

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADB Safegate Sweden AB,
ADB Safegate BV, and
ADB Safegate Americas, LLC

Petitioner,

v.

Honeywell International Inc.,

Patent Owner.

Case PGR2023-00053
U.S. Patent No. 11,538,349

EXHIBIT 1032
DECLARATION OF MARK CAMPBELL, PH.D.

EX1032 - Declaration of Dr. Mark Campbell in Support of Supplemental Evidence

1. My original Declaration (EX1003, hereinafter “Expert Declaration”) provides a detailed description of my experience, background, and expertise. As part of preparing the Expert Declaration in support of the Petition in PGR2023-00053, I cited a number of supporting references as part of my explanation of the Background Technology to U.S. Patent No. 11,538,349 (“the ’349 patent”).

2. In my process for finding each of the supporting references for the Expert Declaration, I used standard practices that professors and students in academia use for writing formal documents such as conference and journal papers or theses. The supporting references come from several sources: 1) papers that I co-wrote with my colleagues and students relevant to the topic; 2) search for key topics, typically using Google Scholar; 3) search of key conferences or journals known to address the topic (e.g., Computer Vision and Pattern Recognition or CVPR), or 4) references cited within one of the key documents. My Expert Declaration used each of these approaches to find the relevant supporting references.

3. Google Scholar (GS) is well-known to include the most publicly available items from the most sources, including conference and journal publications, theses, patents, and other sources known to be publicly available. GS also includes key attributes that detail the publication data, including a “cite” command (different formats such as APA, Chicago, Harvard, and BibTeX), a

EX1032 - Declaration of Dr. Mark Campbell in Support of Supplemental Evidence listing of all other papers that have cited the given paper, and a bar chart showing the number of citations per year. Each of the “cite” examples only show the year, which is common across most sources. Journal citations typically will give the issue date, but not the day/month. *See, e.g.,* EX1034 (GS Example).

4. When using GS, I relied on the citation information listed in GS to know the year of publication for the supporting references. In addition, for those supporting references close to the priority date of the '349 Patent, I verified that source was published prior to August 3, 2020.

Supporting References available on IEEE Xplore

5. Among the supporting references cited in my Expert Declaration, a majority of them were published by IEEE and available online at IEEE Xplore. These supporting references include EX1009, EX1015, EX1016, EX1017, EX1019, EX1020, EX1022, EX1023, EX1024, EX1026, EX1028, and EX1029. According to IEEE Xplore, the publication dates are determined as follows:

Publication Dates

The Date of Publication for Journals and Standards on IEEE Xplore represents the very first instance of public dissemination. IEEE Xplore previously made distinctions between the online publication date, print publication date, etc. This was simplified to reflect a single publication date of record as defined above.

Conference proceedings in IEEE Xplore show "Date of Conference" (date of event) and also "Date Added to IEEE Xplore" (date proceedings were first published).

Courses show the month and year of publication. Some older courses include the label "Reaffirmed" to indicate the course was reevaluated to ensure its contents are up-to-date and relevant.

Books show the Copyright Year of publication.

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EX1033, 4. Accordingly, for each of these supporting references relied upon in
my Expert Declaration, I have provided supporting documentation from IEEE
Xplore providing the date corresponding to the “very first instance of public
dissemination.”

EX1009

6. EX1009, which is Chinrungrueng J, Sunantachaikul U, Triamlumlerd
S., “Smart Parking: An Application of Optical Wireless Sensor Network,”
International Symposium on Applications and the Internet Workshops, was
published on February 12, 2007. *See* EX1033, 2-4.

EX1015

7. EX1015, which is Schumann, O., Hahn, M., Dickmann, J. and
Wöhler, C., “Semantic Segmentation on Radar Point Clouds,” *International
Conference on Information Fusion (FUSION)*, was published on September 6,
2018. *See* EX1033, 19-20.

EX1016

8. EX1016, which is Aldoma, A., Marton, Z.-C., Tombari, F.,
Wohlking, W., Potthast, C., Zeisl, B., Rusu, R. B., Gedikli, S., and Vincze, M.,
“Tutorial: Point Cloud Library: Three-Dimensional Object Recognition and 6 DoF
Pose Estimation,” *IEEE Robotics & Automation Magazine* 19, no. 3, was published
on September 11, 2012. *See* EX1033, 21-22.

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EX1017

9. EX1017, which is I. Miller and M. E. Campbell, “Sensitivity Analysis of a Tightly-Coupled GPS/INS System for Autonomous Navigation,” *IEEE Transactions on Aerospace and Electronic Systems*, 48(2), was published on April 5, 2012. See EX1033, 23-24. In addition, I am a co-author of this paper and can attest to the accuracy of the publication date.

EX1019

10. EX1019, which is I. Miller, M. E. Campbell, and D. Huttenlocher, “Efficient Unbiased Tracking of Multiple Dynamic Obstacles Under Large Viewpoint Changes,” *IEEE Transactions on Robotics*, 27(1), was published on November 22, 2010. See EX1033, 31-33. In addition, I am a co-author of this paper and can attest to the accuracy of the publication date.

