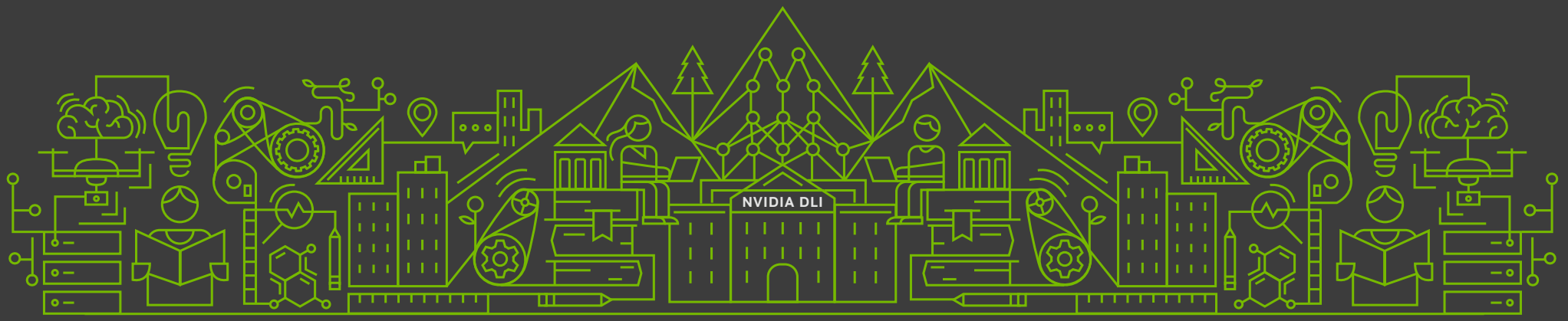
NVIDIA eBook

NVIDIA Deep Learning Institute Teaching Kits



The Foundation for Next-Generation Innovators

The demand for accelerated computing, data science, and AI skills is booming, and university classrooms are at the forefront of nurturing the next generation of students in these emerging technologies.

NVIDIA Teaching Kits lower the barrier of incorporating AI and GPU computing in coursework. The effort is spearheaded by the NVIDIA Deep Learning Institute (DLI), which helps developers around the world learn how to design, train, and deploy AI and GPU acceleration in their applications and gives educators essential resources they can bring to their students and university communities.

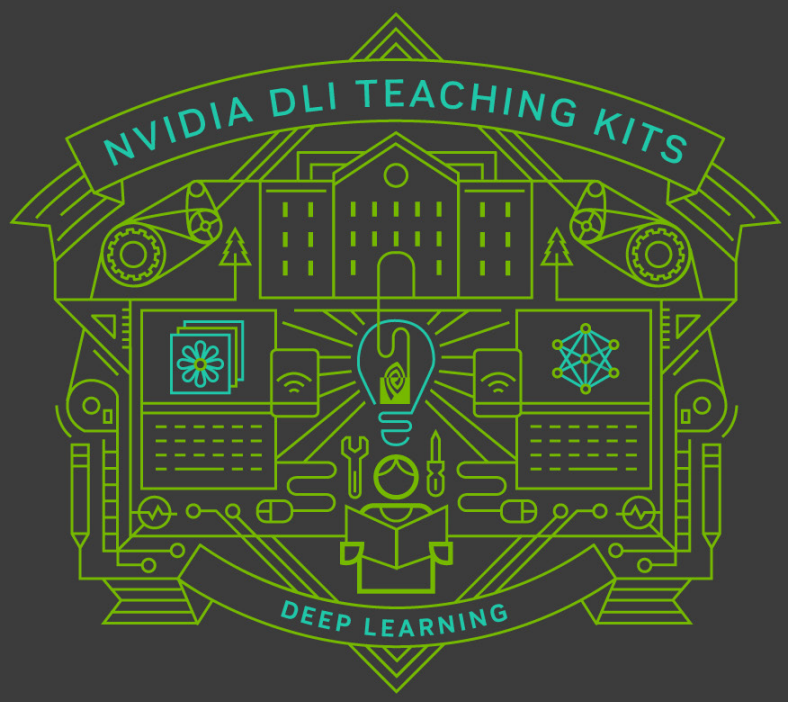
Co-developed with university faculty, NVIDIA Teaching Kits are free and provide content that can be easily integrated into university curriculum. They include downloadable teaching materials and online courses that provide the foundation for understanding and building hands-on expertise in areas like deep learning, accelerated computing, graphics and simulation, and robotics.

