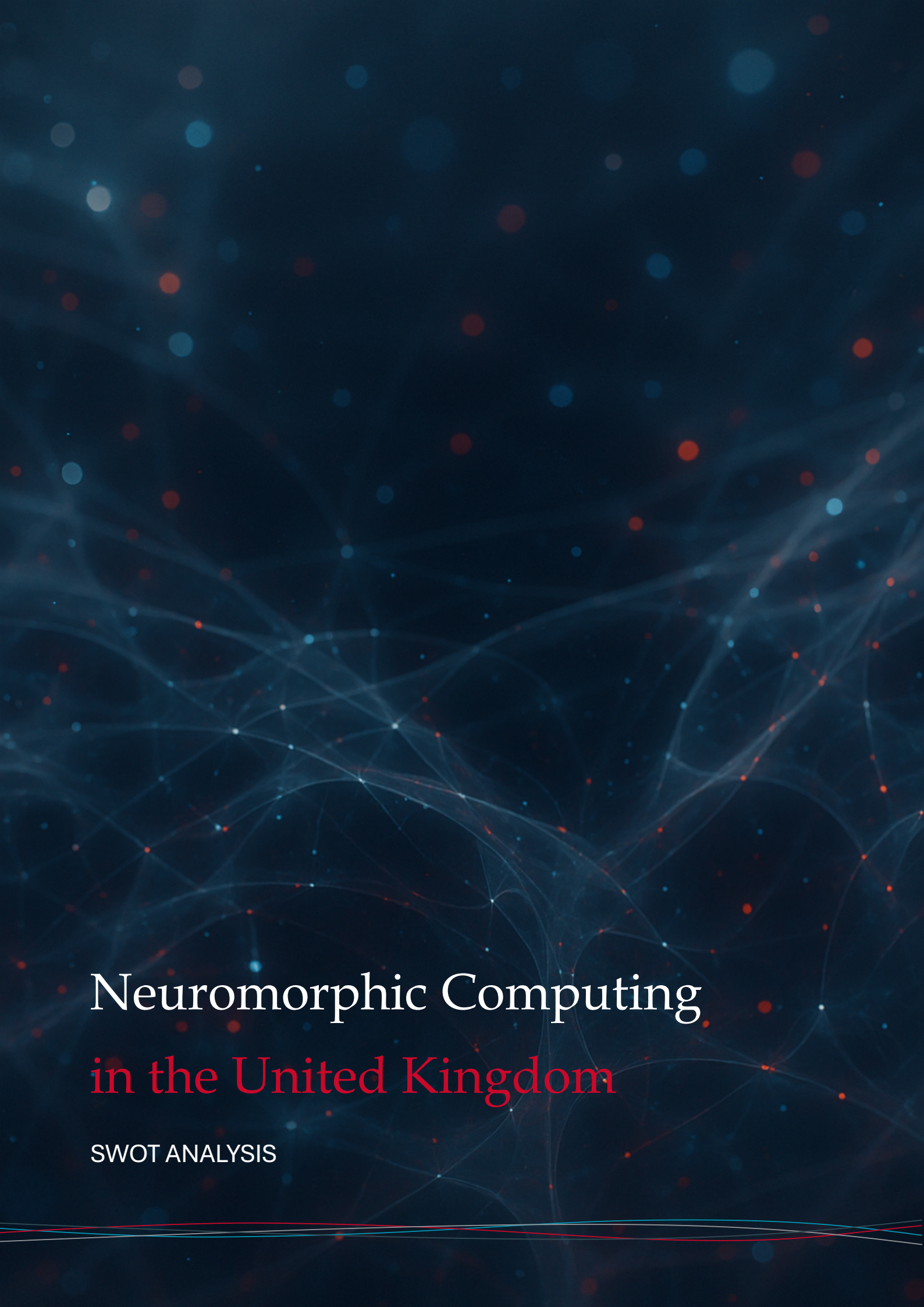




Neuromorphic Computing in the United Kingdom

SWOT ANALYSIS

Colophon

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Authors

Markus Hellenbrand – Senior Research Associate, University of Cambridge

Seb Dixon – Network Manager, NeuMat

Abin Varghese – Research Associate, University of Cambridge

Paul Larcey – Knowledge Transfer Manager, Security and Defence, Innovate UK

Adnan Mehonic – Associate Professor in Nanoelectronics, University College London

Steve Furber – Professor Emeritus in Computer Science, University of Manchester

The author affiliations are listed for reference. For the purpose of this work, the authors do not represent these institutions.

