

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Axon Enterprise, Inc., Dedrone Holdings, Inc., and Skydio, Inc.

Petitioners,

v.

Airspace Systems, Inc.

Patent Owner

Case No. IPR2025-00629

U.S. Patent No. 10,514,711

**DECLARATION OF JUNE ANN MUNFORD IN SUPPORT OF PATENT
OWNER'S REPLY TO
PETITIONERS' OPPOSITION TO
PATENT OWNER'S REVISED MOTION TO AMEND**

1. My name is June Ann Munford. I am over the age of 18, have personal knowledge of the facts set forth herein, and am competent to testify to the same.
2. I earned a Master of Library and Information Science (MLIS) from the University of Wisconsin-Milwaukee in 2009. I have over ten years of experience in the library/information science field. Beginning in 2004, I have served in various positions in the public library sector including Assistant Librarian, Youth Services Librarian and Library Director. I have attached my Curriculum Vitae as Exhibit 2038.
3. During my career in the library profession, I have been responsible for materials acquisition for multiple libraries. In that position, I have cataloged, purchased and processed incoming library works. That includes purchasing materials directly from vendors, recording publishing data from the material in question, creating detailed material records for library catalogs and physically preparing that material for circulation. In addition to my experience in acquisitions, I was also responsible for analyzing large collections of library materials, tailoring library records for optimal catalog search performance and creating lending agreements between libraries during my time as a Library Director.

4. I am fully familiar with the catalog record creation process in the library sector. In preparing a material for public availability, a library catalog record describing that material would be created. These records are typically written in Machine Readable Catalog (herein referred to as "MARC") code and contain information such as a physical description of the material, metadata from the material's publisher, and date of library acquisition. In particular, the 008 field of the MARC record is reserved for denoting the date of creation of the library record itself. As this typically occurs during the process of preparing materials for public access, it is my experience that an item's MARC record indicates the date of an item's public availability.
5. Typically, in creating a MARC record, a librarian would gather various bits of metadata such as book title, publisher and subject headings among others and assign each value to a relevant numerical field. For example, a book's physical description is tracked in field 300 while title/attribution is tracked in field 245. The 008 field of the MARC record is reserved for denoting the creation of the library record itself. As this is the only date reflecting the inclusion of said materials within the library's collection, it is my experience that an item's 008 field accurately indicates the date of an item's public availability.

6. I am familiar with the Internet Archive, a digital library accessible to the general public. Among other services that the Internet Archive makes available to the general public is the Wayback Machine, an online archive of the web. The Internet Archive's Wayback Machine service archives webpages as of a certain capture date to track changes in the web over time. The Internet Archive has been in operation as a nonprofit library since 1996 and has hosted the Wayback Machine service since its inception in 2001. During my time as a librarian, I frequently used the Internet Archive's Wayback Machine for research and instruction purposes. This includes teaching instructional classes on using the Wayback Machine to library patrons and using the Wayback Machine to research reference inquiries that require hard-to-find online resources. I consider the Internet Archive's recordskeeping to be as rigorous and detailed as other formal library recordskeeping practices such as MARC records, OCLC records and Dublin Core.
7. I have reviewed Exhibit EX2039, a document entitled "Improving the Speed of Neural Networks on CPUs" by Vincent Vanhoucke, et al.

8. Attached hereto as Exhibit EX2063 is a screen capture of the Internet Archive Wayback Machine entry for http://static.googleusercontent.com/external_content/untrusted_dlcp/research.google.com/en/us/pubs/archive/37631.pdf. I secured these screen captures myself from https://web.archive.org/web/20120130220632/http://static.googleusercontent.com/external_content/untrusted_dlcp/research.google.com/en/us/pubs/archive/37631.pdf. This record was captured as of January 30, 2012.
9. Exhibit EX2063 is an Internet Archive capture of a file entitled "Improving the Speed of Neural Networks on CPUs" by Vincent Vanhoucke, et al as hosted on the Google Research website. In comparing Exhibit EX2063 to Exhibit EX2039, it is my determination that Exhibit EX2039 is a true and correct copy of "Improving the Speed of Neural Networks on CPUs" by Vincent Vanhoucke, et al as hosted on the Google Research website. As the Internet Archive first captured this file as of January 30, 2012, it is my determination that "Improving the Speed of Neural Networks on CPUs" by Vincent Vanhoucke, et al was first made available to the public as of January 30, 2012 via the Internet Archive and likely earlier via the original Google Research website.

10. I have reviewed Exhibit EX2040, a web page entitled "Intel Instruction Set Extensions."

11. Attached hereto as Exhibit EX2064 is a screen capture of the Internet Archive Wayback Machine entry for <https://www.intel.com/content/www/us/en/support/articles/000005779/processors.html>. I secured these screen captures myself from <https://web.archive.org/web/20190119075515/https://www.intel.com/content/www/us/en/support/articles/000005779/processors.html>. This record was captured as of January 19, 2019.

12. Exhibit EX2064 is an Internet Archive capture of a web page entitled "Intel Streaming SIMD Extensions Technology" as hosted on the Intel website. In comparing Exhibit EX2064 to Exhibit EX2040, it is my determination that Exhibit EX2040 is a true and correct copy of the Intel Instruction Set Extensions web page as hosted on the Intel website. Although Exhibit EX2064 and Exhibit EX2040 have different titles, all material contained within Exhibit EX2040 is present in Exhibit EX2064. As the Internet Archive first captured this page as of January 19, 2019, it is my determination that Intel Streaming SIMD Extensions Technology was first

made available to the public as of January 19, 2019 via the Internet Archive and likely earlier via the original Intel website.

