INTEL® AI ACADEMY

SOFTWARE.INTEL.COM/AI

CONTENTS

- Overview of Intel® AI Academy
- Intel® AI Academy for Students
  - Intel® Student Ambassador Program
- Intel® AI Academy for Professors
- Access to Intel® AI DevCloud
- Technical Support
- How to Participate

INTRODUCING INTEL® AI ACADEMY

A membership program designed to give developers, data scientists, **students and educators** the tools they need to shape the future of AI.

Learn. Develop. Share. Teach.

Members can stay on top of the latest developments in the AI space with learning materials and tools, run their own solutions using Intel cloud technology, and get feedback and support from peers and experts on their AI projects.

Members receive exclusive communications, access exclusive benefits and are recognized for their achievements.

WHAT IS THE INTEL® AI ACADEMY?

LEARN

- Online tutorials
- Webinars
- Student kits
- Support forums

For beginners to advanced developers

DEVELOP

- Intel® Optimized Frameworks
- Access to Intel® AI DevCloud

For Developers, Students, Professors and Startups

SHARE

Project showcase opportunities via:

- Intel® Developer Mesh
- Industry & academic events

For Developers, Student Ambassadors and Professors

TEACH

- Comprehensive courseware
- Hands-on labs
- Cloud compute
- Technical suport

For Professors worldwide

INTEL® LEADERSHIP IN AI

EXPERIENCES

TOOLKITS

Intel® DL Training and Deployment | Intel® Nervana™ DL Software and Cloud | Intel® Computer Vision SDK | Intel® GO™ Automotive SDK | Movidius Fathom*

FRAMEWORKS

Spark MLlib BigDL | neon | TensorFlow | mxnet | theano | torch | Caffe | Chainer

LIBRARIES

Intel® Distribution for python | Intel® DAAL | Intel® Nervana™ Graph* | Intel® MKL | Intel® MKL-DNN | Intel® MLSL

HARDWARE

Compute | Memory/Storage | Networking | Computer Vision

END TO END AI

INTEL® AI ACADEMY

FOR STUDENTS

INTEL® AI ACADEMY FOR STUDENTS

Our goal is to drive awareness of AI innovation worldwide by offering:

- Training on the latest optimized frameworks, plus tools, workshops, and webinars
- Micro-Course Training Opportunities
- Industry Sponsored Data Science Contests & Hackathons
- Access to Intel® AI DevCloud
- Opportunities to become an Intel® Student Ambassador
- Learn about and attend Intel® sponsored events
- Access to industry experts and Intel® engineers for questions and answers (Q&A)

INTEL® AI ACADEMY FOR STUDENTS
WEBCASTS – LIVE & INTERACTIVE

A regularly hosted virtual training event by expert Intel® engineers and technical evangelists, live, broadcasted throughout North America.

This 90 minute event includes:

- Live interaction via Slack
- Insight into Intel & AI
- An Introduction to the program
- Technical trainings
- Social media challenges & prizes
- Live Q&A

INTEL® AI ACADEMY FOR STUDENTS
F2F WORKSHOPS

Workshops are on-campus events hosted by expert Intel® engineers, who will train and collaborate with students.

Three-hour workshops cover:

- Intel® AI Academy for Students
- Intel® AI Portfolio
  - DL frameworks optimized for IA
- Deep Learning and Neural Networks Introduction
- Hands-on Lab
  - Use the Intel® AI Devcloud to create a pet breed detector
- Social Media Contest & Prizes

AI STUDENT KITS
STUDENT KIT CONTENTS

Kits include self-paced courses and Python Jupyter* notebooks

Coursework	Tools and Frameworks	Intel® AI DevCloud
Downloadable from the Intel® AI Academy student kit page	Accessed through links to GitHub*; hosted on the Intel® AI Academy tools page	Access provided by filling out a form on the Intel® AI DevCloud page

- Benefit from expert-created trainings with hands-on programming exercises, remote access, and more
- Gain access to the latest libraries, frameworks, tools, and technologies from Intel® to accelerate your AI project
- Learn at your own pace, and get help if you need it via the Intel® AI Academy support forum, with access to Intel® and community experts
- Can be used as part of a short workshop, a hands-on webinar, or on-demand learning