Reviewers

Marjolein Bouwers – Chief Innovation Advisor, Netherlands Innovation Network UK

Iris Leussink – Senior Innovation Advisor, Netherlands Innovation Network UK

Layout and typesetting

Markus Hellenbrand

Contact details

Embassy of the Kingdom of the Netherlands
38 Hyde Park Gate
London
SW7 5DP
United Kingdom
T +44 20 7590 3259

NeuMat Network
27 Charles Babbage Road
Cambridge
CB3 0FS
United Kingdom
<https://www.neumat.co.uk/>
info@neumat.co.uk

NeuMat is a UKRI-funded network dedicated to supporting and uniting UK researchers, industry professionals, and early-career innovators who are working on neuromorphic technologies for advanced, novel, energy-efficient AI hardware.



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Executive summary

Neuromorphic technologies (NMT) stand at an intersection of electrical engineering, computer, materials, and neuro- science, taking biological inspiration to offer transformative potential for the future of artificial intelligence (AI) and next-generation computing hardware. In the United Kingdom, a rich blend of academic prowess, public policy support, and industry engagement is establishing an ecosystem with international reach and ambition. The UK has a strong position academically in materials and semiconductor design, with robust connections to semiconductor manufacturers, though it lacks its own large-scale manufacturing capabilities. To strengthen the UK's position in NMT, increased, targeted, and co-ordinated government funding is needed for basic research and alignment of multiple disciplines. Emphasis should be placed on the importance of NMT as the only potential low-energy computing technology capable of realising full economic exploitation of AI and related technologies such as robotics and autonomous systems. Further, a greater visibility and appreciation of NMT by the wider public is expected to attract private investment, much-needed to bring NMT to the market.

Part 1: Introduction and background of NMT in the UK

The origins of neuromorphic technologies (NMT) date back to the early 1980s,¹ and most generally, NMTs describe any approach to technology which is shaped by inspiration from biological cognitive information processing, specifically its dense interconnectivity, parallelism, and extremely low energy consumption.^{2,3} Interest in NMT has accelerated recently, driven by the limits of Moore's law and the escalating energy demands of artificial intelligence (AI). With global data centre electricity consumption projected more than doubling by 2030, induced by ever increasing computation demand, the efficiency of Information and Communication Technologies (ICT) has become critical – an area where NMT offer great promise.^{4,5}

The UK's neuromorphic sector is characterised by a history of world-leading research, a dynamic entrepreneurial culture, and recently, an increasingly proactive policy landscape. UK universities have established themselves as early leaders in neuromorphic materials, device physics, algorithms, and architectures. There is a growing number of startups in the NMT and AI space in the UK with great interest from venture capitalists for such technologies. Many universities have dedicated commercialisation units to enable technology transfer and take academic research to market applications, trying to follow in the steps of UK semiconductor and NMT/AI giants such as Google DeepMind, Arm, or SpiNNaker.

1.1 Current status of the market

As an emerging technology, market quantification for NMT varies dramatically with estimations of worldwide \$0.6-5.2B in 2024 and forecasts of up to \$5-20B by 2030-2034,^{6,7} of which the UK is estimated to make up \$0.6-1.4B currently, with projections up to \$0.8-7.9B by 2030/31.^{6,8} Due to its potential for reducing data centre energy costs, NMT will also have access to the intersecting AI market, which was estimated at \$189B in 2023 and is forecast to grow to \$4.8T by 2033.⁹ Apart from that, the three main market sectors will be industrial, automation, consumer electronics, and automotive, followed by aerospace, defence, healthcare, and other specialised sectors.¹⁰ Another key market for NMTs will be the general area of IoT and edge computing with an estimated market volume of \$23.6B in 2024 and an expected growth to \$327.8B by 2033.¹¹

1.2 Most important government policies and initiatives

The UK government has strongly increased its dedication to national semiconductor efforts in recent years, exemplified by the 2023 formation of a new Department for Science, Innovation and Technology (DSIT), and neuromorphic hardware is mentioned

explicitly in the accompanying National Semiconductor Strategy.¹² With some overlap to NMTs, the UK government has also developed a separate, dedicated AI strategy.¹³

The UK Compute Roadmap puts NMT as one of the emerging compute paradigms that will power future AI innovation, with a predicted timeline of 2027 to begin adoption into public infrastructure.¹⁴ The UK government's Rapid Technology Assessment (RTA) on Future Computing also explicitly highlights neuromorphic computing.¹⁵

1.3 Government financial instruments for supporting NMT

The UK supports NMT research primarily through funding agencies under DSIT:

- UK Research and Innovation (UKRI) – the main funding body for academic and early-stage research grants, including large-scale programmes.
- Innovate UK – supports collaborative R&D and SME-led innovation, providing routes for translating concepts towards commercial applications.
- Advanced Research + Invention Agency (ARIA) – a disruptive funding body that backs high-risk, high-reward projects, including the 'Nature Computes Better' programme targeting neuromorphic approaches.