13. I have reviewed Exhibit EX2041, a document entitled "Implementing Streaming SIMD Extensions on the Pentium III Processor" by Srinivas K. Raman, et al as published in IEEE Micro August 2000.
14. Attached hereto as Exhibit EX2065 is a true and correct copy of the MARC record for IEEE Micro as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2065 accurately describes the title, publisher and ISSN number of IEEE Micro. The Showing Results field present on page 3 of this record indicates the library's collection includes the August 2000 issue of IEEE Micro containing "Implementing Streaming SIMD Extensions on the Pentium III Processor".
15. Attached hereto as Exhibit EX2066 is a true and correct copy of "Implementing Streaming SIMD Extensions on the Pentium III Processor" as published in IEEE Micro as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2041 to Exhibit EX2066, it is my determination that Exhibit EX2041 is a

true and correct copy of "Implementing Streaming SIMD Extensions on the Pentium III Processor" by Srinivas K. Raman, et al as published in IEEE Micro.

16. The 008 field of the MARC record in Exhibit EX2065 indicates the date of record creation. The 008 field of Exhibit EX2065 indicates the Penn State University Library first acquired IEEE Micro as of July 13, 2000 and held the journal in perpetuity until the publication of "Implementing Streaming SIMD Extensions on the Pentium III Processor". Considering this information, it is my determination that IEEE Micro August 2000 and therefore "Implementing Streaming SIMD Extensions on the Pentium III Processor" was made available to the public shortly after its initial publication in August 2000.

17. I have reviewed Exhibit EX2042, a document entitled "Towards Closing the Energy Gap Between HOG and CNN Features for Embedded Vision" by Amr Suleiman, et al as published in Proceedings of 2017 International Symposium on Circuits and Systems.

18. Attached hereto as Exhibit EX2067 is a true and correct copy of the MARC record for Proceedings of 2017 International Symposium on Circuits and

Systems as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2067 accurately describes the title, publisher and ISBN number of Proceedings of 2017 International Symposium on Circuits and Systems.

19. Attached hereto as Exhibit EX2068 is a true and correct copy of "Towards Closing the Energy Gap Between HOG and CNN Features for Embedded Vision" as published in Proceedings of 2017 International Symposium on Circuits and Systems as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2042 to Exhibit EX2068, it is my determination that Exhibit EX2042 is a true and correct copy of "Towards Closing the Energy Gap Between HOG and CNN Features for Embedded Vision" by Amr Suleiman, et al as published in Proceedings of 2017 International Symposium on Circuits and Systems.

20. The 008 field of the MARC record in Exhibit EX2067 indicates the date of record creation. The 008 field of Exhibit EX2067 indicates the Penn State University Library first acquired Proceedings of 2017 International Symposium on Circuits and Systems as of March 16, 2018. Considering this information, it is my determination that Proceedings of 2017 International Symposium on Circuits and Systems and therefore "Towards Closing the

Energy Gap Between HOG and CNN Features for Embedded Vision" was made available to the public shortly after March 16, 2018.

21. I have reviewed Exhibit EX2043, a document entitled "CPU Based YOLO:

A Real Time Object Detection Algorithm" by Md. Bahar Ullah, et al as published in Proceedings of the 2020 IEEE Region 10 Symposium.

22. Attached hereto as Exhibit EX2069 is a true and correct copy of the MARC record for Proceedings of the 2020 IEEE Region 10 Symposium as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2069 accurately describes the title, publisher and ISBN number of Proceedings of the 2020 IEEE Region 10 Symposium.

23. Attached hereto as Exhibit EX2070 is a true and correct copy of "CPU Based YOLO: A Real Time Object Detection Algorithm" as published in Proceedings of the 2020 IEEE Region 10 Symposium as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2043 to Exhibit EX2070, it is my determination that Exhibit EX2043 is a true and correct copy of "CPU Based YOLO: A

Real Time Object Detection Algorithm" by Md. Bahar Ullah, et al as published in Proceedings of the 2020 IEEE Region 10 Symposium.

24. The 008 field of the MARC record in Exhibit EX2069 indicates the date of record creation. The 008 field of Exhibit EX2069 indicates the Penn State University Library first acquired Proceedings of the 2020 IEEE Region 10 Symposium as of November 14, 2020. Considering this information, it is my determination that Proceedings of the 2020 IEEE Region 10 Symposium and therefore "CPU Based YOLO: A Real Time Object Detection Algorithm" was made available to the public shortly after November 14, 2020.

25. I have reviewed Exhibit EX2044, a web page entitled "Real-Time Detection with YOLO."

26. Attached hereto as Exhibit EX2071 is a screen capture of the Internet Archive Wayback Machine entry for <https://machinethink.net/blog/object-detection-with-yolo/>. I secured these screen captures myself from <https://web.archive.org/web/20170526072201/https://machinethink.net/blog/object-detection-with-yolo/>. This record was captured as of May 26, 2017.

27. Exhibit EX2071 is an Internet Archive capture of a web page entitled "Real-Time Detection with YOLO" as hosted on the Machine Think Blog website.

