



# NVIDIA AI FOR HIGHER EDUCATION

According to an IDC survey, 99.4 % of respondents in higher education say AI will be instrumental to their institution's competitiveness, with 15% calling it a "game-changer."<sup>1</sup>

## Leading Higher Education Institutions Are Using NVIDIA DGX Systems

**9** of the Top 10  
Global  
Universities

**8** of the Top 10  
US National  
Universities

**7** of the Top 10  
US Research  
Universities

Many higher educational institutions are pushing to increase research activities to drive innovation and prestige. With thousands of applicants to well-known foundations and funding agencies, researchers face low research funding success rates, rates that have been dropping over the years. For example, the NIH funding success rate has decreased from 31% in 1998 to 19% in 2017. To support research and enable more competitive grants, many institutions are realizing that leveraging AI can not only be a costly endeavor but also brings forth challenges around technology integration and management.

To meet the increasing demands of researchers, institutions are looking to provide AI infrastructure. However, solution cost (57%) and lack of skills (47%) are top challenges impacting the implementation of AI platforms in higher education, followed by a lack of a data strategy (37%), which shows that many institutions don't have access to the tools and resources to execute.<sup>1</sup>

## Deliver the Next Generation of AI Skilled Workforce

The NVIDIA AI Starter Kit contains everything researchers and faculty need to get started, including the turnkey, industry-leading **NVIDIA DGX™ A100 and 2nd Gen AMD EPYC™ CPUs**, ready-to-use AI software, and expertise from NVIDIA and our partners, so you can overcome the challenges of democratizing AI for every student and researcher across domains including Engineering and Computer Science, Life Sciences and as broad as language and linguistics researchers. Some examples of institutions using the DGX platform include the following:

**Get your NVIDIA AI Starter Kit Today with Special Pricing for Educational Institutions**

### THE SOLUTION INCLUDES:

- > NVIDIA DGX A100 and/or NVIDIA DGX Station A100.
- > 3 years of NVIDIA enterprise support.
- > Custom training by NVIDIA DGXperts.
- > NVIDIA DLI teaching kits for accelerated computing, data science, deep learning and robotics.
- > Joint promotion of published research results.
- > Flexible leasing and AI lifecycle management options available.



**Big Data:** German Research Centre for Artificial Intelligence (DFKI) combines satellite imagery with real-time social media postings - including text, photo, video - to better predict disasters and assist response efforts. DGX systems and DGX Station enable them to build bigger AI models and process more data to support rescuers in the decision-making process for faster, more efficient dispatching of resources. Fully connected GPUs enable faster training and for conducting more detailed experiments, and large GPU memory is beneficial when training on terabytes of satellite and aerial imagery.



Figure 1. DFKI uses AI powered solutions for crisis management



**Computer Vision:** Predictive analytics, commonly used in business to identify risks and opportunities, is increasingly used by the sports industry to tap into massive amounts of data. But the amount of data is vast — one season’s worth of data alone is about 700,000 at-bats, which represents about a terabyte and a half of data. Scientists at New York University (NYU) are applying deep learning using the DGX system to analyze unprecedented amounts of Major League Baseball (MLB) data to analyze every player’s every move and help improve the game.



Figure 2. NYU uses AI for predictive analytics in sports



**Natural Language Processing (NLP):** The University of Florida is using NVIDIA DGX SuperPOD™ for important research, and built **GatorTron**, the largest clinical language model to date. Using pre-trained models from NGC™ and trained on records from more than 50 million interactions with 2 million patients, this breakthrough can help identify patients for lifesaving clinical trials, predict and alert health teams about life-threatening conditions, and provide clinical decision support to doctors.



Figure 3. University of Florida uses AI for clinical decision support



**Molecular Image Processing:** Multi-modal Australian Sciences Imaging and Visualisation Environment (MASSIVE) is a facility brought about through the collaboration of Monash University and several leading research organizations in Australia. Its M3 high performance computer supports one of the largest CryoEM HPC user communities in the world, consisting of approximately 1,000 researchers, with 10 groups using a cluster of the DGX systems. Monash University is using the technology to create superdrugs that combat superbugs. In addition to CryoEM, the supercomputers are used for machine learning and deep learning applications.