In addition, broader government frameworks have led and can lead to direct or indirect funding opportunities. Examples include the government investing £200M in the UK semiconductor sector during 2023-2025, of which 10% were allocated to NMT to found the NeuMat Network, the UK Multidisciplinary Centre for Neuromorphic Computing, and the Neuroware Innovation and Knowledge Centre (IKC). Given the abundance of other critical R&D segments in semiconductors and ICT, this is a good result; it clearly demonstrates that there is room, but also requirement, for the NMT community to interact with policy makers to ensure funding allocation to NMT.

The various UK strategies mentioned above all include provisions where NMT can compete for resources. Examples are the National Semiconductor Strategy, which outlines £1B being committed to the semiconductor sector until 2033, and another £2B for AI infrastructure through the UK Compute Roadmap, both of which can strengthen NMT directly or indirectly via grants and SMEs working on materials, design, and chip assembly.¹⁶ The funding will mostly be made available through UKRI, Innovate UK, and the Defence Science and Technology Laboratory (DSTL). Considerable funding may also be accessible via the Position, Navigation, and Timing (PNT) department of DSIT. The ongoing 2025–2030 Spending Review, due to be completed by Q1 2026,¹⁷ will provide more granular deployment figures. As large portions of the budget are not yet allocated, it is important to emphasise the opportunity and necessity for the NMT community to engage with policy makers to ensure that sufficient funding will reach the NMT sector.

1.4 Main challenges obstructing the growth of the NMT market

The main challenges can be grouped into ‘internal’ and ‘external’ ones, referring to challenges of maturity and competition, respectively. Internal challenges comprise scalability and complexity, hardware limitations, lack of standardisation and software environments. Examples of this are neuromorphic devices such as memristors suffering from manufacturability issues such as low yield and device variability. Additionally, the software ecosystem is also underdeveloped; algorithms, benchmarks, and standards specific to NMT need significant advances and unification for easier industry adoption.

Some of these challenges, such as uniformity and the lack of strong systems demonstrations, lead to external challenges such as limited market awareness for this emerging technology, as well as strong competition from established technologies such as graphics processing units (GPUs). Besides the obvious improvements on the technical side, to gain traction in the market, the NMT community will have to engage with policy makers, potential early adopters in industry, and investors, to create a critical mass.

Part 2: Relevant Players

The UK is continuing to build a strong R&D ecosystem in NMT, producing high-impact academic research, ranking 2nd in the world for field citation ratio.¹⁵ This ecosystem is largely dominated by academic and startup efforts, but major semiconductor companies outposted in the UK are increasingly venturing into this space, as is a rapidly growing complement of SME and startup organisations working in NMT-adjacent technologies. These will be detailed in the following subsections.

2.1 Academic & research organisations

Non-commercial NMT research in the UK is mostly led by research & technology organisations (RTOs), including universities and larger coordinated centres, and spans the entire stack from fundamental neuroscience and materials research to circuits, systems, and algorithms development. **Table I** provides examples of some leading centres in these areas. Of special note is the Manchester-based SpiNNaker system, which, founded at the university, has become one of the most advanced spiking neural network implementations in the world. An important international RTO of special interest to Netherlands-UK collaborations is imec. While a Belgian institute, imec has a presence both in the Netherlands and in the UK, and may be of key importance for establishing joint research efforts.

Table 1. Examples of UK-based research centres working on NMT. Links provided to each centre; listed in alphabetic order.

Centre/Project	Approach
APRIL	UKRI hub on materials, devices, circuits, and system design for AI/neuromorphic hardware
Centre for Electronics Frontiers	Brain-inspired architectures; materials and devices for post von Neumann systems; based at the University of Edinburgh
Centre for Intelligent Information Processing Systems	Intelligent information systems, hardware-software co-design, and energy-efficient brain-inspired AI; based King's College London
NeuCam	Collaborative research on materials and devices for neuromorphic computing; based at the University of Cambridge
NeuMat	UK-wide UKRI network linking academia and industry to advance NMT spanning materials, devices to circuits
Neuroware Innovation and Knowledge Centre	UK's first IKC dedicated to neuromorphic hardware; accelerating commercialisation
Nervous Systems	Spiking neural networks and bio-inspired fault-tolerant hardware architectures
SpiNNaker	Million-core Arm-based neuromorphic computing platform simulating large-scale spiking neural networks in real time, supporting research in neuroscience, AI, and robotics
UK Multidisciplinary Centre for Neuromorphic Computing	UKRI national hub, roadmapping and cross-disciplinary neuromorphic research and translation

2.2 Industry (multinational, SME, startup, spinout)

Industrial representatives in NMT (and AI) in the UK are mainly at the R&D or startup level. As noted in the introduction, there is considerable overlap with AI, and the lines are often blurred between the two. The most prominent example is Google DeepMind with their implementation of various neural network algorithms to tackle complex protein structures and materials discovery.