In comparing Exhibit EX2071 to Exhibit EX2044, it is my determination that Exhibit EX2044 is a true and correct copy of the Real-Time Detection with YOLO web page as hosted on the Machine Think Blog website. As the Internet Archive first captured this page as of May 26, 2017, it is my determination that Real-Time Detection with YOLO was first made available to the public as of May 26, 2017 via the Internet Archive and likely earlier via the original Machine Think Blog website.

28.I have reviewed Exhibit EX2045, a document entitled "Tinier-Yolo: A Real-Time Object Detection Method of Constrained Environments" by Wei Fang, et al as published in IEEE Access December 2019.

29.Attached hereto as Exhibit EX2072 is a true and correct copy of the MARC record for IEEE Access as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2072 accurately describes the title, publisher and ISSN number of IEEE Access. The Showing Results field present on page 3 of this record indicates the library's collection includes the December 2019 issue of IEEE Access containing "Tinier-Yolo: A Real-Time Object Detection Method of Constrained Environments".

30. Attached hereto as Exhibit EX2073 is a true and correct copy of "Tinier-Yolo: A Real-Time Object Detection Method of Constrained Environments" as published in IEEE Access as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2045 to Exhibit EX2073, it is my determination that Exhibit EX2045 is a true and correct copy of "Tinier-Yolo: A Real-Time Object Detection Method of Constrained Environments" by Wei Fang, et al as published in IEEE Access.

31. The 008 field of the MARC record in Exhibit EX2072 indicates the date of record creation. The 008 field of Exhibit EX2072 indicates the Penn State University Library first acquired IEEE Access as of August 21, 2012 and held the journal in perpetuity until the publication of "Tinier-Yolo: A Real-Time Object Detection Method of Constrained Environments". Considering this information, it is my determination that IEEE Access December 2019 and therefore "Tinier-Yolo: A Real-Time Object Detection Method of Constrained Environments" was made available to the public shortly after its initial publication in December 2019.

32. I have reviewed Exhibit 2046, a document entitled "Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks" by Shaoqing

Ren, et al as published in IEEE Transactions on Pattern Analysis and Machine Intelligence June 2017.

33. Attached hereto as Exhibit EX2074 is a true and correct copy of the MARC record for IEEE Transactions on Pattern Analysis and Machine Intelligence as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2074 accurately describes the title, publisher and ISSN number of IEEE Transactions on Pattern Analysis and Machine Intelligence. The Showing Results field present on page 3 of this record indicates the library's collection includes the June 2017 issue of IEEE Transactions on Pattern Analysis and Machine Intelligence containing "Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks".

34. Attached hereto as Exhibit EX2075 is a true and correct copy of "Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks" as published in IEEE Transactions on Pattern Analysis and Machine Intelligence as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit 2046 to Exhibit EX2075, it is my determination that Exhibit 2046 is a true and correct copy of "Faster R-CNN: Towards Real-Time Object Detection with

Region Proposal Networks" by Shaoqing Ren, et al as published in IEEE Transactions on Pattern Analysis and Machine Intelligence.

35. The 008 field of the MARC record in Exhibit EX2074 indicates the date of record creation. The 008 field of Exhibit EX2074 indicates the Penn State University Library first acquired IEEE Transactions on Pattern Analysis and Machine Intelligence as of July 13, 2000 and held the journal in perpetuity until the publication of "Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks". Considering this information, it is my determination that IEEE Transactions on Pattern Analysis and Machine Intelligence June 2017 and therefore "Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks" was made available to the public shortly after its initial publication in June 2017.

36. I have reviewed Exhibit EX2047, a document entitled "Recurrent Filter Learning for Visual Tracking" by Tianyu Yang, et al as published in Proceedings of IEEE International Conference on Computer Vision Workshops January 2018.

37. Attached hereto as Exhibit EX2076 is a true and correct copy of the MARC record for Proceedings of IEEE International Conference on Computer

Vision Workshops as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2076 accurately describes the title, publisher and ISSN number of Proceedings of IEEE International Conference on Computer Vision Workshops. The Showing Results field present on page 3 of this record indicates the library's collection includes the January 2018 issue of Proceedings of IEEE International Conference on Computer Vision Workshops containing "Recurrent Filter Learning for Visual Tracking".

38. Attached hereto as Exhibit EX2077 is a true and correct copy of "Recurrent Filter Learning for Visual Tracking" as published in Proceedings of IEEE International Conference on Computer Vision Workshops as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2047 to Exhibit EX2077, it is my determination that Exhibit EX2047 is a true and correct copy of "Recurrent Filter Learning for Visual Tracking" by Tianyu Yang, et al as published in Proceedings of IEEE International Conference on Computer Vision Workshops.

39. The 008 field of the MARC record in Exhibit EX2076 indicates the date of record creation. The 008 field of Exhibit EX2076 indicates the Penn State

University Library first acquired Proceedings of IEEE International Conference on Computer Vision Workshops as of September 17, 2013 and held the journal in perpetuity until the publication of "Recurrent Filter Learning for Visual Tracking". Considering this information, it is my determination that Proceedings of IEEE International Conference on Computer Vision Workshops January 2018 and therefore "Recurrent Filter Learning for Visual Tracking" was made available to the public shortly after its initial publication in January 2018.

