Editorial

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Contact Intel PR

By Doug Fisher

Artificial intelligence (AI) — machines that can learn from their results to improve their programming for better results. This is how humans operate. We try something, we judge the result and modify our behavior. What some considered to be science fiction only a few years ago, AI is edging closer to reality as decades of research — combined with advances in compute power, memory, storage, network connectivity, sensors and the software that unites them all — is poised to enable new classes of intelligent predictive analytics.

These innovations will bring benefits to multiple industries, and to society as a whole in the way we lead our everyday lives. AI is going to change our lives for the better as machines learn, reason, act and adapt — transforming industries by amplifying human capabilities, automating tedious or dangerous tasks, and solving some of our most challenging societal problems. Intel can offer crucial technologies to drive the AI evolution, but ultimately we must work together as an industry — and as a society — to achieve the ultimate potential of AI.

Press Kit: Intel Artificial Intelligence: Unleashing the Next Wave

How does "upstreaming" artificial intelligence help us achieve that? In the literal sense, upstreaming means "moving closer to the source" or "engaging earlier in a production process." Our approach in software at Intel is no different. First, we reduce barriers to entry for developers, data scientists and students so that they can unleash the full potential of Intel's amazing hardware capabilities (the source) to get the most out of AI for the industry. Second, we engage early with the ecosystem by delivering essential training, tools and resources to developers, data scientists and students, among others, so that they can share their expertise and knowledge upstream with the rest of the community to drive rapid AI adoption and innovation, ultimately driving scale downstream across a wide set of AI applications. The end result of upstreaming is to "democratize." Simply put, this is making artificial intelligence available for all.

Unleash the full potential of AI

Intel's longstanding innovation and integration of capabilities into the CPU roadmap, driven by Moore's law, will further enhance training performance, as well as efficiency, density, programmability and cost effectiveness. Couple that with the most sophisticated set of optimizations in open sourced Deep Learning Frameworks onto Intel® architecture including Nervana's Neon deep learning framework, Caffe*, TensorFlow*, Theano*, and Torch*, and MXNet*, along with the availability of Intel® Nervana™ Graph Compiler, which provides an advanced mechanism for representing and optimizing deep learning topologies, developers will be able to unleash the full potential of AI.

Bringing to life that potential in a real-world application is the Pizako App. Pikazo was developed in 2015 using neural style transfer algorithms, modeled on a Torch* framework. It is a collaboration among human, machine and the concept of art that paints any image in the style of any other such as Van Gogh, Picasso or a Graffiti style — turning any of your pictures into a piece of artwork worthy of hanging on your wall. With Intel hardware and software support we optimized

Torch* for Intel Architecture, and we integrated the Intel® Math Kernel Library to accelerate the Deep Neural Network primitives in the hardware. The result? Render speeds 28 times faster, and the ability to support images at least 15 times the size from when the app first launched.

Once the developer identifies their preferred framework, Intel offers the Intel® Deep Learning SDK as a set of tools for data scientists and software developers to develop, train, and deploy deep learning solutions.

Engage Early

We are engaging early with the ecosystem to help scientists, students and developers increase momentum and quickly create their own AI solutions. Effectively upstreaming the knowledge in the ecosystem to create downstream momentum and scale. That is why having a robust, all-inclusive ecosystem to foster innovation and build momentum around AI is the key to success. Intel is proud of our robust Intel Developer Program, and we are even more proud to extend its reach in AI with the new Intel® Nervana™ AI Academy. Along with access to the Intel® Developer Zone for Artificial Intelligence, through the academy, our community can find "all things AI" including IA optimized deep learning frameworks, tools for training and deployment, and a vast array of education, courses and resources.

Engaging early also means "upstreaming" in education — specifically reaching students as the developers and data scientists of tomorrow. Intel is pleased to announce the partnership with Coursera, a global leading education provider, to provide a series of AI online courses, beginning in 2017. With a world leading education platform, partnering with nearly 150 top universities and organizations across nearly 30 countries around the globe, Intel and Coursera will be partnering to deliver a series of AI-focused courses to be led by both Intel and Industry experts and thought leaders, helping to drive scale for AI further downstream as they become trained evangelists.

