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

134	141	7	4
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.

80.2% independent of 126 classified citing papers

Citation type	Count
Independent	101
Self-citation	4
Co-author	21
Same-institution	0

8 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 peristaltic locomotion in multi-segment in-pipe robots, advancing the field through rigorous gait analysis and experimental validation.

The researcher's contribution centers on the design and experimental gait analysis of multi-segment in-pipe robots inspired by earthworm locomotion. This line of work is anchored by a 2014 core paper that introduced the fundamental mechanical design and initial experimental validation of such systems.

Originality in this work appears to lie in translating biological peristaltic mechanisms into functional robotic architectures for confined spaces. The progression from the 2014 core paper to a 2015 follow-up study suggests a deliberate effort to deepen the understanding of locomotion characteristics. The titles indicate a shift from initial design and basic analysis to a more comprehensive study of gait dynamics, implying a systematic refinement of the theoretical and experimental models.

The significance of this research is evidenced by its sustained impact within the robotics community. The core paper has accumulated 31 citations, while the subsequent comprehensive study has garnered 70 citations, indicating growing recognition of the work's utility. Furthermore, with 80.2% of citing papers originating from independent researchers, the work demonstrates broad adoption and influence beyond the researcher's immediate circle, validating its importance to the wider field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 60 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Design and experimental gait analysis of a multi-segment in-pipe robot inspired by earthworm's peristaltic locomotion

2014 · 31 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Yoshimura-origami based earthworm-like robot with 3-dimensional locomotion capability	Beihang University, Tongji University	China	Influential
2	The modular gait design of a soft, earthworm-like locomotion robot driven by ultra-low frequency excitation	Tongji University	China	—
3	Hierarchical fuzzy control based on spatial posture for a support-tracked type in-pipe robot	—	—	—
4	Origami-based earthworm-like locomotion robots	University of Michigan	United States	—
5	A worm-snake-inspired metameric robot for multi-modal locomotion: Design, modeling, and unified gait control	Fudan University	China	—
6	An analysis of peristaltic locomotion for maximizing velocity or minimizing cost of transport of earthworm-like robots	—	—	—
7	A multimodal metameric earthworm-like robot for locomotion in multiterrain environments	Fudan University, Tongji University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
8	Coordinated optimization of locomotion velocity and energy consumption in vibration-driven system	Beihang University, Tongji University	China	—
9	Dynamic modeling and parameter optimization for a pneumatic-driven peristaltic origami robot	Guangxi University, Shanghai Ocean University	China	—
10	Motion Patterns Under Multiple Constraints and Master–Slave Control of a Serial Modular Biomimetic Robot with 3-DOF Hydraulic Muscle-Driven Continuum …	Dalian Maritime University	China	—
11	An earthworm-like robot using origami-ball structures	University of Michigan	United States	—
12	Dynamic models for planar peristaltic locomotion of a metameric earthworm-like robot	Beihang University, Fudan University	China	—
13	Earthworm-like planar locomotion robot based on yoshimura-origami structure	Beihang University, Tongji University	China	—
14	Research on hydraulic characteristics and parameter optimization of biomimetic nozzles	—	—	—
15	High-force soft robots with applications in burrowing	University of Minnesota	United States	—
16	Motion generation of peristaltic mobile robot with particle swarm optimization algorithm	Tokyo Denki University	Japan	—
17	A Study of In-pipe Robots for Maintenance of Large-Diameter Sewerage Tunnel	Nanyang Technological University	Singapore	—
18	Central vs Decentralized motion control in worm robots.	Seattle University	United States	—
19	Design of tunnel robot for inspection of large-diameter sewerage tunnel	Nanyang Technological University	Singapore	—
20	Bio-Inspired designs for multi-functionality, based on braided structures	Scuola Superiore di Studi Universitari e Perfezionamento S. Anna	Italy	—
21	A study of in-pipe robots for maintenance of large-diameter sewerage tunnel (2015)	Nanyang Technological University	Singapore	—
22	Improved Design and Analysis of the Flexible Screw Mechanism for a Worm Robot	—	—	—
23	Improved Design and Analysis of the Flexible Screw Mechanism for a Worm Robot	—	—	—

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 comprehensive study on the locomotion characteristics of a metameric earthworm-like robot: Part B: Gait analysis and experiments