40.I have reviewed Exhibit EX2048, a document entitled "Dropout: A Simple Way to Prevent Neural Networks from Overfitting" by Nitish Srivastava, et al as published in Journal of Machine Learning Research January 2014.

41.Attached hereto as Exhibit EX2078 is a true and correct copy of the MARC record for Journal of Machine Learning Research as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2078 accurately describes the title, publisher and ISSN number of Journal of Machine Learning Research. The Showing Results field present on page 3 of this record indicates the library's collection includes the January 2014 issue of

Journal of Machine Learning Research containing "Dropout: A Simple Way to Prevent Neural Networks from Overfitting".

42. Attached hereto as Exhibit EX2079 is a true and correct copy of "Dropout:

A Simple Way to Prevent Neural Networks from Overfitting" as published in Journal of Machine Learning Research as held by the Penn State

University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2048 to Exhibit EX2079, it is my determination that

Exhibit EX2048 is a true and correct copy of "Dropout: A Simple Way to Prevent Neural Networks from Overfitting" by Nitish Srivastava, et al as published in Journal of Machine Learning Research.

43. The 008 field of the MARC record in Exhibit EX2078 indicates the date of

record creation. The 008 field of Exhibit EX2078 indicates the Penn State

University Library first acquired Journal of Machine Learning Research as of February 12, 2001 and held the journal in perpetuity until the publication

of "Dropout: A Simple Way to Prevent Neural Networks from Overfitting".

Considering this information, it is my determination that Journal of Machine

Learning Research January 2014 and therefore "Dropout: A Simple Way to

Prevent Neural Networks from Overfitting" was made available to the public

shortly after its initial publication in January 2014.

44.I have reviewed Exhibit EX2049, a document entitled "Implementation of an Artificial Neural Network in Recognizing In-flight Quadrotor Image" by Reiichiro Christian S. Nakano, et al as published in Proceedings of the TENCON IEEE Region Ten Conference January 2016.

45.Attached hereto as Exhibit EX2080 is a true and correct copy of the MARC record for Proceedings of the TENCON IEEE Region Ten Conference as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2080 accurately describes the title, publisher and ISSN number of Proceedings of the TENCON IEEE Region Ten Conference. The Showing Results field present on page 3 of this record indicates the library's collection includes the January 2016 issue of Proceedings of the TENCON IEEE Region Ten Conference containing "Implementation of an Artificial Neural Network in Recognizing In-flight Quadrotor Image".

46.Attached hereto as Exhibit EX2081 is a true and correct copy of "Implementation of an Artificial Neural Network in Recognizing In-flight Quadrotor Image" as published in Proceedings of the TENCON IEEE Region Ten Conference as held by the Penn State University Library. This

PDF was secured from the library's collection. In comparing Exhibit EX2049 to Exhibit EX2081, it is my determination that Exhibit EX2049 is a true and correct copy of "Implementation of an Artificial Neural Network in Recognizing In-flight Quadrotor Image" by Reiichiro Christian S. Nakano, et al as published in Proceedings of the TENCON IEEE Region Ten Conference.

47. The 008 field of the MARC record in Exhibit EX2080 indicates the date of record creation. The 008 field of Exhibit EX2080 indicates the Penn State University Library first acquired Proceedings of the TENCON IEEE Region Ten Conference as of January 6, 2011 and held the journal in perpetuity until the publication of "Implementation of an Artificial Neural Network in Recognizing In-flight Quadrotor Image". Considering this information, it is my determination that Proceedings of the TENCON IEEE Region Ten Conference January 2016 and therefore "Implementation of an Artificial Neural Network in Recognizing In-flight Quadrotor Image" was made available to the public shortly after its initial publication in January 2016.

48. I have reviewed Exhibit EX2050, a document entitled "Mobile Device Based Outdoor Navigation With On-line Learning Neural Network: a Comparison with Convolutional Neural Network" by Zeija Zheng, et al as

published in Proceedings of the IEEE International Conference on Computer Vision Workshops December 2016.

49. Attached hereto as Exhibit EX2082 is a true and correct copy of the MARC record for Proceedings of the IEEE International Conference on Computer Vision Workshops as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2082 accurately describes the title, publisher and ISSN number of Proceedings of the IEEE International Conference on Computer Vision Workshops. The Showing Results field present on page 3 of this record indicates the library's collection includes the December 2016 issue of Proceedings of the IEEE International Conference on Computer Vision Workshops containing "Mobile Device Based Outdoor Navigation With On-line Learning Neural Network: a Comparison with Convolutional Neural Network".

50. Attached hereto as Exhibit EX2083 is a true and correct copy of "Mobile Device Based Outdoor Navigation With On-line Learning Neural Network: a Comparison with Convolutional Neural Network" as published in Proceedings of the IEEE International Conference on Computer Vision Workshops as held by the Penn State University Library. This PDF was

secured from the library's collection. In comparing Exhibit EX2050 to Exhibit EX2083, it is my determination that Exhibit EX2050 is a true and correct copy of "Mobile Device Based Outdoor Navigation With On-line Learning Neural Network: a Comparison with Convolutional Neural Network" by Zeija Zheng, et al as published in Proceedings of the IEEE International Conference on Computer Vision Workshops.

