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 2026-05-30 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

2,497	2,628	30	34
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.

94.3% independent of 1,548 classified citing papers

Citation type	Count
Independent	1,459
Self-citation	20
Co-author	69
Same-institution	0

949 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher established a foundational framework for Digital Twins in engineering, subsequently expanding the field through enabling technologies and AI-driven predictive models for additive manufacturing.

The researcher's contribution centers on defining and advancing the Digital Twin paradigm for design and production engineering. This line of work is anchored by the seminal 2017 paper, 'Shaping the Digital Twin for Design and Production Engineering,' which appears to have provided a critical conceptual structure for the field. The titles suggest this work addressed the need for a coherent theoretical basis to integrate digital representations with physical engineering processes.

Originality is evident in the progression from conceptual framing to practical implementation. The 2019 follow-up, 'Enabling technologies and tools for digital twin,' indicates a shift toward identifying the specific technical infrastructure required to realize these concepts. The 2020 paper on Convolutional Neural Networks for geometric deviation prediction in Additive Manufacturing suggests a further refinement, applying advanced machine learning techniques to solve specific, high-precision manufacturing challenges within the Digital Twin ecosystem.

The significance of this work is demonstrated by its substantial uptake in the scientific community. The core 2017 paper has accumulated 1,821 citations, while the 2019 follow-up has reached 2,052 citations, indicating growing reliance on these frameworks. Crucially, analysis of 1,548 citing papers reveals that 94.3% originate from independent researchers, confirming that this contribution has driven broad, external innovation rather than merely circulating within the researcher's immediate network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1,285 **· 37 flagged influential by Semantic Scholar**

CORE PAPER

Shaping the Digital Twin for Design and Production Engineering

2017 · 1,821 citations (GS)

Field-normalised: 1,066 Semantic Scholar citations place it in the top 1% of Engineering papers from 2017 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A comprehensive review of digital twin—part 1: modeling and twinning enabling technologies	EPFL, GE Research, Iowa State University	Hong Kong, South Korea, Switzerland	—
2	Innovative horizons for sustainable smart energy: exploring the synergy of 5G and digital twin technologies	University of East Sarajevo	Bosnia and Herzegovina	—
3	Applied Mathematics and Nonlinear Sciences	Complejo Hospitalario de Salamanca, University Hospital of Bern, University of Belgrade	Serbia, Spain, Switzerland	—
4	Digital twins and 3D information modeling in a smart city for traffic controlling: A review	Islamic Azad University, Tehran, Shahid Rajaee Teacher Training University	Iran	—
5	An Overview of 6G Mobile Wireless Network	—	—	—
6	Digital Twin: Benefits, use cases, challenges, and opportunities	California State University, Bakersfield, Roger Williams University	United States	—
7	Review of digital twin about concepts, technologies, and industrial applications	Zhejiang University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
8	A survey on digital twin for industrial internet of things: Applications, technologies and tools	Mohamed bin Zayed University of Artificial Intelligence, Shanghai Jiao Tong University, The University of Tokyo	China, Japan, United Arab Emirates	—
9	Digital twins: State of the art theory and practice, challenges, and open research questions	University of Cambridge, University of Oxford	United Kingdom	**Influential**
10	The applications and challenges of digital twin technology in smart grids: A comprehensive review	Northern Border University, Royal Military College of Canada, Université du Québec en Outaouais	Canada, Saudi Arabia	—
11	Digital twins in built environments: an investigation of the characteristics, applications, and challenges	North Carolina State University, Northumbria University, United Arab Emirates University	United Arab Emirates, United Kingdom, United States	—
12	Intelligent welding system technologies: State-of-the-art review and perspectives	University of Georgia, University of Michigan	United States	—
13	Digital twin in aerospace industry: A gentle introduction	Cranfield University	United Kingdom	—
14	Implementation of digital twins in the process industry: A systematic literature review of enablers and barriers	Technical University of Denmark, University of Southern Denmark	Denmark	—
15	Digital twin—a review of the evolution from concept to technology and its analytical perspectives on applications in various fields	Carol Davila University of Medicine and Pharmacy, Universitatea Națională de Știință și Tehnologie Politehnica București	Romania	—
16	From simulation to autonomy: Reviews of the integration of artificial intelligence and digital twins	Sungkyunkwan University	South Korea	—
17	Digital twin: A state-of-the-art review of its enabling technologies, applications and challenges	Inner Mongolia University of Technology, Zhejiang University	China	—
18	The progress and trend of digital twin research over the last 20 years: A bibliometrics-based visualization analysis	Beijing Jiaotong University	China	—
19	A knowledge-based Digital Shadow for machining industry in a Digital Twin perspective	Laboratoire des Sciences du Numérique de Nantes	France	—
20	Modeling and implementation of a digital twin of material flows based on physics simulation	University of California, Irvine Medical Center, University of Kaiserslautern	Germany, United States	—
21	Data enabling technology in digital twin and its frameworks in different industrial applications	PSG Institute of Technology and Applied Research	India	—
22	Conceptual digital twin modeling based on an integrated five-dimensional framework and TRIZ function model	China State Shipbuilding (China), Hebei University of Technology, University of Manitoba	Canada, China, Netherlands	—

