

## Modern Machine Learning innovators win 2025 Queen Elizabeth Prize for Engineering

The 2025 Queen Elizabeth Prize for Engineering celebrates seven engineers for their groundbreaking contributions to Modern Machine Learning, a cornerstone of artificial intelligence advancements.

**Tuesday 4 February, 2025, London, UK:** The 2025 Queen Elizabeth Prize for Engineering (QEPrize) has been awarded to seven engineers—Yoshua Bengio, Geoffrey Hinton, John Hopfield, Yann LeCun, Jensen Huang, Bill Dally, and Fei-Fei Li—in recognition of their seminal contributions to the advancement of Modern Machine Learning, a foundational component driving progress in artificial intelligence (AI).

The collective efforts of these innovators have been pivotal in advancing the three core pillars of Modern Machine Learning: advanced algorithms, high-performance hardware, and high-quality datasets. It is the combination of these interrelated breakthroughs that underpins the widespread adoption and application of AI systems. The seamless integration of these contributions has enabled the development of powerful AI systems that are revolutionising industries, transforming daily life, and reshaping how we live and work—all made possible by the pioneering vision of this year's laureates.

Modern Machine Learning, which enables systems to learn from data, recognise patterns, and make predictions without explicit programming, has revolutionised AI by allowing models to self-improve with new data. Yoshua Bengio, Geoffrey Hinton, John Hopfield, and Yann LeCun have been instrumental in championing artificial neural networks, which are now the dominant model for machine learning. Their groundbreaking research laid the conceptual foundations for this transformative approach, enabling machines to process and learn from vast amounts of data in ways previously unimaginable.

Jensen Huang and Bill Dally led developments for the hardware that underpins the operation of modern machine learning algorithms. Their vision of utilising Graphics Processing Units (GPUs) and their subsequent architectural advances, has been central to scaling machine learning algorithms, making them powerful enough to support today's AI applications.

Fei-Fei Li recognised the critical need for high-quality datasets to benchmark progress as well as train and evaluate machine learning models effectively. By creating ImageNet, a large-scale image database, she enabled access to millions of labelled images that have become indispensable and instrumental in training and evaluating computer vision algorithms.

The contributions of these seven engineers have laid the foundation for machine learning technologies powering some of the most exciting innovations of our time. From revolutionising healthcare diagnostics to enabling self-driving cars and personalised recommendations, their work highlights the transformative potential of AI in shaping a better future. The 2025 QEPrize honours their ingenuity and vision, recognising their profound impact on engineering and society as a whole.

*"I am honoured to receive the Queen Elizabeth Prize for Engineering alongside esteemed pioneers in the field of AI. Modern AI is built on the foundation of algorithms, data, and hardware. Decades of research on parallel computing and stream processing paved the way for the development of the GPUs that enabled existing algorithms and data sets to achieve super-human results on many applications."*



Queen Elizabeth Prize  
for Engineering

*"Over the last decade, advances in GPU performance, efficiency, and networking have powered today's language and diffusion models, driving innovations that enhance the human experience in many ways. We continue to apply engineering methods to refine AI hardware and software so that AI can empower people to achieve even greater things."*

**Dr Bill Dally**

*"Receiving the Queen Elizabeth Prize for Engineering is a wonderful honour and recognition of the role engineering plays in advancing society. I hope this award will encourage future innovators to address our world's most pressing challenges including the challenge of making AI safe so that we can all reap its benefits."*

**Professor Geoffrey Hinton**

*"Being curious about the world is the natural state for children. With support and education, this curiosity can develop an engineer or scientist. Add a sense of social purpose, and you have made a civilisation."*

*"It is my joy to be honoured with the 2025 Queen Elizabeth Prize for Engineering alongside six expert engineers who, like me, try to use facts about our brains to make more powerful computers."*

*"The facts about the interconnectivity of brain neuroanatomy become the engineer's structure of artificial neural networks. The synapses which connect a brain cell to others become the adjustable parameters of the programmer. Learning by exploring the environment is replaced by using massive data sets."*

**Professor John Hopfield**

*"Engineers are builders of the future. And engineering is the art and science of turning imagination into reality, solving challenges once thought impossible, and uplifting the human condition. I am deeply honoured to receive the Queen Elizabeth Prize for Engineering and to be recognised among the pioneers whose work has shaped the world we live in today. This prize has honoured the visionaries who gave us the internet, GPS, digital imaging, and wireless technology—breakthroughs that have transformed industries and everyday life."*

