

Passion. Curiosity. Purpose.

Spot Nuclei, Speed Cures.

January 16 – April 16, 2018

Press Kit

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#DataSciBowl



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DATA SCIENCE BOWL 2018 – FINAL PRESS RELEASE FOR LAUNCH

BOOZ ALLEN & KAGGLE'S ANNUAL DATA SCIENCE COMPETITION PUTS ARTIFICIAL INTELLIGENCE TO WORK ACCELERATING LIFE-SAVING MEDICAL RESEARCH

Fourth Annual Data Science Bowl to Use Machine Intelligence to Accelerate Research for Diseases—Hosted in Partnership with Broad Institute, NVIDIA, and PerkinElmer

January 16, 2018

McLean, Va. – Somewhere, buried in one of tens of millions of cell samples, could lie the next great breakthrough in disease prevention or cure. But, one of the great barriers to finding it could be the need for human eyes to evaluate a corresponding mountain of cell images, one by one. In an era when terabytes of data can be analyzed in just a few days, the opportunity to enhance automation of biomedical analysis could help researchers achieve breakthroughs faster in the treatment of almost every disease—from cancer, diabetes and rare disorders to the common cold.

To spur this automation, **Booz Allen Hamilton** (NYSE: BAH) and **Kaggle** today launched the 2018 **Data Science Bowl**, a 90-day competition that calls on thousands of participants globally to train deep learning models to examine images of cells and identify nuclei, regardless of the experimental setup—and without human intervention. Creators of the top algorithms will split \$170,000 in cash and prizes, including an NVIDIA® DGX Station™, a personal AI supercomputer that delivers the computing capacity of 400 CPUs in a desktop workstation.

“This year’s Data Science Bowl will bring together thousands of people from around the world to confront deadly diseases in one of our most complex challenges yet,” said Ray Hensberger, a Booz Allen Hamilton principal. “Despite some progress, it remains time-consuming and expensive to find treatments for all types of diseases. We believe that pairing artificial intelligence and the collective ingenuity of the global data science community will yield powerful tools that can help accelerate the search for medical cures.”

Past Data Science Bowls have tackled **ocean health**, **heart disease**, and **lung cancer**—in which competitors trained algorithms to, among other things, measure key indicators of heart disease in seconds.

The 2018 Data Science Bowl At-A-Glance:

Ready to use data to make a difference? Visit DataScienceBowl.com.
Competition runs: **January 16 – April 16, 2018**

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- **Why does this challenge matter?** All current options for nuclei detection require time-consuming biologist intervention. There are no deep learning models available today that can identify nuclei across multiple experimental setups and testing conditions. Finally, biologists often do not have the technical expertise nor the time needed to train their own deep learning models.
- **What will participants do? The Broad Institute of MIT and Harvard**, a non-profit biomedical and genomics research institute, will provide Data Science Bowl participants from 20 different imaging experiments, each containing images of nearly 1,000 nuclei. Using this data, participants will create algorithms that can identify nuclei in any cell image, thereby expediting the detection process and allowing biologists to conserve time for other efforts.
- **Which organizations are involved?** The competition receives sponsorship and support from several leading health and technology organizations, including the Broad Institute, **NVIDIA**, and **PerkinElmer, Inc.**

“We’re proud to bring together some of the world’s top minds in a forum that harnesses data science for social good,” said Anthony Goldbloom, CEO, Kaggle. “This year’s competition will provide our global community with an exciting opportunity to transform biomedical research through new open-source solutions.”

To participate in the competition, please register and download the data set by visiting **Kaggle.com**. To learn more about the Data Science Bowl, including more information about past Data Science Bowl competitions, visit **DataScienceBowl.com**.

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About Booz Allen Hamilton

Booz Allen Hamilton (NYSE: BAH) has been at the forefront of strategy and technology for more than one hundred years. Today, the firm provides management and technology consulting and engineering services to leading *Fortune* 500 corporations, governments, and not-for-profits across the globe. Booz Allen partners with public and private sector clients to solve their most difficult challenges through a combination of consulting, analytics, mission operations, technology, systems delivery, cybersecurity, engineering, and innovation expertise.