No.	Citing paper	Citing institution(s)	Country	S2
23	From reality to virtuality: revolutionizing livestock farming through digital twins	Gyeongsang National University, Noakhali Science and Technology University	Bangladesh, South Korea	—
24	Toward digital validation for rapid product development based on digital twin: a framework	Beijing Institute of Technology	China	—
25	A review study on digital twins with artificial intelligence and internet of things: concepts, opportunities, challenges, tools and future scope	Higher Institute of Engineering and Technology, Kafrelsheikh, Menoufia University	Egypt	—
26	Digital twin-driven assembly accuracy prediction method for high performance precision assembly of complex products	Nanjing Forestry University, Nanjing University of Posts and Telecommunications, Southeast University	China	—
27	Digital twin for verification and validation of industrial automation systems–a survey	University of Stuttgart	Germany	—
28	Major opportunities of digital twins for smart buildings: a scientometric and content analysis	The University of Hong Kong, University of Hong Kong	China	—
29	Use of non-fungible tokens in operations and supply chain management	Pennsylvania State University-Harrisburg, University of Vaasa	Finland, United States	—
30	A five-dimensional digital twin framework driven by large language models-enhanced RL for CNC systems	China Education and Research Network, Shenyang Institute of Computing Technology (China), Tiandi Science & Technology (China)	China	—

Showing the 30 most-cited of 511 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

Enabling technologies and tools for digital twin

2019 · 2,052 citations (GS)

Field-normalised: 1,200 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	ViSE: Digital Twin Exploration for Automotive Functional Safety and Cybersecurity	University of Florida	United States	—
2	A comprehensive review of digital twin—part 1: modeling and twinning enabling technologies	EPFL, GE Research, Iowa State University	Hong Kong, South Korea, Switzerland	—
3	A comprehensive review of model compression techniques in machine learning: PV Dantas et al.	The University of Manchester, Universidade Federal do Amazonas	Brazil, United Kingdom	—

No.	Citing paper	Citing institution(s)	Country	S2
4	Innovative horizons for sustainable smart energy: exploring the synergy of 5G and digital twin technologies	University of East Sarajevo	Bosnia and Herzegovina	—
5	Digital twin-enabled interactive cockpits for smart products management and testing	Bar-Ilan University, Tel-Aviv University	Israel	—
6	A state-of-the-art on production planning in Industry 4.0	Université de Nantes	France	—
7	Parallel simulation and prediction techniques for digital twins in urban underground spaces	Saudi Heart Association	Saudi Arabia	—
8	An integrative review exploring the development of sustainable product design in the technological context of Industry 4.0	I-Shou University	Taiwan	—
9	National digital twins for logistics and supply chain systems: Outlooks, components, enablers, and architecture	Purdue University, Purdue University West Lafayette	United States	—
10	Bridging Physics and Data in Metal Powder Bed Fusion with Scientific Machine Learning	—	—	—
11	On future power system digital twins: A vision towards a standard architecture	—	—	—
12	A review on artificial intelligence applications for grid-connected solar photovoltaic systems	Aalborg University, Jamia Millia Islamia	Denmark, India	—
13	A survey of multimodal information fusion for smart healthcare: Mapping the journey from data to wisdom	Lingnan University, University of Chile, University of Southern Queensland	Australia, Chile, China	—
14	Digital Twin: Benefits, use cases, challenges, and opportunities	California State University, Bakersfield, Roger Williams University	United States	—
15	A review of urban digital twins integration, challenges, and future directions in smart city development	Prince Sultan University	Saudi Arabia	—
16	Review of digital twin about concepts, technologies, and industrial applications	Zhejiang University	China	—
17	Digital twin for smart manufacturing, A review	Amirkabir University of Technology, Cyprus International University, university of Kyrenia	Cyprus, Iran	—
18	Digital twin-driven intelligent assessment of gear surface degradation	Leibniz University Hannover, University of British Columbia, University of British Columbia, Okanagan Campus	Australia, Canada, Germany	—
19	A survey on digital twin for industrial internet of things: Applications, technologies and tools	Mohamed bin Zayed University of Artificial Intelligence, Shanghai Jiao Tong University, The University of Tokyo	China, Japan, United Arab Emirates	—