51. The 008 field of the MARC record in Exhibit EX2082 indicates the date of record creation. The 008 field of Exhibit EX2082 indicates the Penn State University Library first acquired Proceedings of the IEEE International Conference on Computer Vision Workshops as of September 17, 2013 and held the journal in perpetuity until the publication of "Mobile Device Based Outdoor Navigation With On-line Learning Neural Network: a Comparison with Convolutional Neural Network". Considering this information, it is my determination that Proceedings of the IEEE International Conference on Computer Vision Workshops December 2016 and therefore "Mobile Device Based Outdoor Navigation With On-line Learning Neural Network: a Comparison with Convolutional Neural Network" was made available to the public shortly after its initial publication in December 2016.

52.I have reviewed Exhibit EX2051, a document entitled "YOLO Nano: A Highly Compact You Only Look Once Convolutional Neural Network for Object Detection" by Alexander Wong, et al as published in Proceedings of the 2019 Workshop on Energy Efficient Machine Learning and Cognitive Computing.

53.Attached hereto as Exhibit EX2084 is a true and correct copy of the MARC record Proceedings of the 2019 Workshop on Energy Efficient Machine Learning and Cognitive Computing as held by the Massachusetts Institute of Technology Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2084 accurately describes the title, publisher and ISBN number of Proceedings of the 2019 Workshop on Energy Efficient Machine Learning and Cognitive Computing. The 'Online Availability' field visible on page 2 of Exhibit EX2084 indicates this library's copy of Proceedings of the 2019 Workshop on Energy Efficient Machine Learning and Cognitive Computing is hosted via the IEEE Xplore database.

54.Attached hereto as Exhibit EX2085 is a true and correct copy of "YOLO Nano: A Highly Compact You Only Look Once Convolutional Neural Network for Object Detection" as published in Proceedings of the 2019

Workshop on Energy Efficient Machine Learning and Cognitive Computing. This PDF was secured from IEEE Xplore, the same database hosting Proceedings of the 2019 Workshop on Energy Efficient Machine Learning and Cognitive Computing as held by the Massachusetts Institute of Technology Library. In comparing Exhibit EX2051 to Exhibit EX2085, it is my determination that Exhibit EX2051 is a true and correct copy of "YOLO Nano: A Highly Compact You Only Look Once Convolutional Neural Network for Object Detection" by Alexander Wong, et al as published in Proceedings of the 2019 Workshop on Energy Efficient Machine Learning and Cognitive Computing.

55. The 008 field of the MARC record in Exhibit EX2084 indicates the date of record creation. The 008 field of Exhibit EX2084 indicates the Massachusetts Institute of Technology Library first acquired Proceedings of the 2019 Workshop on Energy Efficient Machine Learning and Cognitive Computing as of August 10, 2021. Considering this information, it is my determination that Proceedings of the 2019 Workshop on Energy Efficient Machine Learning and Cognitive Computing and therefore "YOLO Nano: A Highly Compact You Only Look Once Convolutional Neural Network for Object Detection" was made available to the public shortly after August 10, 2021.

56. I have reviewed Exhibit EX2052, a document entitled "YOLO Net on iOS" by Maneesh Apte, et al.

57. Attached hereto as Exhibit EX2086 is a screen capture of the Internet Archive Wayback Machine entry for <https://cs231n.stanford.edu/reports/2017/pdfs/135.pdf>. I secured these screen captures myself from <https://web.archive.org/web/20171118092245/https://cs231n.stanford.edu/reports/2017/pdfs/135.pdf>. This record was captured as of November 18, 2017.

58. Exhibit EX2086 is an Internet Archive capture of a file entitled "YOLO Net on iOS" by Maneesh Apte, et al as hosted on the Stanford website. In comparing Exhibit EX2086 to Exhibit EX2052, it is my determination that Exhibit EX2052 is a true and correct copy of YOLO Net on iOS by Maneesh Apte, et al as hosted on the Stanford website. As the Internet Archive first captured this file as of November 18, 2017, it is my determination that YOLO Net on iOS by Maneesh Apte, et al was first made available to the public as of November 18, 2017 via the Internet Archive and likely earlier via the original Stanford website.

59. I have reviewed Exhibit EX2053, a document entitled "A GPU based implementation of Robust Face Detection System" by Vaibhav Jain, et al as published in Procedia Computer Science June 2016.
60. Attached hereto as Exhibit EX2087 is a true and correct copy of the MARC record for Procedia Computer Science as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2087 accurately describes the title, publisher and ISSN number of Procedia Computer Science. The Showing Results field present on page 3 of this record indicates the library's collection includes the June 2016 issue of Procedia Computer Science containing "A GPU based implementation of Robust Face Detection System".
61. Attached hereto as Exhibit EX2088 is a true and correct copy of "A GPU based implementation of Robust Face Detection System" as published in Procedia Computer Science as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2053 to Exhibit EX2088, it is my determination that Exhibit EX2053 is a true and correct copy of "A GPU based implementation of Robust Face

Detection System" by Vaibhav Jain, et al as published in Procedia Computer Science.

62.The 008 field of the MARC record in Exhibit EX2087 indicates the date of record creation. The 008 field of Exhibit EX2087 indicates the Penn State University Library first acquired Procedia Computer Science as of June 7, 2010 and held the journal in perpetuity until the publication of "A GPU based implementation of Robust Face Detection System". Considering this information, it is my determination that Procedia Computer Science June 2016 and therefore "A GPU based implementation of Robust Face Detection System" was made available to the public shortly after its initial publication in June 2016.

