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Grace Wahba Awarded the 2025 International Prize in Statistics



WAHBA 2025

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International Prize in Statistics Award

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The International Prize in Statistics Foundation has awarded **Grace Wahba** the 2025 prize for her groundbreaking work on smoothing splines, which has transformed data analysis and machine learning.

A pioneer in nonparametric regression, Wahba's contributions laid the foundation for modern statistical techniques that power machine learning algorithms such as gradient boosting and neural networks.

“Grace Wahba’s contributions have had a profound and lasting impact on statistics,” said Jessica Utts, chair of the International Prize in Statistics Foundation.

Often called “the mother of smoothing splines,” Wahba’s work has influenced climate science, medical imaging, and machine learning, including the development of support vector machines.

A dedicated mentor and role model, Wahba has guided numerous PhD students who now lead in academia and industry. Her achievements include membership in the National Academy of Sciences, and, in 2021, the Institute of Mathematical Statistics established the Grace Wahba Award and Lecture in her honor.

Wahba will receive the \$80,000 prize in October 2025 at the World Statistics Congress, organized by the International Statistical Institute.



Grace Wahba Honored with International Prize for Work on Smoothing Splines

ALEXANDRIA, VA (April 14, 2025)

More information about the life and work of Wahba can be found in many places, including the following:

[A Conversation with Grace Wahba](#)

[Dr. Grace Wahba: Distinguished Statistician Colloquium](#)

[Grace Wahba](#)



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WORD VERSION

The International Prize in Statistics Foundation has awarded Grace Wahba the 2025 prize in recognition of her groundbreaking work on smoothing splines, which has transformed modern data analysis and machine learning.

Professor Wahba was among the earliest to pioneer the use of nonparametric regression modeling. Recent advances in computing and availability of large data sets have further popularized these models, especially under the guise of machine learning algorithms such as gradient boosting and neural networks. Nevertheless, the use of smoothing splines remains a mainstay of nonparametric regression.

Wahba earned her PhD in statistics from Stanford University in 1966 and joined the University of Wisconsin-Madison in 1967 as the first female faculty member in the department of statistics. She remained there for 51 years, before retiring in 2018 as I.J. Schoenberg-Hilldale Professor Emerita.

In seminal research that began in the early 1970s, Wahba developed theoretical foundations and computational algorithms for fitting smoothing splines to noisy data. Her sustained contributions led to a rigorous mathematical framework and practical techniques for extracting meaningful patterns from imperfect observations, a challenge that lies at the heart of statistical analysis.

Her joint work on reproducing kernel Hilbert spaces (RKHS) and the famous “Representer Theorem” showed that optimizing functions over infinite-dimensional spaces could be reduced to finite-dimensional problems, making previously intractable computations feasible. She also developed “generalized cross-validation” (GCV), a regularization method now widely used for automatically selecting optimal smoothing parameters, solving a critical practical problem in data analysis.

“Grace Wahba’s contributions have had a profound and lasting impact on statistical methodology and practice,” said Jessica Utts, chair of the International Prize in Statistics Foundation. “Her early insights into regularization and smoothing have become essential tools used daily by statisticians and data scientists working across nearly every scientific field.”

Often called “the mother of smoothing splines,” Professor Wahba was practicing data science before the term was even anticipated. Her work has seen practical applications in fields ranging from climate science to medical imaging. Her techniques have been used to analyze spatial patterns in global temperature data, predict disease risk factors, and enhance image reconstruction in various medical contexts.

Wahba’s work has also been recognized as foundational in modern machine learning. Her methods form a pillar of contemporary artificial intelligence and were instrumental in the development of popular kernel-based algorithms such as support vector machines.

“Grace has been an inspiration and a role model to me ever since I first met her 50 years ago,” said Sir Bernard Silverman, past president of the Royal Statistical Society and Institute of Mathematical Statistics. “She was one of the pioneers of genuinely applicable computational statistics and always spent time talking to people in applied fields, as well as in statistics.”

