

Congratulatory Message to Professor Shun-ichi Amari on Being Awarded the 2025 Kyoto Prize in Information Science

Frédéric Barbaresco¹  and Frank Nielsen² 

¹ Thales, 91120 Palaiseau, France

² Sony Computer Science Laboratories Inc., Tokyo, Japan

The Geometric Science of Information (GSI) community heartily congratulates Professor Shun-ichi Amari on being awarded the 2025 Kyoto Prize in information science. Professor Amari is recognized for his “pioneering contributions to opening up theoretical foundations of artificial intelligence and establishment of information geometry.”

Frank Nielsen first invited Professor Amari to the computer science department colloquium of École Polytechnique entitled “Emerging Trends in Visual Computing: LIX Fall Colloquium” (ETVC 2008), which was held in École Polytechnique, Palaiseau, France, during November 18–20, 2008. The revised papers and invited papers were published in [7], and Professor Amari contributed to an invited article entitled “Information Geometry and Its Applications: Convex Function and Dually Flat Manifold” [1]. His video lecture is available online.



Fig. 1. Group photo of GSI 2013 with Professor Shun-ichi Amari.

It was a great honor that Professor Amari inaugurated the series of our biennial international conference on “Geometric Science of Information” (GSI) in 2013. The event was held at École des Mines (ParisTech), Paris, France, during August 28–30, 2013, with proceedings in the LNCS Springer Nature series [8]. The video lecture is available online. During the event, Professor Shun-ichi Amari met with Professor Jean-Louis Koszul and Professor Hirohiko Shima who also attended GSI 2013: See photo in Fig. 2. Profs. Amari, Koszul and Shima are all experts in Hessian manifolds [9], which are handled in information geometry as dually flat spaces [2] (i.e., global Hessian manifolds). See group photo in Fig. 1.



Fig. 2. Photo of Professors Hirohiko Shima, Jean-Louis Koszul, and Shun-ichi Amari at GSI 2013.

Professor Amari also physically participated to GSI 2015 in École Polytechnique (Palaiseau, France, October 28–30, 2015), and contributed to two papers at GSI 2015: The first paper was co-authored with John Armstrong and is entitled “The Pontryagin forms of Hessian manifolds” [5]. The second paper was prepared with Nihat Ay and deals with the important topic of “Standard divergence in manifold of dual affine connections” [3]. See group photo in Fig. 3.

In 2017, Professor Amari contributed to a joint paper with Dr. Ryo Karakida [6] on “Information geometry of Wasserstein divergence” at GSI 2017, held at École des Mines (ParisTech), Paris, France, during November 7–9, 2017. Furthermore, Professor Amari



Fig. 3 Group photo of GSI 2015 with Professor Shun-ichi Amari.

presented a paper co-authored with Dr. Takeru Matsuda at GSI 2021, held at Sorbonne University, Paris (July 21st–23rd, 2021).

The paper is entitled “Wasserstein statistics in one-dimensional location-scale models” [4].

Thank you Professor Amari for your support of GSI!

The web portal of the GSI community with proceedings, slides, recorded talk video, and satellite events is available at <https://franknielsen.github.io/GSI>.

On behalf of the GSI community, we would like to heartily congratulate Professor Shun-ichi Amari (1936–) for his amazing 65+-year research career that pioneered many fields and spanned many branches of information sciences.

The contributions of Professor Amari to the mathematical design and analysis of neural networks and the new geometric framework of information geometry for information sciences is of prime importance and plays an increasing role in AI.

Frédéric Barbaresco and Frank Nielsen

On Behalf of the GSI community

<https://conference-gsi.org/>

July 2025

References

1. Amari, Si.: Information geometry and its applications: convex function and dually flat manifold. In: Nielsen, F. (eds.) ETVC 2008. LNCS, vol. 5416, pp. 75–102. Springer, Heidelberg (2009). https://doi.org/10.1007/978-3-642-00826-9_4
2. Amari, S.: Information Geometry and Its Applications. Applied Mathematics Science, vol. 194. Springer, Tokyo (2016). <https://doi.org/10.1007/978-4-431-55978-8>
3. Amari, Si., Ay, N.: Standard Divergence in manifold of dual affine connections. In: Nielsen, F., Barbaresco, F. (eds.) GSI 2015. LNCS, vol. 9389, pp. 320–325. Springer, Cham (2015). https://doi.org/10.1007/978-3-319-25040-3_35
4. Amari, Si., Matsuda, T.: Wasserstein statistics in one-dimensional location-scale models. In: Nielsen, F., Barbaresco, F. (eds.) GSI 2021. LNCS, vol. 12829, pp. 499–506. Springer, Cham (2021). https://doi.org/10.1007/978-3-030-80209-7_54
5. Armstrong, J., Amari, S.: The Pontryagin forms of Hessian manifolds. In: Nielsen, F., Barbaresco, F. (eds.) GSI 2015. LNCS, vol. 9389, pp. 240–247. Springer, Cham (2015). https://doi.org/10.1007/978-3-319-25040-3_27
6. Karakida, R., Amari, Si.: Information geometry of Wasserstein divergence. In: Nielsen, F., Barbaresco, F. (eds.) GSI 2017. LNCS, vol. 10589, pp. 119–126 (2017). Springer, Cham. https://doi.org/10.1007/978-3-319-68445-1_14
7. Nielsen, F.: Emerging Trends in Visual Computing LIX Fall Colloquium, ETVC 2008, Palaiseau, France, November 18–20, 2008, Revised Selected and Invited Papers, vol. 8085. LNCS. Springer, Heidelberg (2013). <https://doi.org/10.1007/978-3-642-00826-9>
8. Nielsen, F., Barbaresco, F.: Geometric Science of Information - First International Conference, GSI 2013, Paris, France, August 28–30, 2013. Proceedings, LNCS, vol. 8085. Springer, Heidelberg (2013). <https://doi.org/10.1007/978-3-642-40020-9>
9. Shima, H.: The Geometry of Hessian Structures. World Scientific (2007)