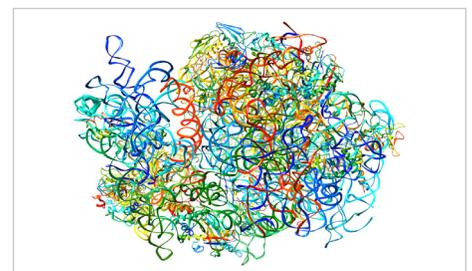


Figure 4. Monash University uses powerful supercomputing to fight antibiotic resistant superbugs

## The Benefits of DGX Systems

### > Attract the Best Talent

With technology the deciding factor, the most powerful AI platform will increase recruitment of top academic faculty, researchers and students.

### > Tackle the Most Complex Problems

As research problems and student projects become more complex than ever, access to DGX systems will enable you to handle the exponential growth in data sets and compute requirements.

### > Enable the Future Workforce

A solid foundation in AI will be a critical enabler and differentiator for graduates entering the workforce as employers continue on the path of digital transformation.



Figure 5. NVIDIA DGX systems

> **Flexible Architecture to Support Varying Needs**

Researchers can run AI and HPC workloads on a single infrastructure. And with Multi-Instance GPU (MIG), multiple GPU instances can power these AI workloads, right-sized for the needs of students and researchers or as a dual use platform for teaching and research.

> **Support for In-Person and Remote Learning**

Easily adapt to changing curricula and access powerful computing from wherever students may be, supporting distance learning at-scale.

> **Win the Battle for Funding**

Researchers with access to powerful infrastructure will often attract additional funding.

## Reshape the Future of Learning with AI

The NVIDIA AI Starter Kit makes it easier and faster to tackle AI projects.

It includes:

> **The Essential Instrument of AI Research**

DGX A100 delivers unmatched flexibility and performance with a simplified plug-in, power-up experience.

> **Supercomputing at Your Fingertips**

To get started in AI without a data center, DGX Station A100 provides a powerful AI appliance that just plugs into any standard wall outlet. When you are ready to scale-up, enjoy effortless mobility of AI projects to DGX A100 with predictable performance at scale.

> **Ready-to-Use Software for Out-of-the-Box Productivity**

Our growing portfolio of AI models, scripts, and libraries available from the **NGC catalog** enables researchers to focus on innovating instead of integrating. With over 150 AI and HPC optimized containers, over 100 models and industry-specific SDKs, students and researchers can save hours of work and be assured they always get the best performance.

> **Expert Guidance to Realize Results Sooner**

Domain-specific knowledge and expertise from NVIDIA and our partners helps you navigate the path from concept to production.

> **A Scalable Infrastructure Aligned to Your Research Endeavors**

With DGX A100, the foundational building block for scalable AI infrastructure, your AI Starter Kit can grow into scaled AI infrastructure whenever you need it to.

## Key Users

	RESEARCHERS	DEPARTMENT OR LARGER LAB
Use Cases	<ul style="list-style-type: none"><li>&gt; One or more researchers running AI workloads.</li><li>&gt; A dedicated development platform, often in a small office or lab.</li><li>&gt; Flexibility to provide many smaller instances for teaching during the day, and large research runs across full GPUs during the night.</li></ul>	<ul style="list-style-type: none"><li>&gt; Getting started building AI infrastructure for both teaching or research at the departmental level.</li><li>&gt; Supporting multiple research teams and teaching faculty.</li><li>&gt; MIG to support every workload, from the smallest to the largest, to give researchers more resources and flexibility.</li></ul>
Recommendations	<ul style="list-style-type: none"><li>&gt; DGX Station A100 for single or multiple users.</li><li>&gt; DGX A100 for larger workloads supporting multiple users (if rack space is available).</li></ul>	<ul style="list-style-type: none"><li>&gt; DGX A100 for large workloads supporting multiple users.</li><li>&gt; Small NVIDIA DGX POD™ with minimum of 2 nodes to scale demand across multiple teams and departments, and support larger scale training jobs.</li></ul>

To learn more about NVIDIA AI Starter Kit, visit: [www.nvidia.com/ai-starter-kit](http://www.nvidia.com/ai-starter-kit)

To learn more about NVIDIA's Higher Education and Research solutions, visit: <https://www.nvidia.com/en-us/industries/higher-education-research/>