**Jensen Huang**

*"I am deeply honoured to receive the Queen Elizabeth Prize for Engineering, especially in such esteemed company alongside my fellow honourees. My life's work has been dedicated to the imperative of ensuring the development of the most impactful technology of our generation benefit humanity, and my hope is that this recognition will drive further awareness of the need to continue to keep human values at the centre of AI's development among engineers, academic researchers, technologists, policymakers and civil society leaders alike to ensure the best future for our children, our parents, for all of us."*

*The profound impact of data will continue to fuel AI's increasing power and technological capabilities, we'll be able to use it for more scientific discovery, to make education more personalised, improve health and elder care, empower creators and designers, and address the realities of our changing planet and climate, to name just a few."*

**Dr Fei-Fei Li**

*"This year, we celebrate the remarkable achievements that these seven engineers have contributed to Modern Machine Learning, a field that has revolutionised Artificial Intelligence by uniting algorithms, hardware, and data. The impact of this innovation is felt across industries, economies, and the planet, showcasing the profound role engineering plays in shaping our future. With admiration for the interdisciplinary approach between these innovators, this year's laureates are addressing some of the most complex challenges of our time."*

*"Their work exemplifies the power of collaboration and stands as an inspiration to engineers everywhere. We celebrate their extraordinary contributions and their well-earned recognition as Queen Elizabeth Prize for Engineering Laureates."* – **Lord Vallance, Chair, Queen Elizabeth Prize for Engineering Foundation**

*"This year's winning innovation is a groundbreaking advancement that impacts everyone, yet the full extent of its underlying engineering remains largely unrecognised, making it an especially exciting choice. While all of this year's nominees were worthy of recognition, Modern Machine Learning stood out for its growing global interest in understanding its significance. This year's Prize celebrates the value of transformative breakthroughs and serves as a reminder of the importance of continuous innovation in engineering. We eagerly anticipate future nominations for the 2026 Queen Elizabeth Prize for Engineering that will shape the way we live and define the future."* – **Professor Dame Lynn Gladden, Chair of Judging Panel, Queen Elizabeth Prize for Engineering**

Now in its twelfth year, the QEPrize has honoured 26 engineers whose innovations have had a significant impact on billions of lives around the world. The 2025 Laureates, who will share the £500,000 prize, were introduced by Lord Vallance, Chairman of the Queen Elizabeth Prize for Engineering Foundation, during a reception at the Science Museum in the presence of HRH The Princess Royal, a Royal Fellow of the Royal Academy of Engineering.

To find out more about this year's winning innovation, visit [www.qeprize.org/winners](http://www.qeprize.org/winners)

## ENDS

Additional Quotes from QEPrize's Judging Panel:

### **Professor Nick Jennings**

"This year's Queen Elizabeth Prize for Engineering winner, Modern Machine Learning, exemplifies the transformative power of engineering. By encompassing algorithms, hardware, and data, it forms the backbone of Artificial Intelligence, impacting all our lives, the industries we work in, and supporting our economies and the planet. We deeply admire how Modern Machine Learning integrates multiple engineering disciplines, adopting a whole-systems approach—something we, as engineers, truly value in solving complex challenges. The breadth of expertise represented by this year's laureates underscores the collaborative nature of this achievement."

### **Dr Abdigani Diriye**

"This particular innovation has probably been one of the most fascinating and exciting breakthroughs over the last 20–30 years. Two aspects really resonate with me the most. First, its profound impact on humanity—playing a crucial role in areas such as fraud prevention, improving healthcare, and enabling emerging economies to leapfrog limitations by leveraging data. Second, its ability to inspire the next generation of engineers, as this is an incredibly exciting and transformative science. The nominees themselves are also remarkable individuals, truly driving and powering this new era of machine learning."

### **Professor Orla Feely**

"Modern Machine Learning has the potential to transform how we live and learn, but it is crucial that this work continues to be developed in a way that supports all of humanity. As judges of the Queen Elizabeth Prize for Engineering, we are looking for groundbreaking contributions that offer global benefit, broad impact, and the potential to inspire the next generation—and this year's winning innovation does just that."