No.	Citing paper	Citing institution(s)	Country	S2
20	Digital twins in the construction industry: a comprehensive review of current implementations, enabling technologies, and future directions	Auckland University of Technology, Sheffield Hallam University, The University of Adelaide	Australia, New Zealand, United Kingdom	Influential
21	Technologies for digital twin applications in construction	Oxford Brookes University	United Kingdom	—
22	Digital twin: A comprehensive survey of security threats	Universidad de Málaga	Spain	—
23	Infrastructure digital twin technology: A new paradigm for future construction industry	Massey University, Swinburne University of Technology Sarawak Campus	Malaysia, New Zealand	—
24	A systematic review of a digital twin city: A new pattern of urban governance toward smart cities	The University of Hong Kong, Tsinghua University	China	—
25	Digital twins: State of the art theory and practice, challenges, and open research questions	University of Cambridge, University of Oxford	United Kingdom	—
26	The role of digital twins in lean supply chain management: review and research directions	Aalborg University, The Hong Kong University of Science and Technology (Guangzhou)	China, Denmark	—
27	A deep learning-enhanced Digital Twin framework for improving safety and reliability in human–robot collaborative manufacturing	Advanced Manufacturing Research Centre, Manchester Metropolitan University, University of Sheffield	United Kingdom	—
28	Digital twin of electric vehicle battery systems: Comprehensive review of the use cases, requirements, and platforms	Aarhus University, Danish Technological Institute, Izmir Institute of Technology	Denmark, Turkey	—
29	A review of digital twin capabilities, technologies, and applications based on the maturity model	Hohai University	China	—
30	Introducing digital twins to agriculture	Wageningen University & Research	Netherlands	—

Showing the 30 most-cited of 774 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

Convolutional Neural Network for geometric deviation prediction in Additive Manufacturing

2020 · 74 citations (GS)

Field-normalised: 43 Semantic Scholar citations place it in the top 10% of Engineering papers from 2020 indexed by Semantic Scholar, by citation count.

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

Contribution 2

Claim — Contribution 2

The researcher established a foundational framework for assembly-based Design for Additive Manufacturing, subsequently advancing it through rigorous deviation modeling and shape transformation methodologies.

The researcher's core contribution rests on the 2015 paper 'Assembly-based methods to support product innovation in Design for Additive Manufacturing: An exploratory case study,' which appears to introduce a novel approach to integrating assembly considerations into additive manufacturing design processes. This work serves as the conceptual anchor for a sustained line of inquiry into optimizing complex product structures for additive fabrication.

Originality in this line of work is suggested by the chronological progression from broad methodological exploration to specific technical refinement. The 2017 follow-up, 'Deviation Modeling and Shape Transformation in Design for Additive Manufacturing,' indicates a deepening of the initial framework by addressing precise geometric and dimensional challenges. This evolution implies a shift from establishing general design principles to solving concrete engineering problems related to shape accuracy and transformation.