Made by and for Educators

Teaching Kits feature comprehensive content, including:

- Lecture slides and videos
- Hands-on programming labs and solutions
- Interactive Jupyter Notebooks
- Quizzes, exam questions, and solutions
- Ebooks
- Syllabi
- Quick-start guides
- Free DLI online courses with the opportunity to earn certificates of subject matter competency to support career growth

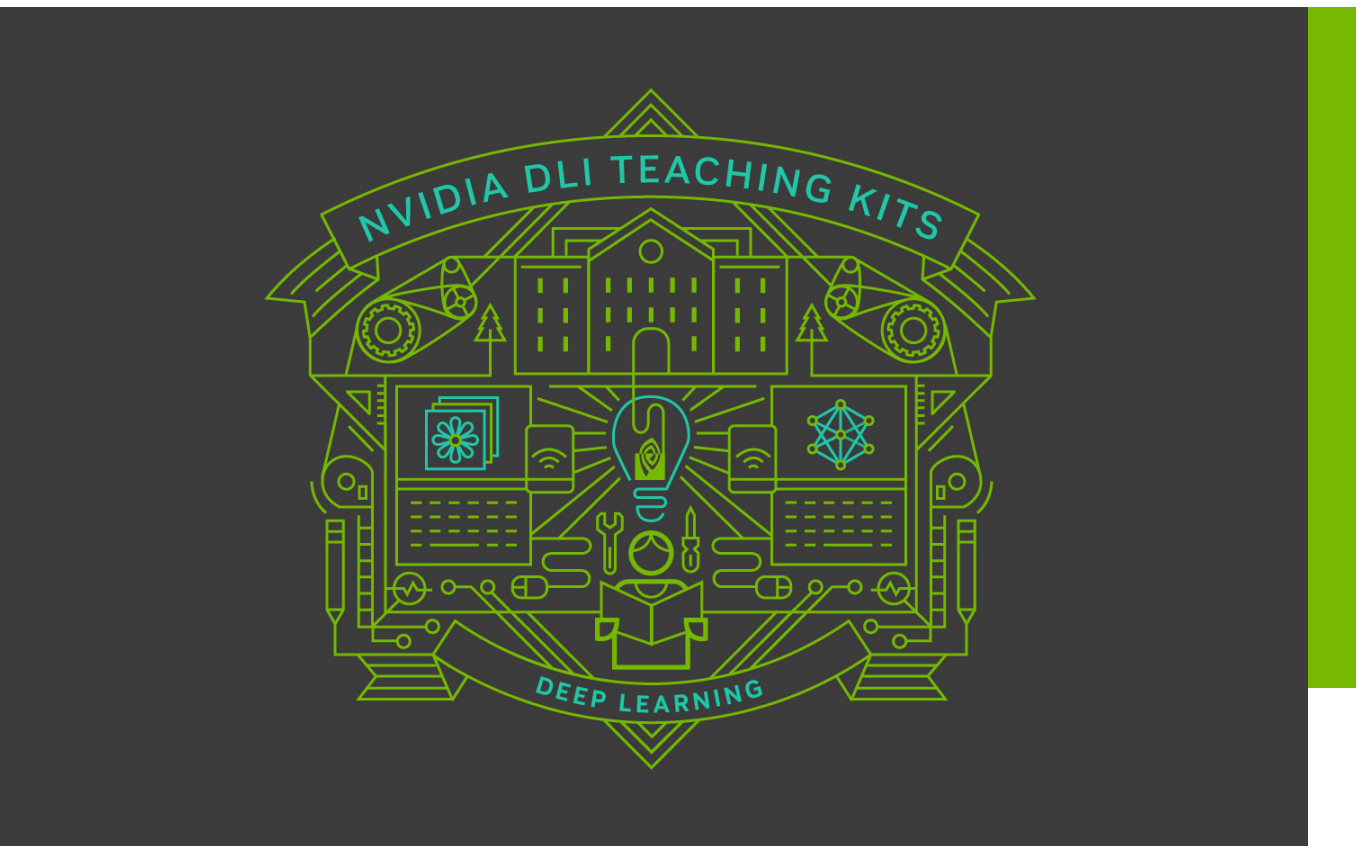
Advanced Deep Learning Capabilities



Deep Learning Teaching Kit

Enable students to delve into introductory and advanced deep learning topics, from image classification to generative adversarial networks (GANs) to natural language processing (NLP). The Deep Learning Teaching Kit was co-developed with Professor Yann LeCun and his team at New York University (NYU) and leverages the latest computing frameworks and techniques.