EX1020

11. EX1020, which is F. Havlak and M. E. Campbell, “Discrete and Continuous, Probabilistic Anticipation for Autonomous Robots in Urban Environments,” *IEEE Transactions on Robotics*, 30(2), was published on December 11, 2013. See EX1033, 34-36. In addition, I am a co-author of this paper and can attest to the accuracy of the publication date.

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EX1022

12. EX1022, which is Campbell, M. E., Ahmed, N. R., “Distributed Data Fusion: Neighbors, Rumors, and the Art of Collective Knowledge,” *IEEE Control Systems Magazine*, 36(4), was published on July 18, 2016. See EX1033, 41-42. In addition, I am a co-author of this paper and can attest to the accuracy of the publication date.

EX1023

13. EX1023, which is Deng, J., Dong, W., Socher, R., Li, L.J., Li, K. and Fei-Fei, L., “Imagenet: A large-scale Hierarchical Image Database,” *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, was published on August 18, 2009. See EX1033, 43-44.

EX1024

14. EX1024, which is Rusu, R.B. and Cousins, S., “3D is Here: Point Cloud Library (PCL)” *IEEE International Conference on Robotics and Automation (ICRA)*, was published on August 18, 2011. See EX1033, 45-46.

EX1026

15. EX1026, which is Wohlking, W., Aldoma, A., Rusu, R.B. and Vincze, M., “3Dnet: Large-scale Object Class Recognition from CAD Models,” *IEEE International Conference on Robotics and Automation (ICRA)*, was published on June 28, 2012. See EX1033, 53-55.

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EX1028

16. EX1028, which is Qi, C.R., Su, H., Mo, K. and Guibas, L.J.,
“Pointnet: Deep Learning on Point Sets for 3D Classification and Segmentation,”
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), was
published on November 9, 2017. See EX1033, 59-60.

EX1029

17. EX1029, which is Wang, Y., Chao, W.L., Garg, D., Hariharan, B.,
Campbell, M. and Weinberger, K.Q., 2019. “Pseudo-Lidar from Visual Depth
Estimation: Bridging the Gap in 3D Object Detection for Autonomous Driving,”
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), was
published on January 9, 2020. See EX1033, 61-63.

Supporting References not available on IEEE Xplore

18. Although the remaining supporting references corresponding to
EX1011-EX1014, EX1018, EX1021, EX1025, EX1027, EX1030, and EX1031 are
not available on IEEE Xplore, the evidence supports that each of these supporting
references was published prior to August 3, 2020.

EX1011

19. EX1011, which is Im N., “A Study on Ship Automatic Berthing with
Assistance of Auxiliary Devices,” *International Journal of Naval Architecture and
Ocean Engineering*, was published in September 2012 and was published online

EX1032 - Declaration of Dr. Mark Campbell in Support of Supplemental Evidence on March 16, 2016. *See* EX1033, 5-6. The International Journal of Naval

Architecture and Ocean Engineering is an Open Access Journal published by Elsevier and is available online at ScienceDirect. Both Elsevier and ScienceDirect are well-known and respected publishers in academia.

20. As further evidence that EX1011 was published prior to August 3, 2020, EX1011 was cited by subsequently published papers including EX1035. *See* EX1035, 10. EX1035 was published by IEEE on January 27, 2017.

EX1012

21. EX1012, which is Mi, C., Shen, Y., Mi, W. and Huang, Y., “Ship Identification Algorithm based on 3D Point Cloud for Automated Ship Loaders.” *Journal of Coastal Research*, (73), was published on January 1, 2015. *See* EX1033, 7-10. The *Journal of Coastal Research* is published by the Coastal Education & Research Foundation (CERF), with papers online by BioOne.

22. As further evidence that EX1012 was published prior to August 3, 2020, EX1012 was cited by subsequently published papers including EX1036. *See* EX1036, 8. EX1036 was made available online by IEEE Xplore on January 27, 2017.

EX1013

23. EX1013, which is Thupakula, K., “Data Fusion Techniques for Object Identification in Airport Environment.” *SAE Technical Paper 2017-01-2109*, 19

EX1032 - Declaration of Dr. Mark Campbell in Support of Supplemental Evidence Sept 2017, doi: 10.4271/2017-01-2109, was published on September 19, 2017. *See* EX1033, 11-14. This paper was published by the Society of Automotive Engineering (SAE) and is available online at SAE Mobilus.

24. As further evidence that EX1013 was published prior to August 3, 2020, EX1013 was cited by subsequently published papers including EX1037. *See* EX1037, 15. EX1037 was made available online by the AIAA, the premier aerospace society, on January 5, 2020. The publication policies for AIAA are also included. EX1037, 16-19.