With a growing number of startups in NMT and adjacent technologies, a strong industrial ecosystem is emerging in the UK. This also includes a wide variety of supporting industries, such as in chip design, photonics, materials development, and consultancy. Examples include Paragraf and Pragmatic with pioneering work in materials fabrication, Fractile and Graphcore with bottom-up re-designs of CMOS circuits and hardware, and

Utterberry and Wayve for various applications of NMT, collectively demonstrating the sector's breadth and depth, though sometimes they still face barriers in scaling and market access. The Netherlands, meanwhile, based on comparison with a recent white paper,¹⁸ offer complementary strengths especially in circuit design, various applications, advanced device manufacturing, and EU programme alignment, making it a strong strategic partner in advancing cross-border NMT.

Besides a rich startup environment, there are also a few world-leading companies in the NMT and semiconductor area based in the UK. Already mentioned is DeepMind, and a further prominent example is Arm as a pioneer in chip design, which does not only provide IP for the world-leading SpiNNaker system, but will also include dedicated neural accelerators in their GPUs from 2026.¹⁹ Finally, several internationally leading semiconductor companies with R&D activities in NMT have seats across the UK. Examples are Microsoft Research, Hewlett Packard Labs, Nokia Bell Labs, Northrop Grumman, and Thales. For these major companies, there is often strong confidentiality, so information about their activities and interests in NMT is limited. **Table II** provides a snapshot of companies working on NMT based or outposted in the UK, while companies and academic & research organisations are shown together in **Figure 1**.

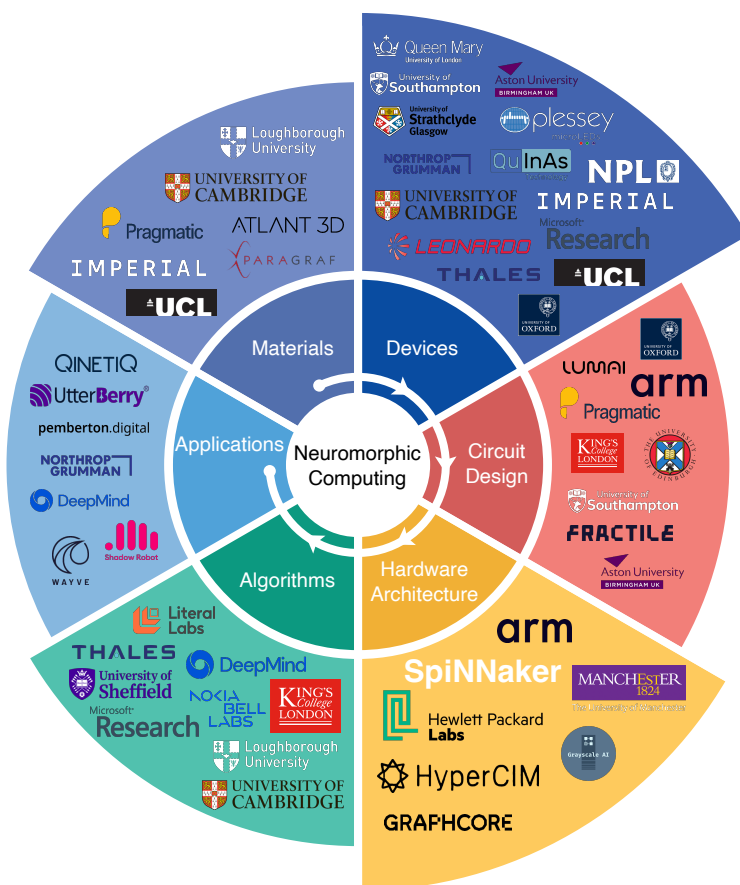


Figure 1. Schematic overview over the various areas of NMT in the UK. The UK has a very balanced all-around ecosystem in NMT with numerous and strong players at all levels of the stack. There is a need, however, for the different levels to work together more closely. For sizing the different areas, weight was given to the number of agents, but also their perceived strength, and presence in a certain segment indicates an exemplary strength, but not exclusive limitation. Included universities are limited to the ones formally associated with the most recently funded dedicated NMT projects, further detailed in **Figure 2**.