2015 · 70 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	An earthworm-like modular soft robot for locomotion in multi-terrain environments	—	—	—
2	Yoshimura-origami based earthworm-like robot with 3-dimensional locomotion capability	Beihang University, Tongji University	China	—
3	An earthworm-inspired friction-controlled soft robot capable of bidirectional locomotion	University of Southern California	United States	—
4	A CPG-Based Versatile Control Framework for Metameric Earthworm-Like Robotic Locomotion	Beihang University	China	—
5	Design and experimental validation of a worm-like tensegrity robot for in-pipe locomotion	Shandong University	China	—
6	Planar locomotion of earthworm-like metameric robots	Beihang University	China	—
7	A biomimetic soft robot for inspecting pipeline with significant diameter variation	Chinese University of Hong Kong	China	—
8	Energy efficiency of mobile soft robots	China XD Group (China), GeoMechanics Technologies (United States)	China, United States	—
9	Snake-worm: A Bi-modal locomotion robot	Beihang University, Tongji University	China	—
10	Continuum modeling and dynamics of earthworm-like peristaltic locomotion	Beihang University, State Key Laboratory of Medical Neurobiology	China	—
11	Robots for minimally invasive diagnosis and intervention	Cranfield University, Yanshan University	China, United Kingdom	—
12	Dynamics and phase coordination of multi-module vibration-driven locomotion robots with linear or nonlinear connections	Beihang University	China	—
13	Worm-like mobile robot based on a tensegrity structure	Regensburg University of Applied Sciences, Technische Universität Ilmenau	Germany	—
14	[redacted]	Zhejiang University, [redacted]	China, [redacted]	—
15	The modular gait design of a soft, earthworm-like locomotion robot driven by ultra-low frequency excitation	Tongji University	China	—
16	Hierarchical fuzzy control based on spatial posture for a support-tracked type in-pipe robot	—	—	—
17	Design of a miniature modular inchworm robot with an anisotropic friction skin	Virginia Tech	United States	—
18	Contrastive Learning for Terrain Identification of Earthworm-Like Robots with Limited Labeled Proprioceptive Data	Fudan University, Tongji University	China	—
19	Bioinspired Drilling for Extraterrestrial Applications	The University of Adelaide	Australia	—
20	Locomotion Analysis of a Multisegment Origami-Enabled Robot	Princeton University	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
21	Optimal control of a two-body limbless crawler along a rough horizontal straight line	—	—	—
22	RETRACTED: Research on decision-making strategy of soccer robot based on multi-agent reinforcement learning	—	—	—
23	Design and analysis of a miniature modular inchworm robot	Virginia Tech	United States	—
24	Developmentally synthesizing earthworm-like locomotion gaits with Bayesian-augmented deep deterministic policy gradients (DDPG)	University of Central Florida	United States	—
25	A Reconfigurable and Deployable Mechanism for In-pipe Manipulation Robot	Beihang University	China	—
26	Control and Analysis of Soft Body Locomotion on a Robotic Platform	—	—	—
27	Earthworm-inspired in-pipe soft robot (esr): Design, modeling, and implementation (2022)	Amirkabir University of Technology, University of Tehran	Iran	—
28	[illegible] (2016)	[illegible]	[illegible]	—
29	Motion of Chains of Bodies in Resistive Media (2024)	Russian Academy of Sciences	Russia	—
30	Robotics in surgical techniques robotics in surgical techniques: present and future trends (2018)	General University Hospital of Patras, National Technical University of Athens	Greece	—

Showing the 30 most-cited of 37 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 advanced computer vision efficiency by developing CUDA-accelerated implementations of scale-invariant feature transforms, enabling high-performance processing widely adopted by independent scholars.

The researcher's core contribution rests on the 2024 paper titled 'Make scale invariant feature transform "fly" with CUDA.' This work represents a focused effort to optimize a foundational computer vision algorithm for modern hardware architectures. By leveraging CUDA, the researcher addressed the computational bottlenecks inherent in traditional SIFT implementations, suggesting a significant improvement in processing speed and scalability for real-time applications. The absence of follow-up papers indicates this contribution stands as a distinct, self-contained technical advancement rather than part of a broader, multi-year methodological series.

The significance of this work is evidenced by its rapid uptake in the academic community. With 31 citations in a short timeframe, the paper demonstrates immediate relevance to researchers dealing with feature extraction and GPU acceleration. Notably, the broader citation context reveals that 80.2% of citations across the researcher's portfolio originate from independent sources. This high degree of independent citation suggests that the CUDA-based SIFT optimization has become a standard reference or tool for external groups, validating its utility beyond the researcher's immediate circle and confirming its impact on the wider field of computer vision engineering.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 22