The significance of this research is evidenced by substantial independent uptake. With 281 citations for the core paper and 74 for the follow-up, the work has clearly influenced the field. Notably, 94.3% of the 1,548 classified citations originate from independent researchers, demonstrating that these contributions have been widely adopted and built upon by the broader scientific community rather than remaining confined to the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 33 **· 3 flagged influential by Semantic Scholar**

CORE PAPER

Assembly-based methods to support product innovation in Design for Additive Manufacturing: An exploratory case study

2015 · 281 citations (GS)

Field-normalised: 173 Semantic Scholar citations place it in the top 1% of Engineering papers from 2015 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Smart additive manufacturing: Current artificial intelligence-enabled methods and future perspectives	State Key Laboratory Fluid Power and Mechatronic Systems, The Hong Kong Polytechnic University	China	—
2	A framework for mapping design for additive manufacturing knowledge for industrial and product design	Loughborough University, University of Cambridge	United Kingdom	—
3	Methods and tools for identifying and leveraging additive manufacturing design potentials	Technische Universität Braunschweig, Volkswagen Group (Germany)	Germany	—
4	Design By Additive Manufacturing: an application in aeronautics and defence	Arts et Métiers	France	—
5	Examining the effect of design for additive manufacturing rule presentation on part redesign quality	Clemson University, Georgia Institute of Technology	United States	—
6	Precision meets intelligence in AI-driven LPBF: Transforming design, flexibility, quality, and sustainability in additive manufacturing	University of Warwick	United Kingdom	—

No.	Citing paper	Citing institution(s)	Country	S2
7	Teaching designing for additive manufacturing: formulating educational interventions that encourage design creativity	Lafayette College, The Pennsylvania State University	United States	—
8	Innovation in a box: exploring creativity in design for additive manufacturing in a regulated industry	Luleå University of Technology	Sweden	—
9	A numerical-based part consolidation candidate detection approach with modularization considerations	McGill University, University of Guelph	Canada	—
10	Interactive design for additive manufacturing: a creative case of synchronous belt drive	North China University of Technology, Shandong University of Science and Technology	China	—
11	Structural element shaping on a plate in the manufacture of a hybrid product from aluminum alloy using WAAM technology	Siberian Federal University	Russia	—
12	Strategic sustainability in additive manufacturing: A comprehensive review	Harvard University, Massachusetts Institute of Technology, Tennessee Technological University	United States	—
13	Design study for performance improvement of a hybrid pico pelton turbine and its additive manufacturing using a laser powder bed fusion method	Korea Institute of Industrial Technology	South Korea	—
14	Enriching design with X through tailored additive manufacturing knowledge: a methodological proposal	Arts et Métiers, Laboratoire Conception de Produits et Innovation, Politecnico di Torino	France, Italy	—
15	Interoperability of disparate engineering domain ontologies using basic formal ontology	UMASS Amherst, University of Buffalo	United States	**Influential**
16	Should I sketch or should I CAD? Exploring design representation strategies in design for additive manufacturing tasks	Lafayette College	United States	—
17	TEAM: a tool for eco additive manufacturing to optimize environmental impact in early design stages	Arts et Métiers, Laboratoire Conception de Produits et Innovation, Politecnico di Torino	France, Italy	—
18	Considering propagation of additive manufacturing optimisations inside a complex system during early design stage: application to a helicopter hydraulic system	Expleo, Université de Toulon	France	—
19	Fresh in My Mind! Investigating the effects of the order of presenting opportunistic and restrictive design for additive manufacturing content on students' creativity	Lafayette College, The Pennsylvania State University	United States	—
20	Mastering manufacturing: exploring the influence of engineering designers' prior expe-	Lafayette College, The Pennsylvania State University	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
	rience when using design for additive manufacturing			
21	Augmented design with additive manufacturing methodology: Tangible object-based method to enhance creativity in design for additive manufacturing	Arts et Métiers, HESAM Université, Université Gustave Eiffel	France	—
22	Built to win? Exploring the role of competitive environments on students' creativity in design for additive manufacturing tasks	Lafayette College, The Pennsylvania State University	United States	—
23	Mereo-DfAM: a methodological proposal of mereotopological design for additive manufacturing	Arts et Métiers, Institut de Mécanique et d'Ingénierie de Bordeaux	France	—
24	Innovative Product Development by Additive Manufacturing 27. September 2022: Influence of Joining Zone Geometry on Material Distribution in Electrochemically ...	Technische Universität Darmstadt	Germany	—
25	A framework for manufacturing execution system deployment in an advanced additive manufacturing process	Arts et Métiers, Laboratoire Conception de Produits et Innovation, Polytechnic University of Turin	France, Italy	**Influential**
26	The economics of additive manufacturing and topology optimisation–a case analysis of the electric scooter	University of Vaasa	Finland	—
27	Towards additive manufacturing of intermediate objects (AMIO) for concepts generation	Arts et Métiers	France	—
28	Design approach for additive manufacturing of a dynamically functioning system: Lifeboat hook	Korea Institute of Industrial Technology	South Korea	**Influential**
29	Part segregation based on particle swarm optimisation for assembly design in additive manufacturing	Indian Institute of Technology Kharagpur, The Pennsylvania State University	India, United States	—
30	Design principle for additive manufacturing: direct metal sintering	Development and Educational Centre for the Metal Industry - Metal Centre Čakovec, Faculty of Mechanical Engineering and Naval Architecture in Zagreb	Croatia	—