Table II. Examples of companies working on NMT or related technologies. Listed in alphabetical order.

Company	Product/focus
Atlant3D	Atomic scale nano fabrication for advanced semiconductor designs
DeepMind	AI and neuromorphic algorithms based on neural networks
Fractile	In-memory compute processors, redesign of SRAM
Graphcore	Graph tool chain designed for machine intelligence
Grayscale AI	Autonomous drones and robots using neuromorphic computing
Hewlett Packard Labs	Developed the Dot-Product Engine (DPE) using memristor crossbars for efficient neuromorphic matrix-vector multiplication
HyperCIM	Hardware accelerator to enhance enterprise data processing
Leonardo	Two neuromorphic sensor projects: EYE2DRIVE (event-based vision) and SENSE-NN (symbolic neuromorphic sensing with LLM integration)
Literal Labs	Ultra-efficient AI using neural networks
LumAI	Optical computing hardware adaptable to NMT
Microsoft Research	Spiking neural networks, photonics, memristors
Nokia Bell Labs	Researching neuromorphic AI for wireless communications, including spiking neural networks for radio signal processing
Northrop Grumman	Neuromorphic cameras for defence and industrial use; involved in DARPA's FENCE programme for neuromorphic IR imaging
Paragraf	2D materials innovation and large-scale graphene deposition
Pemberton Digital	Sensors for edge AI
Plessey Semiconductors	Micro LEDs for optical computing, acquired by Haylo Labs in Aug 2025
Pragmatic	Ultra-thin and flexible electronics for low-power edge applications
QinetiQ	NMT-based solutions for defence and security
QuInAs	Novel random access memory for neuromorphic computing
Shadow Robot	Dextrous robotic hands with ambitions for NMT operation
Thales	Research group on spintronic neuromorphic computing, quantum neuromorphic computing, neuromorphic algorithms
Utterberry	Miniature artificially 'intelligent' ultra-low-power sensors
Wayve	Autonomous vehicles

2.3 National initiatives

Based on the various aforementioned policies, the UK government has funded several dedicated NMT projects. The most recent ones, all starting in 2025, are the NeuMat network, led by the University of Cambridge, the UK Multidisciplinary Centre for Neuromorphic Computing, led by Aston University, and the Neuroware Innovation and Knowledge Centre (IKC), led by UCL. These three are summarised in **Figure 2**. In addition, the Nervous Systems programme, led by the University of York/Ulster, started in 2022 and is still ongoing, as are several other centres. In the past, but with lasting impact, the eFutures network has looked at the state of the general semiconductor field in the UK. All of these initiatives are funded by UKRI, as was the development of SpiNNaker, which was subsequently developed into an open neuromorphic computing service under the auspices of the European Union Flagship Human Brain Project. **Table 1** provides a summary of academic centres in NMT.

The various abovementioned government strategies are intended to strengthen both basic research and industrial application in the areas of semiconductor, AI, and NMT. For industry, typically, Innovate UK is a first point of contact for project funding, but other routes such as via DSTL provide additional opportunities. Specifically for startups, the government-funded ChipStart UK initiative provides funding and mentoring.²⁰

While several government strategies emphasise the importance and ambition to strengthen the UK position in various technologies including NMT and AI, and funding and mechanisms for its distribution are being worked out, specifics are not widely available. As with academic pathways, companies will need to maintain close engagement with the central funding bodies such as Innovate UK to stay informed about evolving opportunities and ensure timely access to government support.