Visit the Intel® AI Academy for more information

AI STUDENT KITS
SAMPLE COURSE DETAILS

Topics

- Machine learning overview
  - What is machine learning?
  - Terminology
  - Types of machine learning (supervised and unsupervised)
- K-nearest neighbors algorithm
- Cross validation
- Linear models
  - Linear regression
  - Logistic regression
- Gradient descent
- Under and overfitting
- Regularization
- Additional supervised learning algorithms
  - SVM
  - Decision trees
  - Random forest
- Boosting

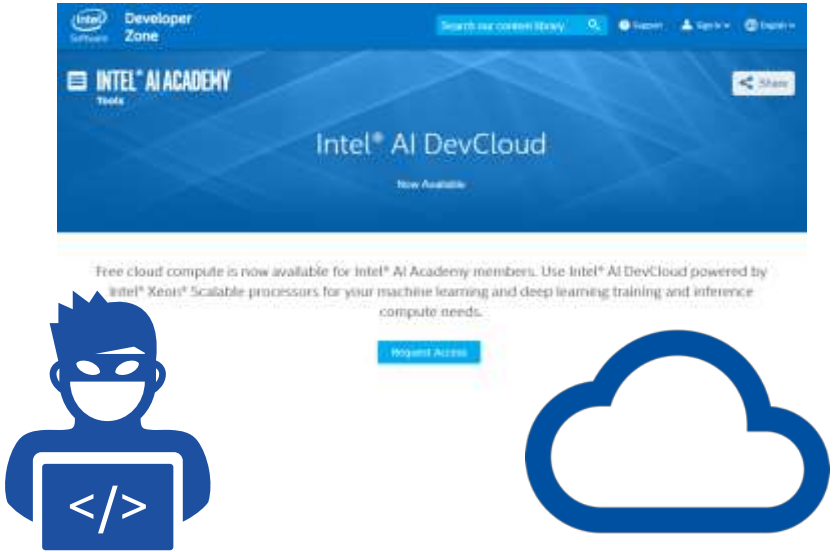
Introduction to Machine Learning

This course will provide an overview of the fundamentals of machine learning. Students will learn about the types of problems that can be solved, the building blocks, and the fundamentals of building models in machine learning. A number of key algorithms will be explored, and students will leave with knowledge of these algorithms' pros and cons, parameters, and practical issues.

Objectives

By the end of this course, students will know what machine learning is, the different algorithm types, and what problems can be solved. They'll also have practical knowledge in a number of supervised learning algorithms along with an understanding of key concepts like under and overfitting, regularization, and cross validation. Students will be able to identify the type of problem they're trying to solve, choose an algorithm, tune parameters, and validate a model.

INTEL® AI DEVCLOUD



- ✓ Get started for FREE
- ✓ 30 days of access to remote cluster of Intel® Xeon® Scalable processors
  - ✓ Request extended access as needed
- ✓ 200 GB file storage
- ✓ Pre-configured libraries & frameworks†

software.intel.com/AI/DevCloud

†neon™ framework, Intel® Optimization for Theano, Intel® Optimization for TensorFlow*, Intel® Optimization for Caffe*, Intel® Distribution for Python* (including NumPy, SciPy, and scikit-learn*), Keras* library*
**Other names and brands may be claimed as the property of others.*

INTEL® AI ACADEMY

STUDENT AMBASSADOR PROGRAM

INTEL® AI ACADEMY FOR STUDENTS
STUDENT AMBASSADORS

- A community of Graduate & PhD students from the top Machine Learning, Deep Learning & AI Institutions around the world
- Curious & inventive thinkers actively working on research papers and projects
- Focused on applied and problem-oriented research utilizing machine learning, deep learning and artificial intelligence principles and technologies

http://devmesh.intel.com

STUDENT AMBASSADOR SHOWCASE EXAMPLES:

INTEL® STUDENT AMBASSADORS WORKING ON AI, USING IA

PANUWAT JANWATTANAPONG, PH.D

EPILEPTIC BRAIN CONNECTIVITY*

SPEAKERSHIP & PUBLISHED PAPER

This technical paper introduces a new method for the quantification and analysis of functional connectivity from electroencephalogram (EEG) by implementing cross-correlation method.

YESER MEZIANI, PH.D APPLICANT

MACHINE LEARNING IN PATH PLANNING FOR MANIPULATORS

SPEAKERSHIP & SUBMITTING A PAPER

This work aims to illustrate how applying an AI approach through machine learning (ML) to generate path via the robot's workspace, eliminates the shortcomings of mathematical models, mainly presented in singularities configurations relative in our case[†] to the 5 degrees of freedom (DoF) structure of the robot manipulator.