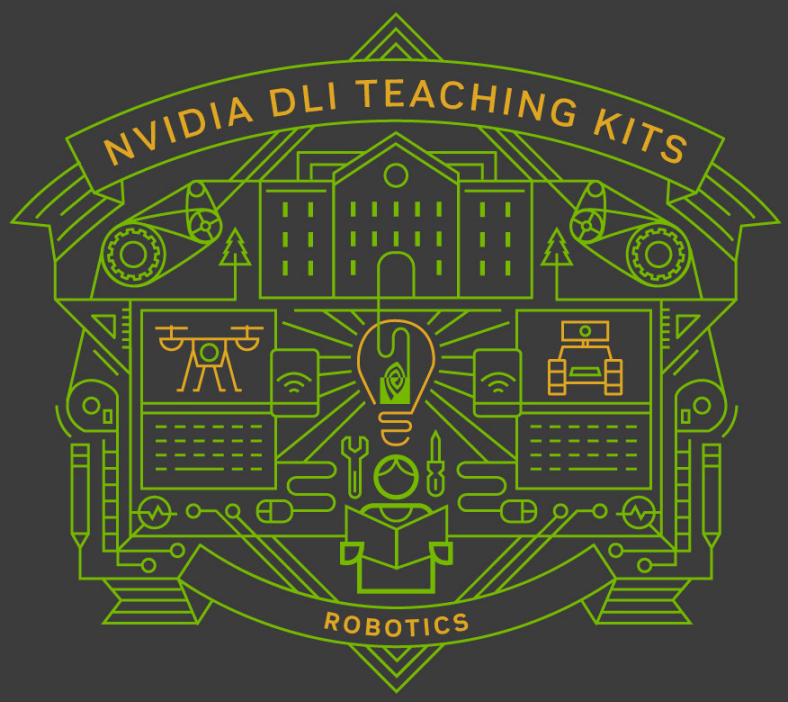
Bring Parallel Computing Into the Classroom



Accelerated Computing Teaching Kit

Teach introductory and advanced parallel computing skills with the Accelerated Computing Teaching Kit. The kit was co-developed with Professor Wen-Mei Hwu and his team from the University of Illinois (UIUC) and Professor Sunita Chandrasekaran and her team from the University of Delaware. It covers introductory and advanced topics such as parallel programming APIs, programming tools and techniques, principles and patterns of parallel algorithms, and processor architecture features and constraints. The Accelerated Computing Teaching Kit also includes an electronic textbook for the instructor, as well as student discount codes for hardcopies.

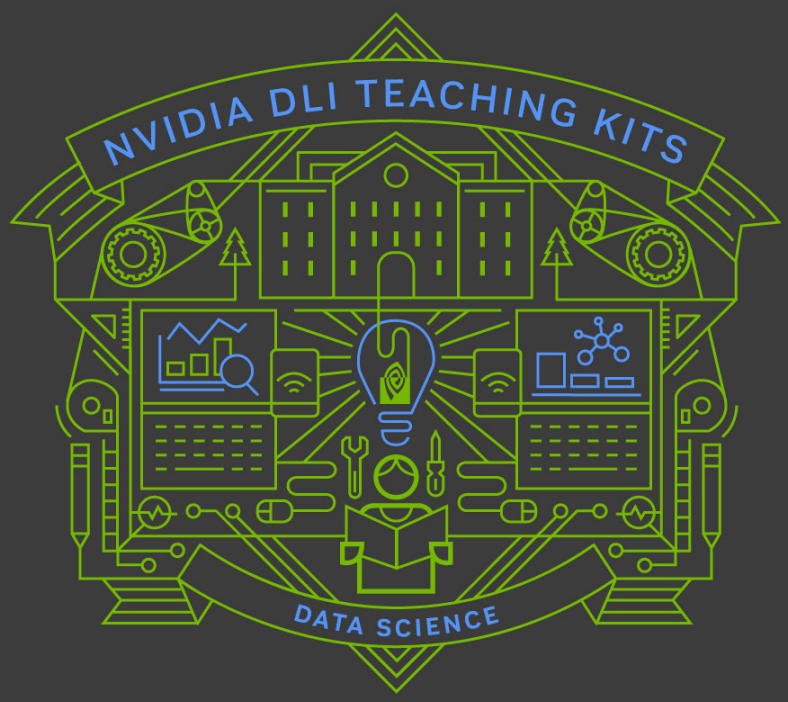
Build Intelligent, Interactive Robots



Edge AI and Robotics Teaching Kit

In collaboration with the University of Oxford and the University of Maryland Baltimore County, the Edge AI and Robotics Teaching Kit includes lecture slides and hands-on labs spanning topics such as big data and IoT, vision AI, reinforcement learning, conversational AI, diversity, ethics, and security, as well as autonomous robotics.