“I can remember visiting her in the 1970s and, each week, she would go off to a ‘liver lunch,’ which was not the menu but the topic of medical research in which she was collaborating at the time,” Silverman recalled. “She knew, and demonstrated to her graduate students and collaborators, that the only way to do proper interdisciplinary work was to get a proper understanding of the substantive field.”

In addition to her stellar research contributions, Wahba has been a mentor and role model for women in mathematics and statistics throughout her career. She has advised numerous PhD students who have gone on to become leading figures in the field, with several department chairs and one member of the National Academy of Sciences among her academic descendants.

Wahba’s achievements have been recognized with numerous honors, including membership in the National Academy of Sciences and American Academy of Arts and Sciences. In 2021, the Institute of Mathematical Statistics established the Grace Wahba Award and Lecture in her honor.

The International Prize in Statistics is awarded every two years by a collaboration among five leading international statistics organizations. The prize recognizes a major achievement by an individual or team in the statistics field, particularly an achievement of powerful and original ideas that has led to practical applications and breakthroughs in other disciplines.

Professor Wahba will receive the prize, which includes an \$80,000 award, in October 2025 at the World Statistics Congress, organized by the International Statistical Institute.

PHOTO

Grace Wahba
Photo by David Callan, 2025

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“The ultimate goal of the International Prize in Statistics is to enhance public understanding of the depth and scope of statistics.”

SHORT RELEASE

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WORD VERSION

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Wahba earned her PhD from Stanford in 1966 and became the first female faculty member in University of Wisconsin-Madison’s statistics department in 1967. She remained there for 51 years, retiring in 2018 as I.J. Schoenberg-Hilldale Professor Emerita.

Her 1970s research established a mathematical framework for smoothing splines, allowing meaningful pattern extraction from noisy data. Her work on reproducing kernel Hilbert spaces (RKHS) and the Representer Theorem made complex computations feasible, while her generalized cross-validation (GCV) method remains widely used.

“Grace Wahba’s contributions have had a profound and lasting impact on statistics,” said Jessica Utts, chair of the International Prize in Statistics Foundation.

Often called “the mother of smoothing splines,” Wahba’s work has influenced climate science, medical imaging, and machine learning, including the development of support vector machines.

A dedicated mentor and role model, Wahba has guided numerous PhD students who now lead in academia and industry. Her achievements include membership in the National Academy of Sciences, and, in 2021, the Institute of Mathematical Statistics established the Grace Wahba Award and Lecture in her honor.

The International Prize in Statistics is awarded biennially for major achievements with broad impact. Wahba will receive the \$80,000 prize in October 2025 at the World Statistics Congress, organized by the International Statistical Institute.

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Exciting news shared today within the global statistics community! Grace Wahba was awarded the prestigious 2025 International Prize in Statistics for her groundbreaking work on smoothing splines, which has revolutionized data analysis and machine learning. The prize recognizes a major achievement by an individual or team in the statistics field, particularly a seminal contribution to knowledge that led to practical applications and breakthroughs in other disciplines.

Wahba is an American statistician and retired I. J. Schoenberg-Hilldale Professor of Statistics at the University of Wisconsin–Madison. Her pioneering contributions to nonparametric regression and the development of algorithms for noisy data laid the foundation for modern machine learning techniques such as gradient boosting and neural networks. Known as “the mother of smoothing splines,” her work continues to influence fields from climate science to medical imaging.

A pathfinder who opened doors for future generations, Wahba’s legacy includes mentoring future leaders and receiving honors such as membership in the National Academy of Sciences. In 2021, the Institute of Mathematical Statistics established the Grace Wahba Award and Lecture in her honor.

The International Prize in Statistics is awarded every two years by five leading international statistics organizations. Congratulations, Grace Wahba, on this well-deserved recognition. Learn more: <https://www.statprize.org/index.cfm> #DataScience #MachineLearning #Statistics #GraceWahba #StatisticalInnovation #WomenInStatistics #AI #PrizeInStatistics



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