With international headquarters in McLean, Virginia, the firm employs approximately 24,225 people globally, and had revenue of \$5.80 billion for the 12 months ended March 31, 2017. To learn more, visit **BoozAllen.com**.

About Kaggle

Kaggle is the world’s largest online data science competition community. With over 1.3 million users across 194 countries, the Kaggle community uses its diverse set of academic backgrounds to solve complex data science problems. Working as individuals or in teams, the winning competitors are awarded prizes and industry recognition for their accomplishments. The top competitors are invited to work on the most interesting and sensitive business problems from some of the world’s biggest companies through Masters Competitions.

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PARTNERS

About the Broad Institute of MIT and Harvard

Broad Institute of MIT and Harvard was launched in 2004 to empower this generation of creative scientists to transform medicine. The Broad Institute seeks to describe all the molecular components of life and their connections; discover the molecular basis of major human diseases; develop effective new approaches to diagnostics and therapeutics; and disseminate discoveries, tools, methods, and data openly to the entire scientific community.

Founded by MIT, Harvard, Harvard-affiliated hospitals, and the visionary Los Angeles philanthropists Eli and Edythe L. Broad, the Broad Institute includes faculty, professional staff, and students from throughout the MIT and Harvard biomedical research communities and beyond, with collaborations spanning over a hundred private and public institutions in more than 40 countries worldwide. For further information about the Broad Institute, go to broadinstitute.org.

About PerkinElmer

PerkinElmer, Inc. is a global leader committed to innovating for a healthier world. Our dedicated team of more than 11,000 employees worldwide is passionate about providing customers with an unmatched experience as they help solve critical issues especially impacting the diagnostics, discovery and analytical solutions markets. Our innovative detection, imaging, informatics and service capabilities, combined with deep market knowledge and expertise, help customers gain earlier and more accurate insights to improve lives and the world around us. The Company reported revenue of approximately \$2.1 billion in 2016, serves customers in more than 150 countries, and is a component of the S&P 500 Index. Additional information is available through 1-877-PKI-NYSE, or at perkinelmer.com.

About NVIDIA

NVIDIA's (NASDAQ:NVDA) invention of the GPU in 1999 sparked the growth of the PC gaming market, redefined modern computer graphics and revolutionized parallel computing. More recently, GPU deep learning ignited modern AI—the next era of computing—with the GPU acting as the brain of computers, robots and self-driving cars that can perceive and understand the world. More information at <http://nvidianews.nvidia.com/>.

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The Challenge

The 2018 Data Science Bowl launches with its most daring challenge yet: Create a solution to automate nucleus detection. It's a quest with the potential to move all medical research ahead.

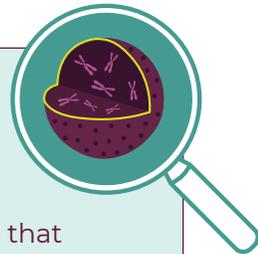
Now in its fourth year, the Data Science Bowl is the world's largest data science competition focused on social good. Each year, it gives the global community of over 1 million data scientists the chance to use their passion to make the world a better place.

For this year's competition, teams will work with a data set of image scans prepared by the Broad Institute. Teams will use these images to develop artificial intelligence algorithms to identify nuclei across varied conditions. \$170,000 in cash and prizes will be split among the winning teams, including an NVIDIA DGX system going to the top finisher*

The Competition

- Global, web-based competition
- Lasts 90 days: January 16 – April 16, 2018
- \$170,000 in cash and prizes, including an NVIDIA® DGX Station™, a personal AI supercomputer that delivers the computing capacity of 400 CPUs in a desktop workstation
- Images and visual collateral at DataScienceBowl.com/media

Why nucleus detection?



Imagine one solution that could speed research for almost any disease, from lung cancer, heart disease, and diabetes to rare disorders—and even the common cold. Identifying the cells' nuclei is the starting point for research because most of the human body's 30 trillion cells contain a nucleus full of DNA, the genetic code that programs each cell. Identifying nuclei allows researchers to identify each individual cell in a sample, and measure how cells react to various treatments. Automating nucleus detection would free researchers from a time-consuming process to focus on finding cures.