EX1014

25. EX1014, which is Miller, I., Campbell, M., Huttenlocher, D., Kline, F.R., Nathan, A., Lupashin, S., Catlin, J., Schimpf, B., Moran, P., Zych, N. and Garcia, E., “Team Cornell's Skynet: Robust Perception and Planning in an Urban Environment,” *Journal of Field Robotics*, 25(8), was published on July 23, 2008. *See* EX1033, 15-18. This paper was published in the Journal of Field Robotics by Wiley, which is a well-known and respected publisher in academia. In addition, I am a co-author of this paper and can attest to the accuracy of the publication date.

26. As further evidence that EX1014 was published prior to August 3, 2020, EX1014 was cited by subsequently published papers including EX1038. *See* EX1038, 12. EX1038 was published by IEEE on November 26, 2015.

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EX1018

27. EX1018, which is Mund, J., Michel, F., Dieke-Meier, F., Fricke, H., Meyer, L., & Rother, C., “Introducing Lidar Point Cloud-based Object Classification for Safer Apron Operations,” *International Symposium on Enhanced Solutions for Aircraft and Vehicle Surveillance Applications*, was presented publicly on April 7-8, 2016. See EX1033, 25-30. This paper was published in a book of the proceedings in 2016 by Deutsche Gesellschaft für Ortung und Navigation (German Institute of Navigation, Bonn Germany). In addition, the paper has been cited six times, including five citations that were published prior to August 3, 2020. See EX1033, 30.

EX1021

28. EX1021, which is I. Miller, M. E. Campbell, and D. Huttenlocher, “Map-aided Localization in Sparse Global Positioning System Environments using Vision and Particle Filtering,” *Journal of Field Robotics*, 28(5), was published on August 9, 2011. See EX1033, 37-40. This paper was published in the Journal of Field Robotics by Wiley, which is a well-known and respected publisher in academia. In addition, I am a co-author of this paper and can attest to the accuracy of the publication date.

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29. As further evidence that EX1021 was published prior to August 3, 2020, EX1021 was cited by subsequently published papers including EX1039. *See* EX1039, 28. EX1039 was published by IEEE on September 4, 2017.

EX1025

30. EX1025, which is Ip, C.Y. and Gupta, S.K., “Retrieving Matching CAD Models by using Partial 3D Point Clouds,” *Computer-Aided Design and Applications*, 4(5), was published on August 5, 2013. *See* EX1033, 47-52. The Computer-Aided Design and Applications proceedings were published online by Taylor and Francis, which is a well-known and respected publisher in academia.

31. As further evidence that EX1025 was published prior to August 3, 2020, EX1025 was cited by subsequently published papers including EX1040. *See* EX1040, 9. EX1040 was made available online by IEEE Xplore on June 28, 2012.

EX1027

32. EX1027, which is Vock, R., Dieckmann, A., Ochmann, S. and Klein, R., “Fast Template Matching and Pose Estimation in 3D Point Clouds,” *Computers & Graphics*, 79, was published in April 2019 and published online on January 17, 2019. *See* EX1033, 56-58. Computers and Graphics is a journal published by Elsevier and is available online at ScienceDirect. Both Elsevier and ScienceDirect are well-known and respected publishers in academia.

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33. As further evidence that EX1027 was published prior to August 3, 2020, EX1027 was cited by subsequently published papers including EX1041. *See* EX1041, 9. EX1041 was made available online by IEEE Xplore on February 13, 2020.

EX1030

34. EX1030, which is Bar-Shalom, Y., Li, X. R., & Kirubarajan, T. (2001), “Estimation with applications to tracking and navigation: theory algorithms and software,” was published on January 4, 2002. *See* EX1033, 64. This book was published by Wiley & Sons, which is a well-known and respected publisher in academia.

35. As further evidence that EX1030 was published prior to August 3, 2020, EX1030 was cited by subsequently published papers including EX1042. *See* EX1042, 25. EX1042 was published by IEEE on September 4, 2017.

EX1031

36. EX1031, which is Petrovskaya, A. and Thrun, S., 2009. Model based vehicle detection and tracking for autonomous urban driving. *Autonomous Robots*, 26(2-3), was published on April 1, 2009. *See* EX1033, 65-68. *Autonomous Robots* is a journal published by Springer, which is a well-known and respected publisher in academia.

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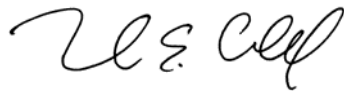
37. As further evidence that EX1031 was published prior to August 3, 2020, EX1031 was cited by subsequently published papers including EX1044. *See* EX1043, 28. EX1043 was published by IEEE on March 25, 2020.

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In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required, I will appear for cross-examination within the United States during the time allotted.

I hereby declare that all statements made herein of my own knowledge are true and all statements made herein on information and belief were and are believed by me to be true, and that all statements herein were and are made with 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 and that any such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Respectfully Submitted,



April 4, 2024

Mark Campbell, Ph.D.