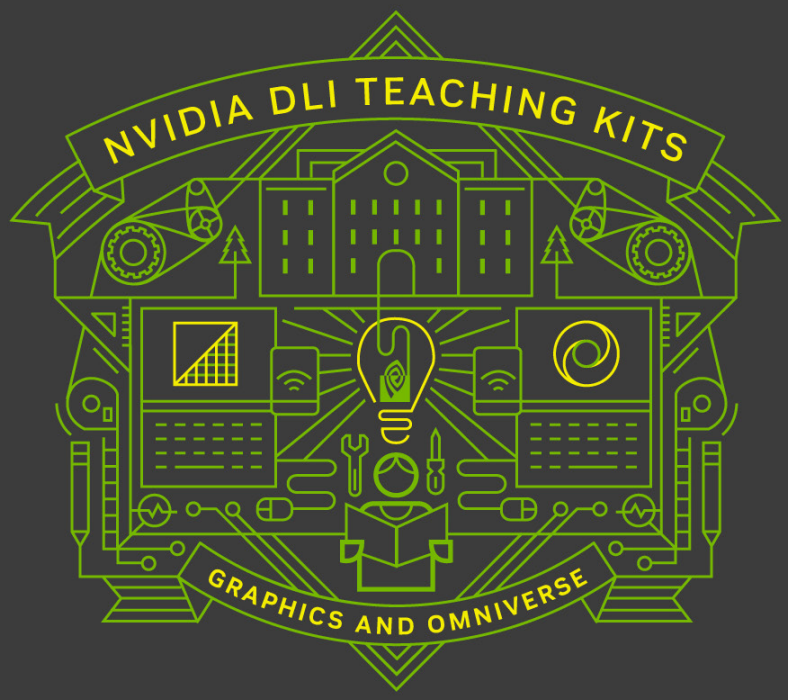
Accelerate Data Science Skills



Accelerated Data Science Teaching Kit

In collaboration with the Georgia Institute of Technology (Georgia Tech) and Prairie View A&M University, the Accelerated Data Science Teaching Kit focuses on GPU-accelerated algorithms and data science using the NVIDIA RAPIDS™ framework. The content has also been developed with cultural awareness, addressing issues such as bias and fairness in data science.

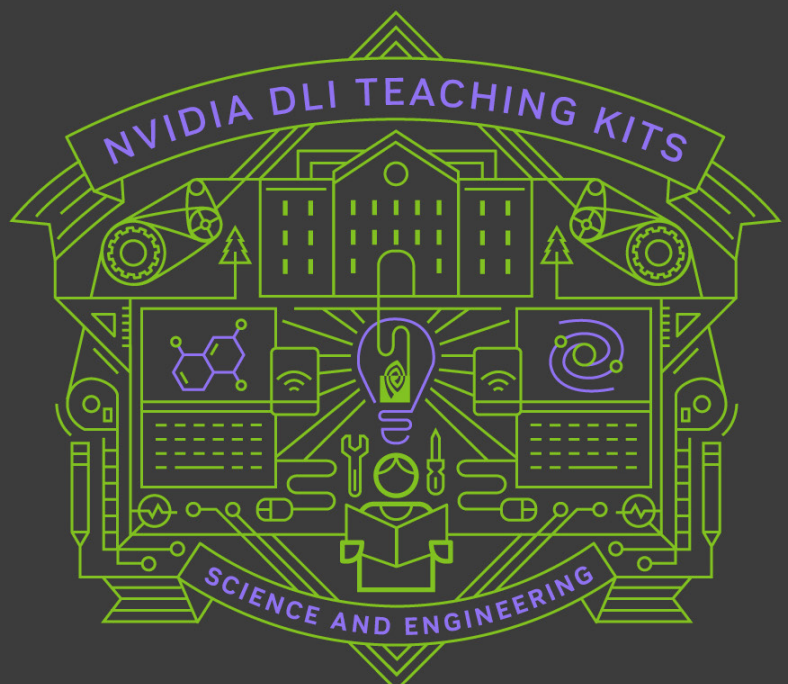
Unleash Immersive Creativity in the Classroom