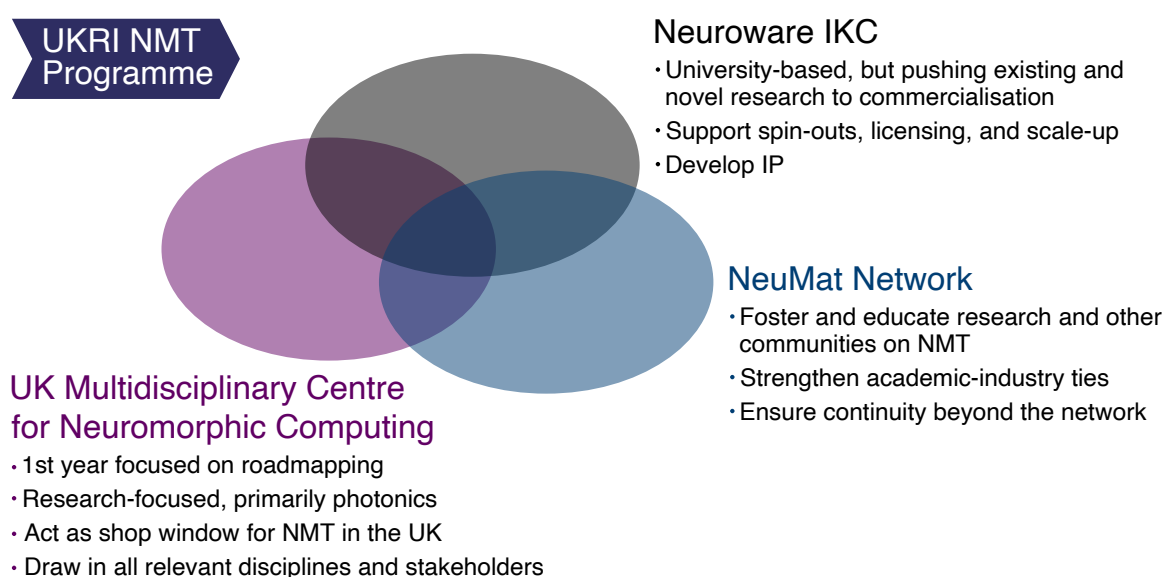


Figure 2. Overview of focus areas of the recent dedicated NMT projects, all funded by UKRI. Adapted from UKRI.



Figure 3. Main office location of the Neuroware Innovation and Knowledge Centre at the UCL East campus. [Copyright UCL/James Tye](#).

2.4 Markets

Neuromorphic technologies are an overall emerging market, generally at a low technology readiness level (with the notable exception of the SpiNNaker systems), but poised to address the urgent need for energy-efficient computing. Early adoption by the three main emerging markets of industrial, consumer, and automotive is expected to focus on extending classical computing, particularly through ultra-low-power edge computing, which will enable real-time data processing at the edge, significantly lowering energy consumption and reducing reliance on centralised infrastructure and connectivity.⁵

As such, a wide range of industries and applications will benefit from NMT adoption. Examples include self-driving cars and autonomous drones, robotics and automation, security and surveillance, finance, energy, and defence.⁵ **Table II** provides a snapshot of current emerging and established companies working in these areas.

A large overarching target application is unlocking sustainable AI by providing dedicated hardware at the level of data centres, in addition to the edge. For NMT data centres, the opportunities are huge, but so is the competition from the current dominance of GPUs, so this is expected to be a longer-term development.

Part 3: NMT SWOT analysis of the UK

The following sections will evaluate the general environment for NMT development and application in the UK, highlighting how the strengths, weaknesses, opportunities, and threats relate to the different layers of the stack, from materials and devices to circuits and hardware, architectures, and algorithms, and will also include applications and markets. A SWOT summary matrix is provided at the end as [Table III](#).

3.1 Strengths

The UK's strong academic tradition is a major strength in emerging technologies such as NMT. UK universities consistently produce highly valued and impactful research and some of the key players have been summarised in Section 2. The main academic strengths are at the levels of materials, devices, hardware architecture, and algorithms. Various universities support commercialisation through dedicated units such as Cambridge Enterprise, UCL Business, and the University of Manchester's Unit M, which provide organisational, financial and policy support. Building on this foundation, the UK government has put into place research funding specifically for NMT by setting up interdisciplinary networks and research centres that combine the strengths of several leading universities with industry partners and national labs to accelerate further the development of technologies relevant to a large market; several of these centres have been summarised in [Table I](#). The UK's global academic reputation further attracts international partners and talent, reinforcing its position in NMT.

Beyond academia, the UK boasts a rich and strongly supported startup environment with numerous entrepreneurship training programmes, incubators, accelerators, and catapults. For NMT as part of the wider semiconductor area, the government-funded ChipStart UK catalyst is especially noteworthy for providing funding and guidance to tech startups.²⁰ The success of this research-driven approach has created several world-leading capabilities and companies. The million-core SpiNNaker system at Manchester, deployed globally in over 100 systems, is one of the most advanced spiking neural network architectures in the world, and provides open access and scalability to researchers. It is based on Arm processor cores, and Arm constitutes another of the UK's trailblazers in the semiconductor industry that provides generous access to a wide range of its IP to researchers and startups.²¹ Another example of a highly successful UK academic development is the Raspberry Pi – a landmark in low power, widely distributed computing. The UK is also home to DeepMind, now part of Alphabet, which originated from its academic base and is a trailblazer in NMT and AI.

More broadly, the UK is the third-largest venture capital market globally, behind only the US and China, and the same applies for the sector of AI investment.¹³

3.2 Weaknesses

The UK has a strong entrepreneurial environment but remains a difficult market for low technology readiness level startups. UK and European investors are generally more risk-averse than in the US, and a persistent investment ‘valley of death’ limits capital for scaling up successful startups. This often leads to promising startups being acquired by US or Asian companies, creating a vicious cycle of sorts, where a lack of scaling up also prevents the buildup of skilled executives for this level of company.