DAVID OJIKA, PH.D

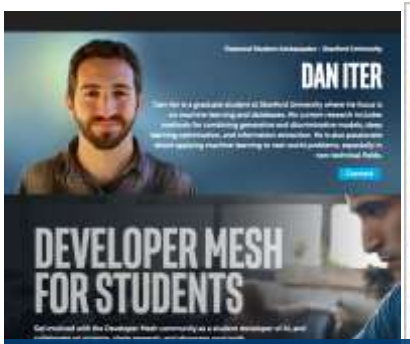
COLLABORATING WITH CERN USING IA

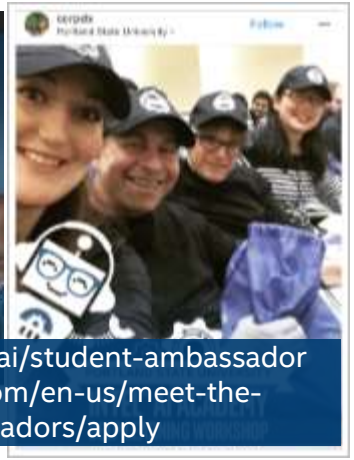
APPLIED RESEARCH COLLABORATION

"Ojika spent one month at the LHC complex last November to assess ways that machine learning techniques could aid in data management. Using deep neural networks, his new analysis pipeline could result in the capture of ten times more useful data, leading to new hypotheses and discovery."

INTEL® AI ACADEMY FOR STUDENTS
STUDENT AMBASSADOR BENEFITS

- Public affiliation and recognition on the Intel® AI Academy website & Intel® Developer Mesh site
- Exposure and opportunity to speak and participate at industry and public facing events about ones work
- NDA access to Intel® AI roadmap, product insights and trainings
- Access to Intel® AI DevCloud, powered by Xeon Scalable Processors
- Access to industry experts and Intel® engineers for questions and answers (Q&A)
- Technical support, free resources, tools and opportunities for micro-funding towards project development





https://software.intel.com/ai/student-ambassador
https://software.intel.com/en-us/meet-the-experts/ambassadors/apply

INTEL® AI ACADEMY FOR STUDENTS
STUDENT AMBASSADORS: EXPECTATIONS

Student Ambassadors continue in the role as long as they are willing and able until their graduations.

Each Student Ambassador works to:

- Write and share technical content via the Intel® AI Academy
- Showcase their work online via Intel® Developer Mesh
- Engage with their local community and the AI industry through research, speakerships, publications, etc. sponsored by Intel®
- Engage their university and connect with their peers through on-campus events, ambassador labs and research

INTEL® AI ACADEMY FOR STUDENTS
APPLY TO BECOME A STUDENT AMBASSADOR

Submit your application here

Candidates are reviewed and interviewed on a weekly basis

INTEL® AI ACADEMY FOR PROFESSORS

INTEL® AI ACADEMY FOR PROFESSORS
HOST A WORKSHOP OR WEBCAST

1. Invite your students to a 3-hour face-to-face hands-on workshop taught by expert Intel® engineers, who will train and collaborate with students.