- **Architecture, Engineering, Construction and Operations Teaching Kit**
- **Digital Humans Teaching Kit**
- **Industrial Metaverse Teaching Kit**
- **Media and Entertainment Teaching Kit**

Created in consultation with top film and animation schools in our Studio Education Partner Program, these Teaching KIts are designed for college and university educators looking to bring graphics and NVIDIA Omniverse™—an open platform for virtual collaboration and real-time, physically accurate simulation—into the classroom.

Bringing AI to the Heart of Science and Engineering



Deep Learning for Science and Engineering Teaching Kit

Co-developed with Professor George Karniadakis and his team at Brown University, this Teaching Kit has dedicated modules for physics-informed machine learning (physics-ML) due to its potential to transform simulation workflows across disciplines, including computational fluid dynamics, biomedicine, structural mechanics, and computational chemistry.

Breaking Barriers to Teaching New Technologies: Benefits for Educators

Saves Time

Developing new teaching materials like lecture slides and hands-on labs can take a significant amount of time for busy faculty. Teaching Kits provide a variety of source-level teaching materials—enough content to teach at least a full semester course—significantly cutting down the time required to develop course content.

Singular, Comprehensive Offering Backed by Industry and Academia

Another barrier for educators is experience with new content—not just the expertise required to teach the technology, but also the experience needed to select specific platforms and resources that are best for teaching. Teaching Kits provide a straightforward and singular, comprehensive offering backed by both industry and academia. Other program offerings help address experience barriers, including support from NVIDIA and NVIDIA's educator communities, roundtable and panel discussions co-located with conferences, a simple web-based portal to the latest Teaching Kits, getting-started guides, live webinars, email updates about new offerings, and an open channel for educators to provide feedback and ask questions.

Reduces Cost and Infrastructure Needs

New teaching resources can have an associated monetary cost. Funding barriers can also be related to a school's infrastructure or geography. Teaching Kits provide educators and their students free access to GPUs in the cloud through NVIDIA DLI's online courses and student certificate opportunities. Resources such as these can help address both funding and infrastructure barriers to teaching.

Addresses Academic Theory and Fundamentals

Many tech companies only provide applied industry and professional training material for universities to teach with, which usually lacks fundamentals and academic theory. Such material can be difficult to adapt to academic environments. NVIDIA co-develops Teaching Kits with academic partners to combine the latest industry trends, GPU architectures, and applications with fundamental theory and pedagogy from academia. This results in the highest-quality teaching material. Each Teaching Kit addresses a different course type and includes update releases over time with new features and content.

Testimonials: Advancing STEM Education With GPU-Accelerated Computing

"DLI Teaching Kits are very helpful for me and act as a class booster. Initially, I start with the basic training examples. The kits really help me to teach students the basics of deep learning such as convolutional neural networks, recurrent neural networks, and their training processes."

Vipul Kumar Mishra, Associate Professor, Bennett University, India

"Students know that the material we present is state of the art and up to date, so it gives them confidence in the material and draws a lot of excitement."

Daniel Wong, Assistant Professor of Electrical and Computer Engineering, University of California, Riverside

"The NVIDIA Teaching Kit on physics-ML has provided me with great resources for use in my machine learning course targeted for our engineering students. The examples and code greatly enable hands-on learning experiences on how machine learning is applied to scientific and engineering problems."

Hadi Meidani, Associate Professor of Civil and Environmental Engineering, University of Illinois Urbana-Champaign

"If you want to spend time productively and if you want to do cool research, use the Teaching Kits. You'll save valuable time, and there's a lot of freedom to do it your way, adapted to your culture and to the demands of your students—supported with very high-quality resources."

Sunita Chandrasekaran, Assistant Professor, University of Delaware

Enhance Your Curriculum

With NVIDIA DLI Teaching Kits, educators can access rich, comprehensive content to teach the next generation of innovators—their students—essential skills in AI and GPU computing. Free, easy to download, and easy to integrate into university curriculum, DLI Teaching Kits lay the foundation for building expertise in key technologies.

Ready to Get Started?

To learn more about NVIDIA DLI Teaching Kits, visit the Teaching Kits hub on our developer portal:
developer.nvidia.com/teaching-kits

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