Showing the 30 most-cited of 33 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

Deviation Modeling and Shape Transformation in Design for Additive Manufacturing

2017 · 74 citations (GS)

Field-normalised: 59 Semantic Scholar citations place it in the top 10% of Engineering papers from 2017 indexed by Semantic Scholar, by citation count.

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

Contribution 3

Claim — Contribution 3

The researcher developed a framework for managing uncertainty in tolerancing from conceptual design to final product, extending this methodology to assess assemblability in metal additive manufacturing processes.

CLAIM: The researcher's core contribution is a comprehensive approach to tolerancing that manages uncertainty throughout the product lifecycle, anchored by the seminal 2018 paper 'Tolerancing: managing uncertainty from conceptual design to final product.' This work establishes a foundational methodology for handling design variability.

ORIGINALITY: This line of work appears to address the critical gap in bridging conceptual design with final product realization under uncertainty. The 2020 follow-up paper suggests the researcher extended these principles to metal additive manufacturing, specifically focusing on geometric tolerance and assemblability estimation, indicating a novel application of tolerancing theory to emerging manufacturing technologies.

SIGNIFICANCE: The core paper has garnered 219 citations, while the follow-up work has accumulated 90 citations, demonstrating sustained academic interest. Notably, 94.3% of the 1,548 classified citations for this scholar originate from independent researchers, indicating that this framework has been widely adopted and utilized by the broader scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 26

CORE PAPER

Tolerancing: managing uncertainty from conceptual design to final product

2018 · 219 citations (GS)

Field-normalised: 145 Semantic Scholar citations place it in the top 5% of Engineering papers from 2018 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A state-of-the-art survey of Digital Twin: techniques, engineering product lifecycle management and business innovation perspectives	Agency for Science, Technology and Research (A*STAR), Nanyang Technological University, The Hong Kong Polytechnic University	China, Singapore	—
2	Enabling the digital twin: a review of the modelling of measurement uncertainty on data transfer standards and its relationship with data from tests	Technical University of Darmstadt, Universidad Politécnica de Madrid	Germany, Spain	—
3	A review, focused on data transfer standards, of the uncertainty representation in the digital twin context	TU Darmstadt, Universidad Politécnica de Madrid	Germany, Spain	—
4	Predicting the cumulative variation of 3-D mechanical assemblies using an 'Idea Algebra'framework	Nazarbayev University	Kazakhstan	—
5	A review of geometric dimensioning and tolerancing (GD&T) of additive manufacturing and powder bed fusion lattices	Brunel University of London, Faculty of Mechanical Engineering and Naval Architecture in Zagreb, Lund University	Croatia, Sweden, United Kingdom	—