- AND/OR -

2. Host a 90-minute webcast watch party along with hundreds of other participants around the world.

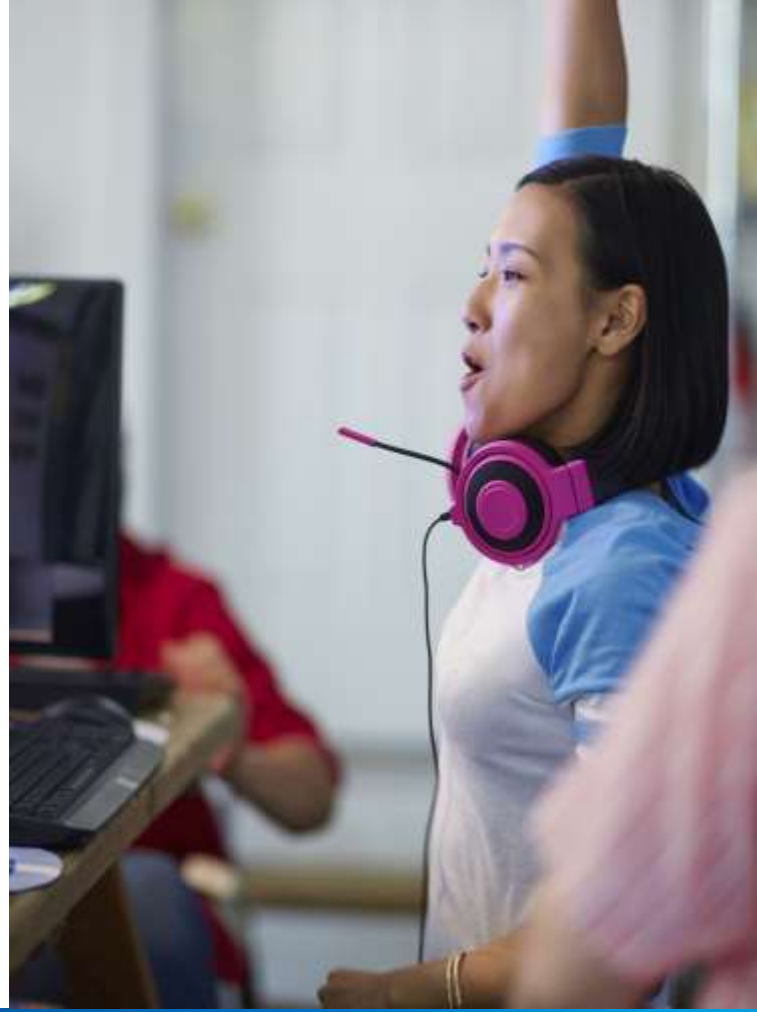
Both events cover:

- Intel® AI Academy for Students
- Intel® AI Portfolio
  - DL frameworks optimized for IA
- Deep Learning and Neural Networks Introduction
- Hands-on Lab
  - Use the Intel® AI Devcloud to create a pet breed detector
- Social Media Contest & Prizes

INTEL® AI ACADEMY FOR PROFESSORS

CURRICULUM ADOPTION + DEVCLOUD FOR THE CLASSROOM

- Use one or more Intel modules for class lectures, labs, homework assignments, or extra credit
  - Intel curriculum consists of lecture slides, hands-on programming assignments, and answer keys
- Leverage DevCloud as a remote development environment for students to practice
  - Use ML/DL libraries and frameworks optimized for better performance on Intel® hardware
- Receive ongoing content and training from Intel®
- Professors and students have access to technical support for curriculum content and DevCloud usage

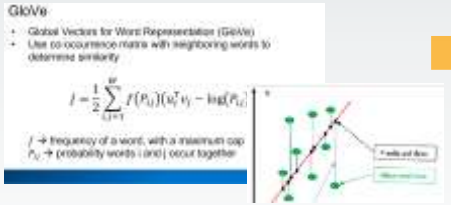


AI PROFESSOR KIT PORTFOLIO

With full access and support from the AI Academy

COURSEWORK

- Machine Learning 501
- Deep Learning 501
- TensorFlow* 501
- Intro to AI
- Exercises and answer keys



TOOLS & FRAMEWORKS

- neon
- TensorFlow*
- Jupyter* notebooks
- Intel® Dist of Python
- Intel® Data Analytics Library

ACCESS TO INTEL® COMPUTE

- Intel® Xeon Scalable Processors
- Intel® Neural Computer Sticks
- Intel® FPGAs

HELP WHEN YOU NEED IT

- Technical support for remote access computing, Intel® tools and frameworks, and course materials
- Access to Intel® engineers, industry experts, other teachers, and community innovators to collaborate on lessons and problems
- Students can get support via the student forums