While the UK has very strong research and design sectors, its major weaknesses are a lack of testbeds, benchmarking tools and large-scale manufacturing facilities for the development of new chip technologies, and this pertains to all levels of the stack. In addition, there is a lack of standardisation and interfacing between levels of the stack. At a more fundamental level, in materials engineering and novel device design, the absence of UK-based R&D centres/facilities capable of taking university-level prototypes to industrial platforms hampers progress. In this context, international collaborations and partnerships with R&D centres such as imec or Leti would be of immense value.

It is a general challenge for NMT that its scope and meaning are often not well-defined. Various disciplines from neuroscience to materials and computer science use the term “neuromorphic” in different ways, which is an expression of fragmentation of the different disciplines. A related weakness is a missing inclusion of NMT in educational programmes to train a specialised workforce. Comprehensive knowledge tends to be acquired by researchers moving between established traditional disciplines.

Finally, UK and European funding levels for NMT and AI fall far behind the US and Asia. While the UK plans to spend £1B on the entire semiconductor industry by 2033, the US Stargate project will provide \$500B on AI alone. The UK and Europe will fall behind rapidly if more money is not made available for infrastructure and personnel.

3.3 Opportunities

As both the UK and the Netherlands are strong players in the field of NMT, an immediate opportunity presents itself in the form of strategic bilateral collaborations that can also extend to other EU centres. In the short term, this could take the form of academic collaborations through staff exchanges or joint workshops, and later evolve into joint research funding projects. In line with a previously discussed weakness, it will be critical that funding should be substantial enough actually to drive progress.

At an academic or industrial level, the absence of established standards presents the opportunity for joint developments thereof, and hence strong influence on the development of an entire field. The British Standards Institution has a presence in the

International Electrotechnical Commission (IEC), which establishes international standards. In addition, there is an opportunity for academia and industry together to develop unified and generally accessible hardware and software libraries and testbeds for various neuromorphic platforms, such as the THOR initiative at the University of Texas at San Antonio.²²

Being highly intersectional, there is a strong opportunity, but also requirement, for more interdisciplinary technology development for NMT – integrating biology, materials science, electrical engineering, and computer science. With stronger entrepreneurial training and academic-industrial collaborations and co-funding, the UK has a huge opportunity to translate academic excellence into widespread technology.

For the UK, contracts are in place to participate in and benefit from European research funding such as Horizon, Chips JU, EuroHPC, and bilaterally, Eurostars and Eureka. Whether all-European, or in a UK-Dutch collaboration, pooling together resources can present an opportunity to establish shared testbeds and manufacturing capabilities; where it may prove a task too heavy for one nation, joint efforts may make it possible. As mentioned before, imec may be of great use in these endeavours, as they have the necessary expertise of technology development including standardisation and scaling, with a presence both in the Netherlands and the UK.

Finally, there is an opportunity to raise public and investor awareness interest by emphasising the immense gains in energy efficiency when NMT is exploited for AI applications. The newly established UK networks and research centres have the chance to demonstrate this and other impact of NMT at both national and European levels.

3.4 Threats

Out of some of the identified weaknesses can be derived several threats to the UK NMT environment. Most straightforwardly, the lack of scale-up funding opens the door to the threat of successful startups being bought out by strong international competition, especially from the US and Asia – China in particular – both of which invest more money at least in AI development than all of Europe together. The threat of losing companies, and with it IP, know-how, and personnel, is self-amplifying in that it will cause the UK and Europe to fall even further behind.

Another dual threat/opportunity situation arises from other NMT-focused centres around the world. They can be a threat and outperform the UK networks, or offer an opportunity for collaboration. Some of the notable centres are based at Stanford University, University of Massachusetts, and Sandia National Laboratories, all in the US, Tsinghua, Zhejiang and Hangzhou Dianzi Universities in China, University of Waterloo, Canada, Korea Advanced Institute of Science and Technology (KAIST), South Korea, Moscow Institute of Physics

and Technology, Russia, Singapore University of Technology and Design, Singapore, and Neuromorphic Systems Laboratory, Japan.

A general threat to any technology development in a ‘hot’ field such as NMT is the speed of the competition. Anyone trying to compete in such a field needs to move fast, something which governments do not always succeed in. Only the most recent UK industrial plans contain dedicated semiconductor and AI strategies, many years after the acceleration of the respective developments. A resulting threat for NMT in particular is hence the competition for government interest both from established technologies and other emerging technologies such as quantum computing.