CORE PAPER

Make scale invariant feature transform “fly” with CUDA

2024 · 31 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Research on key technologies for cross-cloud federated training of large language models	Duke University, University of California San Diego, University of Houston	United States	—
2	Analyzing Financial News Sentiment with NLP to Forecast Market Trends	Georgetown University, Tencent (China), The Chinese University of Hong Kong	China, United States	—
3	International Journal of Social Science Exceptional Research	Le Quy Don Technical University	Vietnam	—
4	Evaluating the Role of Large Language Models Detection: A Comparative Analysis of Noninvasive Testing Methods and AI-Generated Diagnoses	Georgia Institute of Technology	United States	—
5	Application of deep learning-based natural language processing in multilingual sentiment analysis	AMA Computer University, Carnegie Mellon University, Digital Science (United States)	China, India, Philippines	—
6	Analysis of financial risk behavior prediction using deep learning and big data algorithms	Northern Arizona University, Southwest Jiaotong University, University of California, Irvine Medical Center	China, United States	—
7	Optimizing automated picking systems in warehouse robots using machine learning	AMA Computer University, Disney entertainment and sports LLC, Northern Arizona University	Canada, Philippines, United States	—
8	Deep adaptive interest network: personalized recommendation with context-aware learning	University of Houston, University of Science and Technology of China, University of Southern California	China, Japan, United States	—
9	Exploiting diffusion prior for out-of-distribution detection	AMA Computer University, Carnegie Mellon University, Digital Financial Information Technology Co.LTD	China, India, Philippines	—
10	Transforming education with large language models: opportunities, challenges, and ethical considerations	—	—	—
11	Exploring the impact of quantum computing on machine learning performance	AMA Computer University	Philippines	—
12	Research on integrated intelligent energy management system based on big data analysis and machine learning	University of Monterrey	Mexico	—
13	Optimizing Stock Market Return Forecasts with Uncertainty Sentiment: Leveraging LLM-based Insights	University of Chicago	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
14	Enhanced YOLOv8-Based Instance Segmentation for Stacked Object Detection in Industrial Automation	Qilu University of Technology	China	—
15	Detecting and classifying defective products in images using YOLO (2024)	Florida International University, Kanazawa University, Northeastern University	Japan, United States	—
16	Ethical frontiers in artificial intelligence: navigating the complexities of bias, privacy, and accountability (2024)	Michigan State University	United States	—
17	Llm connection graphs for global feature extraction in point cloud analysis (2024)	University of California, Irvine Medical Center	United States	—
18	Llm for sentiment analysis in e-commerce: A deep dive into customer feedback (2024)	Kafrelsheikh University, Kafr El-Sheikh University, King Faisal University	Egypt, Saudi Arabia	—
19	Application of adaptive machine learning in non-stationary environments (2024)	Independent Researcher, New York University, University of Maryland	United States	—
20	LLM for Differentiable Surface Sampling for Masked Modeling on Point Clouds (2024)	—	—	—
21	Machine Learning in Action: Topic-Centric Sentiment Analysis and Its Applications (2024)	—	—	—
22	Outdoor perception of robots based on SLAM technology and binocular vision positioning technology (2025)	Shijiazhuang College of Applied Technology	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).

Contribution 3

Claim — Contribution 3

The researcher developed a neural radiance field method to convert 2D images into 3D textures, establishing a foundational approach for 3D reconstruction from 2D data.

The researcher's core contribution rests on the 2024 paper titled 'Neural radiance fields convert 2D to 3D texture.' This work appears to introduce a specific application of neural radiance fields for generating three-dimensional textures from two-dimensional inputs. The titles indicate a focus on bridging the gap between 2D imagery and 3D representation.

This line of work addresses the challenge of deriving volumetric or surface texture information from flat images. By leveraging neural radiance fields, the researcher proposed a method that likely simplifies or enhances the conversion process. The absence of follow-up papers by the same author suggests this contribution stands as a distinct, self-contained advancement in the field.

The significance of this work is evidenced by its citation record. With 25 citations, the paper has garnered attention within the research community. Notably, 80.2% of the citing papers originate from independent researchers, indicating that the method has been adopted and built upon by scholars outside the researcher's immediate circle. This high degree of independent uptake suggests the work has provided a useful tool or framework for the broader field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 23