AI PROFESSOR KIT DETAILS
SAMPLE COURSE DESCRIPTION

Machine Learning 501 on Modern Intel® Architecture	
Description	Overview (What Is ML, terminology, Supervised vs. Unsupervised) and introduction to concepts for machine learning, with topics ranging from linear and logistic regression to gradient descent, SVM, and decision trees. The course features a refresher to the Python* programming language and introduces Jupyter* notebooks and popular libraries (such as Gensim*, Tensorflow*, Theano*).
Target Audience	Data science, computer science, and AI senior undergraduate and graduate students
Motivation	Learn new skills, see the latest in AI application development, and have fun building machine learning-based applications
Prerequisites	Python programming, Calculus, Linear Algebra, and Statistics
Course Type	12 classes and 12 exercises
Code OS Supported	Windows*, Ubuntu*, Mac OS X*
Detailed Concepts Taught by Course	KNN, cross validation, linear and logistic regression, gradient descent, under/overfitting, regularization, SVM, decision trees, random forest, boosting, Python refresher, Jupyter notebooks, Numpy* and Pandas*, loading and exploring data, data visualization with matplotlib and seaborn, review (supervised and unsupervised learning), SciPy*, scikit-learn (fitting and predicting a model, cross validation, grid search, data preprocessing, and creating a pipeline).
Content Cost to University	Free

INTEL® AI ACADEMY

INTEL® AI DEVCLOUD

ACCESS TO INTEL® AI DEVCLOUD

- Remote access for professors and students to next-generation deep learning and machine learning development environments.
  - Professors may use the cluster for research and/or curriculum development
  - Students may use the cluster for coursework, labs, tutorials, and projects
- Includes a state-of-the-art server cluster powered by the Intel® Xeon® Scalable processor family, Intel® optimized frameworks, and other tools and libraries.
- Each processor has **24 cores** with two-way hyper-threading and **96 GB of on-platform DDR4 RAM**.
- Each student is provided **200 GB of file storage** during the access period.
- Each user's home/user directory is not visible to others. Users' home directories on the cluster are deleted after the access period.
- Request access by visiting this sign-up page

ACCESS TO INTEL® AI DEVCLOUD
FRAMEWORKS, TOOLS, AND LIBRARIES

- Intel® Parallel Studio XE Cluster Edition and the tools and libraries included with it:
  - Intel® C, C++, and Fortran* compilers
  - Intel® MPI Library
  - Intel® OpenMP* Runtime Library
  - Intel® Threading Building Blocks library
  - Intel® Math Kernel Library for Deep Neural Networks (Intel® MKL-DNN)
  - Intel® Data Analytics Acceleration Library (Intel® DAAL)
- Intel® Distribution for Python* 2.7 and 3.5
- Intel® Distribution for Caffe*
- TensorFlow*
- Keras 1.1.0*
- Theano 0.9.0.dev2*
- Neon

INTEL® AI ACADEMY TECHNICAL SUPPORT

- Students and developers receive online forum support on the following topics:
  - Student kits
  - Intel® AI DevCloud
    - Access
    - Tools
    - Libraries
    - Frameworks
- Response within one business day
- Professors receive the same support, and can get additional support if needed through their Intel® rep

INTEL® AI ACADEMY
NEXT STEPS

INTEL® AI ACADEMY

HOW UNIVERSITIES, PROFESSORS, AND STUDENTS CAN PARTICIPATE

- Adopt curriculum and use DevCloud in the classroom
- Create new curriculum
- Conduct research and publish papers
- Host an on-campus workshop or webcast watch party
- Nominate or apply as a student ambassador
- Download student kits for self-paced learning

Keep up to date: Join the Academy!

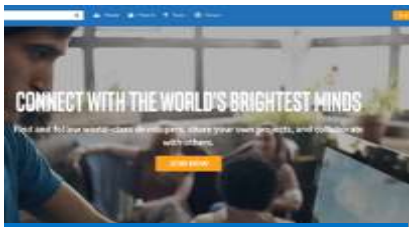
Sign Up for Updates & News

Get the latest updates on upcoming events, webinars, online tutorials & more!

Use Our Tools & Technologies

Check out our latest tools and technologies available for FREE.