In addition, under the academy, the Intel® Student Developer Program for AI, ignites passion in students for AI through a Student Ambassador program as Intel partners with universities worldwide to identify, sponsor and recognize students who have presented interest or delivered inspiring research in machine learning or AI. Upstreaming the knowledge in the ecosystem to create downstream momentum and scale.

Finally, we encourage developers, data scientists and students to put their newly acquired knowledge, skills and acumen to the test by trying their hand at solving real-world problems. Kaggle.com is the leading platform for data science competitions, with a community of data scientists of more than 600,000 who compete in machine learning competitions to solve real-world business and socio-economic problems with AI.

This is why Intel is pleased to announce a partnership with Mobile ODT (Mobile Optical Detection Technologies) — a company dedicated to enabling cervical cancer screening for every woman, everywhere — to host a joint AI competition on Kaggle.com, going live in January 2017. Intel and Mobile ODT will fully engage the expertise, the support and the advocacy of the data scientist and developer community to help identify and classify the potential stage of cervical cancer (through the use of AI image recognition of soft tissue) to determine the appropriate treatment for the patient, with a particular emphasis on developing countries. This is a great example of how engaging "upstream," or early with the ecosystem, can solve real-world problems and drive AI innovation as a disrupter of healthcare in developing countries.

Moving forward, Intel continues to engage "upstream" or early through our ongoing research with key universities such as Stanford, Berkeley, UC Davis, North Caroline State University and Karlsruhe Institute of Technology (Germany) across a widespread set of research topics.

With the proliferation of data and explosion of IoT devices by 2020, winning the cybersecurity space is crucial to ensuring consumer confidence. To this end, Intel established a new research Centre at the Georgia Institute of Technology dedicated to the emerging field of machine learning cybersecurity with a focus on strengthening the analytics malware detection and threat analysis.

Intel has the experience and ability to take AI to the next level and make it available for all by "upstreaming" AI. For industries in many fields to quickly deploy AI, Intel has all the necessary mechanisms in place, including deep R&D, an amazing hardware and software portfolio, venture investments and an advisory board of AI luminaries. To proliferate AI, we have a robust Intel® Nervana™ AI Academy to facilitate access to AI, and we are leading the charge for open data exchanges. To guide the responsible development of AI, Intel is building on our history as a leader in corporate social responsibility, by fostering real-world use cases of AI technology and partnering with government, business, and society's thought leaders to design solutions that will benefit all aspects of our lives.

I'll be happy to hear from you. Connect with me on Twitter or Linkedin.

Useful links:

- Doug's ChipChat
- Chuck Freedman's AI Academy blog

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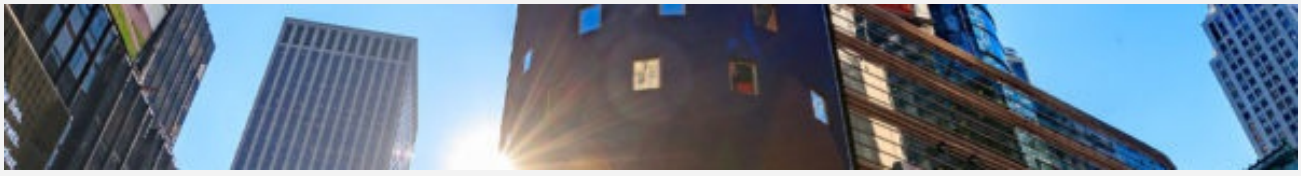

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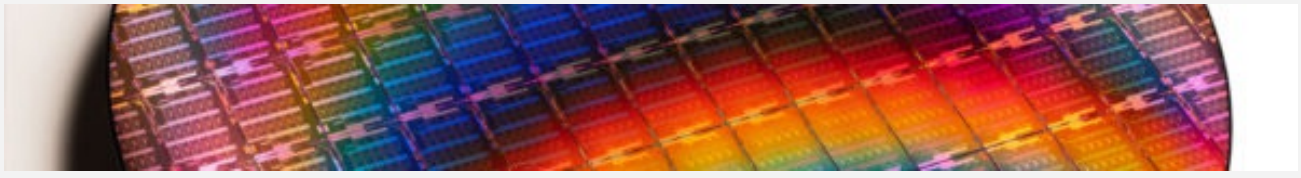

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