63.I have reviewed Exhibit EX2054, a document entitled "Online Video Object Detection using Association LSTM" by Yongyi Lu, et al as published in Proceedings of the 2017 IEEE International Conference on Computer Vision.

64.Attached hereto as Exhibit EX2089 is a true and correct copy of the MARC record for Proceedings of the 2017 IEEE International Conference on Computer Vision as held by the Penn State University Library. I secured this

record myself from the library's public catalog. The MARC record contained within Exhibit EX2089 accurately describes the title, publisher and ISBN number of Proceedings of the 2017 IEEE International Conference on Computer Vision.

65. Attached hereto as Exhibit EX2090 is a true and correct copy of "Online Video Object Detection using Association LSTM" as published in Proceedings of the 2017 IEEE International Conference on Computer Vision as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2054 to Exhibit EX2090, it is my determination that Exhibit EX2054 is a true and correct copy of "Online Video Object Detection using Association LSTM" by Yongyi Lu, et al as published in Proceedings of the 2017 IEEE International Conference on Computer Vision.

66. The 008 field of the MARC record in Exhibit EX2089 indicates the date of record creation. The 008 field of Exhibit EX2089 indicates the Penn State University Library first acquired Proceedings of the 2017 IEEE International Conference on Computer Vision as of December 27, 2017. Considering this information, it is my determination that Proceedings of the 2017 IEEE International Conference on Computer Vision and therefore "Online Video

Object Detection using Association LSTM" was made available to the public shortly after December 27, 2017.

67. I have reviewed Exhibit EX2055, a document entitled "Mesh Segmentation with Connecting Parts for 3D Object Prototyping" by Karl Apaza-Agüero, et al as published in Proceedings of the 2015 IEEE International Conference on Image Processing.

68. Attached hereto as Exhibit EX2091 is a true and correct copy of the MARC record for Proceedings of the 2015 IEEE International Conference on Image Processing as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2091 accurately describes the title, publisher and ISBN number of Proceedings of the 2015 IEEE International Conference on Image Processing.

69. Attached hereto as Exhibit EX2092 is a true and correct copy of "Mesh Segmentation with Connecting Parts for 3D Object Prototyping" as published in Proceedings of the 2015 IEEE International Conference on Image Processing as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2055 to

Exhibit EX2092, it is my determination that Exhibit EX2055 is a true and correct copy of "Mesh Segmentation with Connecting Parts for 3D Object Prototyping" by Karl Apaza-Agüero, et al as published in Proceedings of the 2015 IEEE International Conference on Image Processing.

70.The 008 field of the MARC record in Exhibit EX2091 indicates the date of record creation. The 008 field of Exhibit EX2091 indicates the Penn State University Library first acquired Proceedings of the 2015 IEEE International Conference on Image Processing as of November 16, 2015. Considering this information, it is my determination that Proceedings of the 2015 IEEE International Conference on Image Processing and therefore "Mesh Segmentation with Connecting Parts for 3D Object Prototyping" was made available to the public shortly after November 16, 2015.

71.I have reviewed Exhibit EX2056, a document entitled "Detection of Salient Curvature Features on Polygonal Surfaces" by Kouki Watanabe, et al as published in Computer Graphics Forum July 2002.

72.Attached hereto as Exhibit EX2093 is a true and correct copy of the MARC record for Computer Graphics Forum as held by the Penn State University Library. I secured this record myself from the library's public catalog. The

MARC record contained within Exhibit EX2093 accurately describes the title, publisher and ISSN number of Computer Graphics Forum. The Showing Results field present on page 3 of this record indicates the library's collection includes the July 2002 issue of Computer Graphics Forum containing "Detection of Salient Curvature Features on Polygonal Surfaces".

73. Attached hereto as Exhibit EX2094 is a true and correct copy of "Detection of Salient Curvature Features on Polygonal Surfaces" as published in Computer Graphics Forum as held by the Penn State University Library. This PDF was secured from the library's collection. In comparing Exhibit EX2056 to Exhibit EX2094, it is my determination that Exhibit EX2056 is a true and correct copy of "Detection of Salient Curvature Features on Polygonal Surfaces" by Kouki Watanabe, et al as published in Computer Graphics Forum.

74. The 008 field of the MARC record in Exhibit EX2093 indicates the date of record creation. The 008 field of Exhibit EX2093 indicates the Penn State University Library first acquired Computer Graphics Forum as of August 24, 1998 and held the journal in perpetuity until the publication of "Detection of Salient Curvature Features on Polygonal Surfaces". Considering this information, it is my determination that Computer Graphics Forum July

2002 and therefore "Detection of Salient Curvature Features on Polygonal Surfaces" was made available to the public shortly after its initial publication in July 2002.

75. I have reviewed Exhibit EX2057, a document entitled "Histograms of Oriented Gradients for Human Detection" by Navneet Dalal, et al as published in Proceedings of the 2005 Computer Vision & Pattern Recognition Conference.

76. Attached hereto as Exhibit EX2095 is a true and correct copy of the MARC record for Proceedings of the 2005 Computer Vision & Pattern Recognition Conference as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2095 accurately describes the title, publisher and ISBN number of Proceedings of the 2005 Computer Vision & Pattern Recognition Conference.

