

NIST Technical Note 2152

**Neural Networks for Classifying
Probability Distributions**

Siham Khoussi
Alan Heckert
Abdella Battou
Saddek Bensalem

This publication is available free of charge from:
<https://doi.org/10.6028/NIST.TN.2152>

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

NIST Technical Note 2152

Neural Networks for Classifying Probability Distributions

Siham Khoussi

Abdella Battou

Advanced Network Technologies Division

Information Technology Laboratory

Alan Heckert

Statistical Engineering Division

Information Technology Laboratory

Saddek Bensalem

University of Grenoble Alpes (UGA)

Grenoble, France

This publication is available free of charge from:
<https://doi.org/10.6028/NIST.TN.2152>

April 2021



U.S. Department of Commerce

Gina M. Raimondo, Secretary

National Institute of Standards and Technology

*James K. Olthoff, Performing the Non-Exclusive Functions and Duties of the Under Secretary of Commerce
for Standards and Technology & Director, National Institute of Standards and Technology*

Certain commercial entities, equipment, or materials may be identified in this document in order to describe an experimental procedure or concept adequately. Such identification is not intended to imply recommendation or endorsement by the National Institute of Standards and Technology, nor is it intended to imply that the entities, materials, or equipment are necessarily the best available for the purpose.

National Institute of Standards and Technology Technical Note 2152
Natl. Inst. Stand. Technol. Tech. Note 2152, 20 pages (April 2021))
CODEN: NTNOEF

This publication is available free of charge from:
<https://doi.org/10.6028/NIST.TN.2152>

- Chapter 1* (National Institute of Standards and Technology), . Available at <http://web.archive.org/web/20191213225442/https://www.itl.nist.gov/div898/handbook/eda/section3/eda364.htm>.
- [12] Filliben JJ, Heckert AN (1978) *Dataplot* (National Institute of Standards and Technology), . Available at <http://web.archive.org/web/20190819195854/https://www.itl.nist.gov/div898/software/dataplot/>.
- [13] David Kahaner GEFSNMAM Cleve B Moler (1988) *Numerical Methods and Software*, . Available at <https://books.google.com/books/about/Numerical{ }Methods{ }and{ }Software.html?id=jipEAQAAIAAJ>.
- [14] Silverman BW (1982) *Kernel Density Estimation Using the Fast Fourier Transform*, . Available at <https://rss.onlinelibrary.wiley.com/doi/epdf/10.2307/2347084>.
- [15] Stephens MA (1974) EDF Statistics for Goodness of Fit and Some Comparisons. *Journal of the American Statistical Association* 69(347):730.
- [16] Filliben JJ (2003) *Mean Plot* (National Institute of Standards and Technology), . Available at <http://web.archive.org/web/20180217195200/http://www.itl.nist.gov/div898/handbook/eda/section3/dexmeanp.htm>.
- [17] Dumonceaux R, Antle CE, Haas G (1973) Likelihood Ratio Test for discrimination between two models with unknown scale and location parameters. *Technometrics* 15(1):19.
- [18] Dumonceaux R, Antle CE (1973) Discrimination Between the Log-Normal and the Weibull Distributions. *Technometrics* 15(4):923–926.