Sign up for FREE access to Intel® AI DevCloud



Join the Community

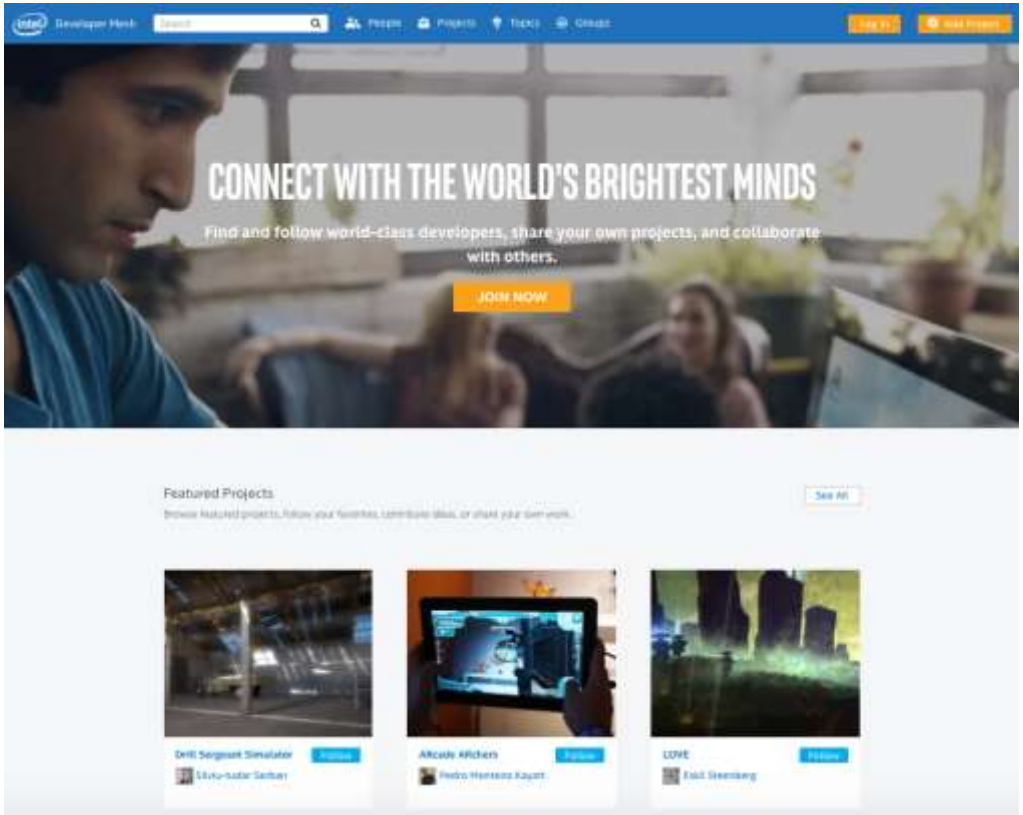
Share your projects and research and collaborate with Intel® to publish papers.

Nominate Student Ambassadors

Nominate students to become Intel® Student Ambassadors to work 1:1 with Intel® to receive free access to exclusive Student Ambassador benefits.

DEVMESH.INTEL.COM

Tell us what you are working on – papers, research, projects – this site is a way for us to learn about amazing work and engage further!



INTEL®
ARTIFICIAL INTELLIGENCE

Learn more about the Intel® AI Academy:

Intel® AI Academy

Visit the Intel® AI Academy website

Student Ambassadors

View information on nominating a Student Ambassador

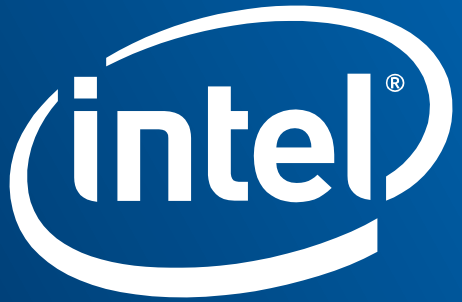
LEGAL NOTICES AND DISCLAIMERS

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at intel.com.

Intel disclaims all express and implied warranties, including without limitation, the implied warranties of merchantability, fitness for a particular purpose, and non-infringement, as well as any warranty arising from course of performance, course of dealing, or usage in trade.

Intel, the Intel logo, Intel Atom, Intel Core, Intel GO, Intel Nervana, Xeon, and Xeon Phi are trademarks of Intel Corporation in the U.S. and/or other countries.

*Other names and brands may be claimed as the property of others.


intel

BACKUP

Intel®-Optimized Libraries and Frameworks

include but are not limited to:

Intel® Optimization for TensorFlow*
Intel® Optimization for Chainer*
Intel® Optimization for Keras*
Intel® Optimization for Theano*
Intel® Optimization for Torch*
Intel® Optimization for Caffe*
Compute Library for Deep Neural Networks (clDNN)
Intel® Data Analytics Acceleration Library (Intel® DAAL)
Intel® Math Kernel Library (Intel® MKL)
Intel® Math Kernel Library for Deep Neural Networks (Intel® MKL-DNN)
Intel® Machine Learning Scaling Library (Intel® MLSL)
Intel® Distribution for Python*