77. Attached hereto as Exhibit EX2096 is a true and correct copy of "Histograms of Oriented Gradients for Human Detection" as published in Proceedings of the 2005 Computer Vision & Pattern Recognition Conference as held by the Penn State University Library. This PDF was

secured from the library's collection. In comparing Exhibit EX2057 to Exhibit EX2096, it is my determination that Exhibit EX2057 is a true and correct copy of "Histograms of Oriented Gradients for Human Detection" by Navneet Dalal, et al as published in Proceedings of the 2005 Computer Vision & Pattern Recognition Conference.

78. The 008 field of the MARC record in Exhibit EX2095 indicates the date of record creation. The 008 field of Exhibit EX2095 indicates the Penn State University Library first acquired Proceedings of the 2005 Computer Vision & Pattern Recognition Conference as of December 19, 2005. Considering this information, it is my determination that Proceedings of the 2005 Computer Vision & Pattern Recognition Conference and therefore "Histograms of Oriented Gradients for Human Detection" was made available to the public shortly after December 19, 2005.

79. I have reviewed Exhibit EX2058, a web page entitled "GeForce GTX Titan X Specifications."

80. Attached hereto as Exhibit EX2097 is a screen capture of the Internet Archive Wayback Machine entry for <https://www.nvidia.com/en-us/geforce/graphics-cards/geforce-gtx-titan-x/specifications/>. I secured these

screen captures myself from

<https://web.archive.org/web/20200809205411/https://www.nvidia.com/en-us/geforce/graphics-cards/geforce-gtx-titan-x/specifications/>. This record was captured as of August 9, 2020.

81. Exhibit EX2097 is an Internet Archive capture of a web page entitled

"GeForce GTX Titan X Specifications" as hosted on the NVIDIA website.

In comparing Exhibit EX2097 to Exhibit EX2058, it is my determination that Exhibit EX2058 is a true and correct copy of the GeForce GTX Titan X Specifications web page as hosted on the NVIDIA website. As the Internet Archive first captured this page as of August 9, 2020, it is my determination that GeForce GTX Titan X Specifications was first made available to the public as of August 9, 2020 via the Internet Archive and likely earlier via the original NVIDIA website.

82. I have reviewed Exhibit EX2059, a web page entitled "CUDA."

83. Attached hereto as Exhibit EX2098 is a screen capture of the Internet

Archive Wayback Machine entry for <https://www.nvidia.com/en-us/geforce/technologies/cuda/>. I secured these screen captures myself from <https://web.archive.org/web/20200809115603/https://www.nvidia.com/en-us/geforce/technologies/cuda/>.

us/geforce/technologies/cuda/. This record was captured as of August 9, 2020.

84. Exhibit EX2098 is an Internet Archive capture of a web page entitled "CUDA" as hosted on the NVIDIA website. In comparing Exhibit EX2098 to Exhibit EX2059, it is my determination that Exhibit EX2059 is a true and correct copy of the CUDA web page as hosted on the NVIDIA website. As the Internet Archive first captured this page as of August 9, 2020, it is my determination that CUDA was first made available to the public as of August 9, 2020 via the Internet Archive and likely earlier via the original NVIDIA website.

85. I have reviewed Exhibit EX2060, excerpts of a book entitled "Foundations of Machine Learning" by Mehryar Mohri.

86. Attached hereto as Exhibit EX2099 is a true and correct copy of the MARC record for Foundations of Machine Learning as held by the Penn State University Library. I secured this record myself from the library's public catalog. The MARC record contained within Exhibit EX2099 accurately describes the title, author, publisher, and ISBN number of Foundations of Machine Learning.

87. Attached hereto as Exhibit EX2100 is a true and correct copy excerpts of Foundations of Machine Learning. These scans were secured from a copy of the Mohri book I purchased from a bookseller. The bibliographic details indexed in Exhibit EX2099 are an accurate description of Foundations of Machine Learning as captured in Exhibit EX2100. In comparing Exhibit EX2060 to Exhibit EX2100, it is my determination that Exhibit EX2060 is a true and correct copy of Foundations of Machine Learning by Mehryar Mohri.

88. The 008 field of the MARC record in Exhibit EX2099 indicates the date of record creation. The 008 field of Exhibit EX2099 indicates the Penn State University Library first acquired Foundations of Machine Learning as of March 30, 2012. Considering this information, it is my determination that Foundations of Machine Learning was made available to the public shortly after its initial acquisition as of March 30, 2012.

89. I have reviewed Exhibit EX2061, a document entitled "You Only Look Once: Unified, Real-Time Object Detection" by Joseph Redmon, et al.

90. Attached hereto as Exhibit EX2101 is a screen capture of the Internet Archive Wayback Machine entry for

<http://pjreddie.com/media/files/papers/yolo.pdf>. I secured these screen captures myself from

<https://web.archive.org/web/20150922103408/http://pjreddie.com/media/files/papers/yolo.pdf>. This record was captured as of August 22, 2015.

91. Exhibit EX2101 is an Internet Archive capture of a file entitled "You Only Look Once: Unified, Real-Time Object Detection" by Joseph Redmon, et al as hosted on the PJ Reddie website. In comparing Exhibit EX2101 to Exhibit EX2061, it is my determination that Exhibit EX2061 is a true and correct copy of You Only Look Once: Unified, Real-Time Object Detection by Joseph Redmon, et al as hosted on the PJ Reddie website. As the Internet Archive first captured this file as of August 22, 2015, it is my determination that You Only Look Once: Unified, Real-Time Object Detection by Joseph Redmon, et al was first made available to the public as of August 22, 2015 via the Internet Archive and likely earlier via the original PJ Reddie website.