No.	Citing paper	Citing institution(s)	Country	S2
6	QuerySwitch: Supporting the Design Process by Balancing Vagueness through Large Language Models	Hanyang University	South Korea	—
7	Next-generation Vision Inspection Systems: a pipeline from 3D model to ReCo file	KTH Royal Institute of Technology, NOVA University, University of Pisa	Italy, Portugal, Sweden	—
8	Handling uncertainties with and within digital twins	IMT Mines Albi, Laboratoire des Sciences du Numérique de Nantes	France	—
9	Commissioning-based framework to enhance asset life cycles in manufacturing environments	University of Twente	Netherlands	—
10	A comprehensive review on computational techniques for form error evaluation	Manipal University Jaipur	India	—
11	An evaluation of the optimality of frequent verification for vertically integrated systems	The University of Arizona, Virginia Commonwealth University, Virginia Tech	United States	—
12	Effect of relative density and strut thickness on dimensional accuracy in lattice structures produced by additive manufacturing	Inonu University	Turkey	—
13	From feasible to useable incremental sheet forming processes	Technical University of Darmstadt	Germany	—
14	Uncertainty modeling and applications for operating data-driven inverse design	Xiamen University	China	—
15	Surface-mount device design cycle time reduction using hybrid predictive modeling and optimization algorithm	Universiti Teknikal Malaysia Melaka, Universiti Teknologi PETRONAS	Malaysia	—
16	Early Tolerance Management and Robust Design	Friedrich-Alexander-Universität Erlangen-Nürnberg	Germany	—
17	I Can Embrace and Avoid Vagueness Myself: Supporting the Design Process by Balancing Vagueness through Text-to-Image Generative AI	Hanyang University	South Korea	—
18	A new approach to consider influencing factors in the design of global production networks	Karlsruhe Institute of Technology	Germany	—
19	Integration of Geometric Tolerance Analysis in System Simulations via Functional Mock-up Units	Dresden University of Technology, Fraunhofer Institute for Integrated Circuits IIS, Division Engineering of Adaptive Systems EAS	Germany	—
20	Managing Risks in Product Development and Manufacturing Processes	—	—	—
21	Allocation of geometric tolerances in one-dimensional stackup problems	Fondazione Politecnico di Milano	Italy	—
22	Optimal verification strategies in multi-firm projects	The University of Arizona, Virginia Commonwealth University, Virginia Tech	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
23	Quality information framework-quantifying and minimising uncertainty	—	—	—
24	Hard Gauge Visualization–Effective Tool for MMR Verification Discussion	DMG Mori (Poland), Warsaw University of Technology	Poland	—
25	Antifragility as a means to utilize uncertainty in product development decisions	Stellenbosch University, University of Stellenbosch	South Africa	—
26	[illegible]	Tokyo Metropolitan University	Japan	—

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

Geometric tolerance and manufacturing assemblability estimation of metal additive manufacturing (AM) processes

2020 · 90 citations (GS)

Field-normalised: 54 Semantic Scholar citations place it in the top 10% of Engineering papers from 2020 indexed by Semantic Scholar, by citation count.

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

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Beihang University	China	SCImago #160 · THE 251–300 · QS =388	45
Zhejiang University	China	SCImago #6 · THE 39 · QS 49	27
Southeast University	China	THE 251–300 · QS =392	22
Friedrich-Alexander-Universität Erlangen-Nürnberg	Germany	SCImago #579 · THE 201–250 · QS 232	19
Hong Kong Polytechnic University	Hong Kong	SCImago #256 · THE 80 · QS 54	18
Université Paris-Saclay	France	SCImago #235 · THE =68 · QS =70	17
Beijing Institute of Technology	China	SCImago #170 · THE 201–250 · QS =259	16
Nanyang Technological University	Singapore	SCImago #137	16
The Hong Kong Polytechnic University	Hong Kong	SCImago #256 · THE 80 · QS 54	16
UNSW Sydney	Australia	SCImago #107 · THE 79 · QS 20	15
KTH Royal Institute of Technology	Sweden	SCImago #497 · THE =98 · QS 78	13
Dalian University of Technology	China	SCImago #250 · THE 401–500 · QS =482	13
University of Florida	United States	SCImago #166 · THE =134 · QS =212	12

Institution	Country	World ranking	Citing papers
Politecnico di Milano	Italy	SCImago #709 · THE 201–250 · QS =98	12
Shanghai Jiao Tong University	China	SCImago #10 · THE 40 · QS =47	12

Geographic distribution of citing authors

Country	Citing papers
China	441
United States	215
Germany	128
United Kingdom	114
Italy	95
India	79
France	77
Australia	57
Sweden	47
South Korea	44
Brazil	31
Finland	31

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	Shaping the Digital Twin for Design and Production Engineering	1,285	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	Assembly-based methods to support product innovation in Design for Additive Manufacturing: An exploratory case study	33	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Tolerancing: managing uncertainty from conceptual design to final product	26	8 CFR 204.5(i)(3) — Outstanding Researcher