As such, even the UK’s strong (academic) research output faces a threat of falling behind, as in some areas there exist a number of advanced neuromorphic hardware systems around the world, where none of them have been developed in the UK.²³ So-called neural engines (or similar) are also available commercially, such as in Apple products and others.

Table III. SWOT matrix as summary of the main text analysis.

Strengths (S)	Weaknesses (W)
• World-class academic research • Excellent talent base – mix of domestic & international • Strong research-to-market pathways • Vibrant startup ecosystem • Dedicated networks & national centres for cross-disciplinary research • Healthy entrepreneurial culture (AI/deep tech) • Government semiconductor & AI strategies • World recognised UK assets: ○ Spinnaker – UK flagship neuromorphic supercomputer ○ Arm – UK premier semiconductor company ○ DeepMind – product of UK academic-to-industry translation	• Conservative and/or risk-averse investment culture • ‘Valley of death’ funding gap • Foreign acquisition of UK-based startups • Limited testbeds and pilot lines • Lack of domestic infrastructure and investment for scaling prototypes • Ambiguity in “NMT” definitions and performance standards • Lack of NMT-focused workforce training • Modest NMT-dedicated budget
Opportunities (O)	Threats (T)
• Interface with decision makers, public, and investors for funding allocation • Leverage collaborative research networks • Regular workshops and knowledge/personnel exchange with international partners • Joint NMT-specific UK–EU funding • Standardisation of NMT goals • Harness interdisciplinarity • Strategic partnerships with imec/Leti • Raising government awareness of NMT promise	• Lack of scale-up funding leading to overseas buyouts • Intense US & Asian competition • Risk of IP and know-how loss • Talent retention • Competing tech priorities in government investments • Speed of global NMT R&D outpacing UK policy • Dominance of tech giants

4 Recommendations

Based on the overviews provided above and the SWOT analysis, the following recommendations are made.

1. **Public engagement and branding:** Enhance outreach, communication, and interfacing with decision and policy makers as well as investors to raise awareness of the potential of NMT as an energy-efficient solution for AI and digital infrastructure. Convey NMT as a cornerstone of sustainable computing, emphasising its distinct value proposition alongside mainstream AI. This will be critical in the immediate future, as funding and policy support are being substantiated.
2. **Increase and diversify funding:** ‘Bang the drum’ for expanded government and private sector investment in NMT, with a focus on bridging the gap from prototype to scalable product. Ensure sustained support for both basic research and commercialisation, including dedicated funding streams for startups and SMEs, as well as advice and mentoring.
3. **Strengthen industry partnerships and scale-up pathways:** Foster deeper collaboration between academia, industry, and government to accelerate technology transfer and market adoption. Develop shared testbeds, pilot lines, and manufacturing facilities, potentially through joint UK–EU initiatives.
4. **Standardisation and benchmarking:** Lead or participate in the development of open standards and benchmarking tools for NMT hardware and software, working with bodies such as IEC and international partners.
5. **Talent development and education:** Include NMT in the syllabus of related fields from undergrads to PhD level. Support multidisciplinary skills development through doctoral training centres, workshops, and personnel exchanges.
6. **Strategic international collaboration:** Expand bilateral and multilateral partnerships, especially with the Netherlands and EU centres, to pool resources, share expertise, and access joint funding opportunities. Engage in EU-aligned programmes (e.g. Horizon, Chips JU, EuroHPC) to strengthen the UK’s position in global research and innovation networks.
7. **Ongoing sector dialogue and evidence gathering:** Continue to consult with experts, venture capitalists, and industry leaders to monitor sector trends and update strategic priorities. Incorporate feedback from initiatives such as NeuMat and Innovate UK, and regularly review progress against national and international benchmarks.

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6 Glossary

Acronym	Meaning
AI	Artificial Intelligence
APRIL	AI for Productive Research & Innovation in eElectronics (APRIL) Hub
ARIA	Advanced Research + Invention Agency, relatively new funding agency
DSIT	Department for Science, Innovation and Technology
DSTL	Defence Science and Technology Laboratory
EU	European Union
GPUs	Graphics Processing Units
ICT	Information and Communications Technologies
IEC	International Electrotechnical Commission
IKC	Innovation and Knowledge Centre
JU	Joint Undertaking (e.g. Chips JU)
NMT	Neuromorphic Technologies
PNT	Positioning, Navigation, and Timing (Office)
R&D	Research and Development
RTO	Research & Technology Organisation
SME	Small and Medium-sized Enterprises
UKRI	UK Research and Innovation, main UK funding body for fundamental research