**Dr Sangeeta Bhatia**

"This year's winning innovation has a profound influence on our lives, both visible and invisible, with a global impact that stretches across almost every facet of our daily lives—from what we eat to how we learn. Personally, I'm particularly excited by its predictive capabilities and the potential to revolutionise personalised medicine, helping us lead healthier lives. Each recipient is truly a trailblazer, standing out for their visionary thinking—they were truly ahead of their time"

**Dr John L. Anderson**

"The essence of engineering is creativity—it's about creating something that doesn't already exist but will benefit society, and this year's winner embodies that. This year's winning innovation hits two key targets we look for as judges: one, having a global benefit to humanity, and two, inspiring the next generation by encouraging more young people to pursue engineering and sparking the imagination of the public."

**Ilya Marotta**

"The Queen Elizabeth Prize for Engineering and its judging panel are always seeking innovations that have a positive impact on the world. This year, I believe all the judges were really satisfied with our decision to name Modern Machine Learning as the winner. It is utilised across numerous industries, including my own, where we apply it for predictive management and risk mitigation on the Panama Canal. We were also deeply impressed by the resilience and perseverance demonstrated by the laureates, who have overcome significant challenges throughout their careers. Congratulations to this year's winners!"

**Professor Teck Seng Low**

"The winning nomination this year is exciting because it is so timely, with technology that can solve and advance many of the world's issues, from climate change to emerging diseases. It brings together different strains of technology, with the capacity to accelerate solutions to global challenges, impacting every aspect of our lives—how we live, work, and play. The people behind this year's winning innovation really stood out for using Artificial Intelligence across a huge spectrum to deliver precision health, better weather understanding, and improved services for citizens."

**Professor Tatsuya Okubo**

"This year's winning innovation helps design our future and Modern Machine Learning is already playing a significant role in shaping our lives. Engineering has a mission to utilise existing knowledge to design and enrich our society. This innovation is already contributing to Japan and beyond and will continue to enrich our daily lives and shape the future."

**Professor Viola Vogel**

"The winning innovation has already started transforming our lives, with many technologies coming together that wouldn't have been possible just 10 years ago. What impressed us most is how large teams, not just one person, have worked together to make this possible, significantly improving diagnostics, particularly in cancer detection. Engineering is done on many different scales, from microscopic to molecular and Modern Machine learning and Artificial Intelligence will revolutionise the way we approach science by using data more effectively, enabling faster and more accurate diagnoses, and providing patients with clearer next steps in their care."



Queen Elizabeth Prize  
for Engineering

## Interview Requests

For more information or to request an interview with any of the judging panel please contact:

### Edelman

Daniel Rowland | [daniel.rowland@edelman.com](mailto:daniel.rowland@edelman.com) | [QE@edelman.com](mailto:QE@edelman.com) | +44 (0) 20 3047 2000

Caitlin York | [caitlin.york@edelman.com](mailto:caitlin.york@edelman.com) | [QE@edelman.com](mailto:QE@edelman.com) | +44 (0) 78 8963 151

### Royal Academy of Engineering

Jane Sutton | [jane.sutton@raeng.org.uk](mailto:jane.sutton@raeng.org.uk) | +44 20 7766 0636

## Notes to Editors:

### About the Queen Elizabeth Prize for Engineering

Diverse, multifaceted, and continually evolving, engineering creates the solutions to global challenges and improves billions of lives. Engineers have enabled us to work together across the planet, explore the smallest cells and the most distant stars, and navigate our way through the world.

Awarded annually, the Queen Elizabeth Prize for Engineering (QEPrize) champions bold, ground breaking engineering innovation which is of global benefit to humanity. The prize celebrates engineering's visionaries, inspiring young minds to consider engineering as a career choice and to help to solve the challenges of the future.

The prize also encourages engineers to help extend the boundaries of what is possible across all disciplines and applications.

The Queen Elizabeth Prize for Engineering is open to:

- Up to ten living individuals;
- Of any nationality;
- Who are personally responsible for a groundbreaking innovation in engineering which has been of global benefit to humanity. self-nomination is not permitted.
- The trustees reserve the right to reject any nomination where, in their reasonable opinion, there is or is likely to be a conflict of interest between the nominees, nominators, or any referees and any other nomination or the prize more generally.

The judges will use these criteria to select the winner, or winners, of the QEPrize:

- What is it that they have done that is a ground-breaking innovation in engineering?
- In what way has this innovation been of global benefit to humanity?
- Are there any other individuals who might claim to have had a pivotal role in this development?