92. I have reviewed Exhibit EX2062, a document entitled "SqueezeNet: AlexNet-Level Accuracy with 50x Fewer Parameters and <0.5MB Model Size" by Forrest N. Iandola, et al.

93. Attached hereto as Exhibit EX2102 is a screen capture of the Internet

Archive Wayback Machine entry for <https://arxiv.org/pdf/1602.07360v4.pdf>.

I secured these screen captures myself from

<https://web.archive.org/web/20170128054438/https://arxiv.org/pdf/1602.07360v4.pdf>. This record was captured as of January 28, 2017.

94. Exhibit EX2102 is an Internet Archive capture of a file entitled

"SqueezeNet: AlexNet-Level Accuracy with 50x Fewer Parameters and <0.5MB Model Size" by Forrest N. Iandola, et al as hosted on the arXiv website. In comparing Exhibit EX2102 to Exhibit EX2062, it is my determination that Exhibit EX2062 is a true and correct copy of

"SqueezeNet: AlexNet-Level Accuracy with 50x Fewer Parameters and <0.5MB Model Size" by Forrest N. Iandola, et al as hosted on the arXiv website. As the Internet Archive first captured this file as of January 28, 2017, it is my determination that "SqueezeNet: AlexNet-Level Accuracy with 50x Fewer Parameters and <0.5MB Model Size" by Forrest N. Iandola, et al was first made available to the public as of January 28, 2017 via the Internet Archive and likely earlier via the original arXiv website.

95. I have reviewed Exhibit EX2103, a document entitled "Convolutional LSTM Network: A Machine Learning Approach for Precipitation Nowcasting" by Xingjian Shi, et al.

96. Attached hereto as Appendix EX2105 is a screen capture of the Internet Archive Wayback Machine entry for <https://arxiv.org/pdf/1506.04214v2.pdf>. I secured these screen captures myself from <https://web.archive.org/web/20200915014241/https://arxiv.org/pdf/1506.04214v2.pdf>. This record was captured as of September 15, 2020.

97. Appendix EX2105 is an Internet Archive capture of a file entitled "Convolutional LSTM Network: A Machine Learning Approach for Precipitation Nowcasting" by Xingjian Shi, et al as hosted on the arXiv website. In comparing Appendix EX2105 to Exhibit EX2103, it is my determination that Exhibit EX2103 is a true and correct copy of "Convolutional LSTM Network: A Machine Learning Approach for Precipitation Nowcasting" by Xingjian Shi, et al as hosted on the arXiv website. As the Internet Archive first captured this file as of September 15, 2020, it is my determination that "Convolutional LSTM Network: A Machine Learning Approach for Precipitation Nowcasting" by Xingjian Shi,

et al was first made available to the public as of September 15, 2020 via the Internet Archive and likely earlier via the original arXiv website.

98. I have reviewed Exhibit EX2104, a document entitled "Spatial-Spectral Feature Extraction via Deep ConvLSTM Neural Networks for Hyperspectral Image Classification." by Wen-Shuai Hu, et al.

99. Attached hereto as Appendix EX2106 is a screen capture of the Internet Archive Wayback Machine entry for <https://arxiv.org/pdf/1905.03577.pdf>. I secured these screen captures myself from <https://web.archive.org/web/20220508083912/https://arxiv.org/pdf/1905.03577.pdf> <https://web.archive.org/web/20220508083912/https://arxiv.org/pdf/1905.03577.pdf>. This record was captured as of May 8, 2022.

100. Appendix EX2106 is an Internet Archive capture of a file entitled "Spatial-Spectral Feature Extraction via Deep ConvLSTM Neural Networks for Hyperspectral Image Classification." by Wen-Shuai Hu, et al as hosted on the arXiv website. In comparing Appendix EX2106 to Exhibit EX2104, it is my determination that Exhibit EX2104 is a true and correct copy of "Spatial-Spectral Feature Extraction via Deep ConvLSTM Neural Networks for Hyperspectral Image Classification." by Wen-Shuai Hu, et al as hosted

on the arXiv website. As the Internet Archive first captured this file as of May 8, 2022, it is my determination that "Spatial-Spectral Feature Extraction via Deep ConvLSTM Neural Networks for Hyperspectral Image Classification." by Wen-Shuai Hu, et al was first made available to the public as of May 8, 2022 via the Internet Archive and likely earlier via the original arXiv website.

101. I have been retained on behalf of the Patent Owner to provide assistance in the above-illustrated matter in establishing the authenticity and public availability of the documents discussed in this declaration. I am being compensated for my services in this matter at the rate of \$200.00 per hour plus reasonable expenses. My statements are objective, and my compensation does not depend on the outcome of this matter.

102. I understand that this declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the U.S. Patent and Trademark Office. I acknowledge that I may be subject to cross-examination via deposition in the case and that any such cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross examination.

103. I declare under penalty of perjury that the foregoing is true and correct. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 6/22/2026

A handwritten signature in black ink, appearing to read 'June Ann Munford', with a stylized, flowing script.

June Ann Munford