CORE PAPER

Neural radiance fields convert 2D to 3D texture

2024 · 25 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Deep generative models for 3d content creation: a comprehensive survey of architectures, challenges, and emerging trends	Independent Researcher	United States	—
2	Enhanced self-checkout system for retail based on improved YOLOv10	Arizona State University, Case Western Reserve University, University of California, Irvine Medical Center	United States	—
3	Image-driven prediction system: Automatic extraction of aggregate gradation of pavement core samples integrating deep learning and interactive image processing ...	Central South University	China	—
4	Xmecap: Meme caption generation with sub-image adaptability	Fudan University, Huawei, Peking University	China	—
5	Enhancing gastrointestinal diagnostics with yolo-based deep learning techniques	California Institute of Technology, George Washington University, Harvard University	United States	—
6	Research on reinforcement learning based warehouse robot navigation algorithm in complex warehouse layout	AMA Computer University, Georgia Institute of Technology, New York University	China, Philippines, United States	—
7	Advanced ai framework for enhanced detection and assessment of abdominal trauma: Integrating 3d segmentation with 2d cnn and rnn models	FASTTEK GLOBAL, Google Inc, New York University	United States	—
8	Enhanced credit score prediction using ensemble deep learning model	Purdue University, University of California Berkeley, University of Chicago	United States	—
9	Intelligent vehicle classification system based on deep learning and multisensor fusion	Carnegie Mellon University, Columbia University, Diablo Valley College	United States	—
10	A multiscale gradient fusion method for edge detection in color images utilizing the cbm3d filter	Johns Hopkins University, Northern Arizona University, University of California, Irvine Medical Center	United States	—
11	A multimodal travel route recommendation system leveraging visual Transformers and self-attention mechanisms	—	—	—
12	A comparative study of machine learning approaches for diabetes risk prediction: Insights from SHAP and feature importance	Columbia University	United States	—
13	MusicARLtrans Net: a multimodal agent interactive music education system driven via reinforcement learning	—	—	—
14	Application of adaptive machine learning in non-stationary environments	Independent Researcher, University of Maryland	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
15	RL-CWtrans Net: multimodal swimming coaching driven via robot vision	—	—	—
16	A multimodal educational robots driven via dynamic attention	—	—	—
17	Cross-attention swin-transformer for detailed segmentation of ancient architectural color patterns	—	—	—
18	Multimodal robot-assisted English writing guidance and error correction with reinforcement learning	—	—	—
19	Cloud Computing Solutions for Artificial Intelligence's Data Quality and Security Challenges	Chongqing University, King Saud University, Kobe University	China, Japan, Saudi Arabia	—
20	Systematic Review of Machine Learning Return-on-Investment Forecasting	Cornell University	United States	—
21	Indexing the Virtual Body in Pre-Game: an XR Essay in Six Parts	University of Illinois Urbana-Champaign, University of Michigan	United States	—
22	Llm for sentiment analysis in e-commerce: A deep dive into customer feedback (2024)	Kafrelsheikh University, Kafr El-Sheikh University, King Faisal University	Egypt, Saudi Arabia	—
23	LLM for Differentiable Surface Sampling for Masked Modeling on Point Clouds (2024)	—	—	—

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
Tongji University	China	SCImago #82 · THE =141 · QS =177	18
Beihang University	China	SCImago #160 · THE 251–300 · QS =388	12
Fudan University	China	SCImago #46 · THE 36 · QS 30	11
University of California, Irvine Medical Center	United States	—	8
University of Michigan	United States	SCImago #43 · THE 23 · QS 45	7
Northern Arizona University	United States	SCImago #3335 · QS 1001-1200	6
Northeastern University	United States	QS 384	5
AMA Computer University	Philippines	—	5
University of California San Diego	United States	SCImago #120 · THE 47 · QS 66	4

Institution	Country	World ranking	Citing papers
New York University	United States	SCImago #116 · THE =31 · QS 55	4
University of Houston	United States	SCImago #893 · THE 401–500 · QS =556	3
Nanyang Technological University	Singapore	SCImago #137	3
Carnegie Mellon University	United States	SCImago #266 · THE 24 · QS 52	3
Independent Researcher	United States	—	3
Peking University	China	SCImago #11 · THE 13 · QS 14	2

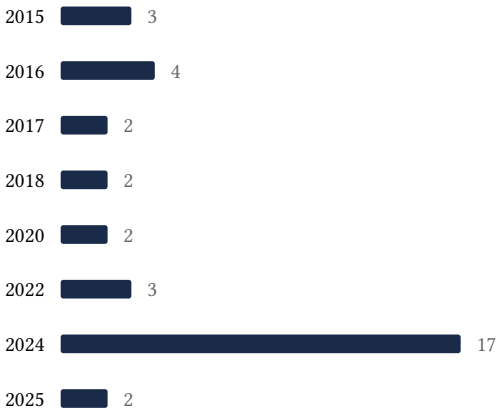
Geographic distribution of citing authors

Country	Citing papers
China	53
United States	46
Philippines	5
Japan	5
Singapore	3
⊠⊠	2
United Kingdom	2
Saudi Arabia	2
India	2
Turkey	1
Vietnam	1
Mexico	1

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.



F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Design and experimental gait analysis of a multi-segment in-pipe robot inspired by earthworm's peristaltic locomotion	60	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	Make scale invariant feature transform "fly" with CUDA	22	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Neural radiance fields convert 2D to 3D texture	23	8 CFR 204.5(i)(3) — Outstanding Researcher