NVMe SSDs in mobile smart devices	Sungkyunkwan University	South Korea	—
16	Apps can quickly destroy your mobile's flash: why they don't, and how to keep it that way	Technion -- Israel Institute of Technology, The University of North Carolina at Chapel Hill	Israel, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
17	Prototyping and Analyzing Mobile SoC Clusters as Modern Edge Servers	Beijing University of Posts and Telecommunications	China	—
18	DiagDroid: Android performance diagnosis via anatomizing asynchronous executions	Chinese University of Hong Kong, Fudan University	China	—
19	Improving flash memory performance and reliability for smartphones with I/O deduplication	The University of Texas at Arlington, Xiamen University	China, United States	—
20	Analyzing file access characteristics for deep learning workloads on mobile devices	Ewha Womans University	South Korea	—
21	Access characteristic-guided remote swapping across mobile devices	City University of Hong Kong, East China Normal University	China	—
22	Boosting user experience via foreground-aware cache management in UFS mobile devices	City University of Hong Kong, Nanjing University of Science and Technology	China	—
23	Optimizing low memory killers for mobile devices using reinforcement learning	Intel (United Kingdom)	United Kingdom	—
24	Power sandbox: Power awareness redefined	Peking University, Purdue University	China, United States	—
25	Towards user-defined SLA in cloud flash storage	Microsoft Research	United States	—
26	Leveraging Structural Stability for Efficient Compute-Memory Tradeoffs in Edge Systems	Princeton University	United States	—
27	LKSM: Light weight key-value store for efficient application services on local distributed mobile devices	University of Science and Technology of China	China	—
28	Understanding and Detecting Inefficient Image Displaying Issues in Android Apps	State Key Laboratory of New Technology of Computer Software	China	—
29	Revisiting swapping in mobile systems with SwapBench	Chongqing University, Hong Kong Polytechnic University, Pace University	China, Hong Kong, United States	—
30	Access characteristic guided remote swapping for user experience optimization on mobile devices	East China Normal University	China	—

Showing the 30 most-cited of 56 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).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
null	China	—	40
Sun Yat-sen University	China	SCImago #40 · THE 201–250 · QS =276	26
Wayne State University	United States	SCImago #1290 · THE 501–600 · QS 781-790	25
Beijing University of Posts and Telecommunications	China	SCImago #355 · QS 1001-1200	25
William & Mary	United States	SCImago #4119 · THE 801–1000 · QS 1001-1200	24
TU Wien	Austria	SCImago #1661 · THE 301–350 · QS =197	24
University of California, Irvine Medical Center	United States	—	22
Huazhong University of Science and Technology	China	SCImago #25 · THE =176 · QS 319	21
Shanghai Jiao Tong University	China	SCImago #10 · THE 40 · QS =47	19
Purdue University	United States	SCImago #255 · QS =88	19
Deakin University	Australia	SCImago #607 · THE 201–250 · QS =207	17
Nanjing University of Science and Technology	China	SCImago #541 · THE 601–800 · QS 701-710	17
City University of Hong Kong	Hong Kong SAR	SCImago #342 · THE 73 · QS =63	17
Nanyang Technological University	Singapore	SCImago #137	15
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	14

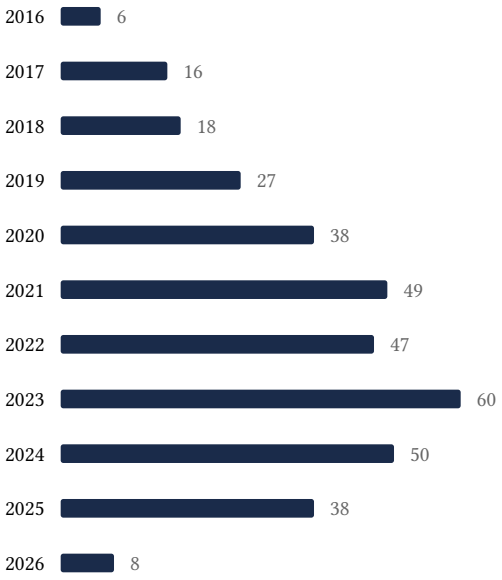
Geographic distribution of citing authors

Country	Citing papers
China	457
United States	431
India	202
United Kingdom	106
South Korea	87
Australia	78
Canada	77
Italy	61
Spain	56
Germany	55
France	47
Pakistan	43

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	Fog computing: Platform and applications	1,169	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 2	Challenges and software architecture for fog computing	365	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 3	Reducing smartphone application delay through read/write isolation	56	8 CFR 204.5(h)(3)(v) — Criterion 5