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With international headquarters in McLean, Virginia, the firm employs more than 23,300 people globally, and had revenue of \$5.80 billion for the 12 months ended March 31, 2017. To learn more, visit boozallen.com. (NYSE: BAH)

Booz Allen brings its pioneering work in advanced analytics—and the industry-leading expertise of its more than 600-member data science team—to transform our clients' data into actions that keep them competitive in today's data-driven economy. To learn about Booz Allen's data science capabilities, visit our [NextGen Analytics & Data Science](#) page.

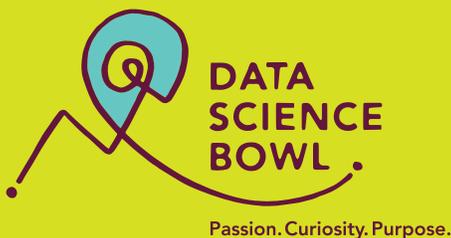
kaggle™

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Sponsors



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Spot Nuclei. Speed Cures.

The challenge: Create an algorithm to automate nucleus detection

40%

of all deaths are caused by illnesses like heart disease and cancer¹

75%

of rare diseases affect children²

30%

of affected children with rare diseases die before age 5²



Finding the nucleus helps to...



locate cells in varied conditions to enable faster cures



free biologists to focus on solutions



improve throughput for research and insight



reduce time-to-market for new drugs— currently 10 years



increase # of compounds for experiments



improve health and increase quality of life

SOURCES: ¹Heart disease and cancer causing 40% of all deaths – World Health Organization (WHO). 2015 – 56.4 million deaths. <http://www.who.int/mediacentre/factsheets/fs310/en/>
2015 – 17.7 deaths from cardiovascular diseases (CVDs). <http://www.who.int/mediacentre/factsheets/fs317/en/>
2015 – 8.8 million deaths from cancer. <http://www.who.int/mediacentre/factsheets/fs297/en/>

²Childhood diseases – 75% of rare diseases affect children; 30% die before age 5 – European Society of Paediatric Oncology (SIOPE). <http://www.siope.eu/SIOPE-EU/English/SIOPE-EU/Advocacy-Activities/Rare-Diseases/page.aspx/148>



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Ray Hensberger is a Principal for Booz Allen Hamilton, directing the execution and expansion of analytic business lines using emerging technologies and leading data science practices. He drives the engineering and development of innovative solutions for advanced analytics and data science. Ray leads engineering and data science teams across prototype and production projects to drive insights from complex data sets using the latest technologies and data science methodologies. His teams support a variety of clients and challenges in the public and private industries, including quantum computing. Having spent more than eight years supporting the DoD, Ray brings military grade technology and analytic prowess to the sports world for Booz Allen.

Ray holds a Bachelor's Degree in Computer Engineering from Virginia Tech and a Master's Degree in Information Systems Engineering from Johns Hopkins University.

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Anne Carpenter is director of the Imaging Platform at Broad Institute of MIT and Harvard, where she is also an **institute scientist**. With a strong background in cell biology, microscopy, and computational biology, her expertise is in developing and applying methods for extracting quantitative information from biological images, especially in a high-throughput manner.

Carpenter directs a team of biologists and computer scientists in developing image analysis and data exploration methods and software that are open source and freely available to the public. She and her team developed CellProfiler, the first open-source, high-throughput cell image analysis software. Carpenter is now a pioneer in image-based profiling, the extraction of rich, unbiased information from images for drug discovery, and functional genomics. She collaborates with dozens of biomedical research groups around the world to develop and apply image analysis methods to diverse biological questions. Her team works across many of Broad's programs and platforms to help identify disease states, therapeutic potential, and gene function from microscopy images.

Carpenter is an NIH MIRA investigator, an NSF CAREER awardee, and has received recognition and research funding from numerous other groups including the Human Frontiers in Science program and the Howard Hughes Medical Institute.

Carpenter earned her B.S. from Purdue University and her Ph.D. from the University of Illinois at Urbana-Champaign.

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Share this inspiring video with your staff, clients and partners, and encourage them to join the 2018 Data Science Bowl. **Spot Nuclei. Speed Cures.**



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