IBM Narrows Big Data Skills Gap, Partnering with More than 1,000 Global Universities

IBM

ARMONK, NY -- IBM announced on August 24, 2013, that it has added nine new academic collaborations to its more than 1,000 partnerships with universities across the globe, focusing on Big Data [1] and analytics [2] -- all of which are designed to prepare students [3] for the 4.4 million jobs that will be created worldwide to support Big Data by 2015. The company also announced more than $100,000 in awards for Big Data curricula.

As part of IBM's Academic Initiative [4], the company is launching new curricula focusing on Big Data and analytics with Georgetown University, George Washington University, Rensselaer Polytechnic Institute and the University of Missouri, as well as a new addition to IBM's partnership with Northwestern University. Internationally, IBM is partnering with Dublin City University, Mother Teresa Women's University in India, the National University of Singapore, and the Philippines' Commission on Higher Education to offer data-driven degree programs, coursework and specialization tracks.

"Leaders in business, education and government must take action to foster a new generation of talent with the technical expertise and unique ideas to make the most of this tsunami of Big Data," said Richard Rodts, Manager of Global Academic Programs, IBM. "To narrow this skills gap, IBM is committed to partnering with universities around the world to provide students with Big Data and analytics curriculum to make an impact in today's data-driven marketplace."

The U.S. Bureau of Labor predicts a 24 percent increase in demand for professionals with data analytics skills during the next eight years. The need for this specialized talent is fueled by the explosion of Big Data — or the 2.5 quintillion bytes of

information generated daily from such sources as sensors, RFID networks, mobile devices and social media. As a result, employers in every industry are seeking job candidates [5] who can uncover insights from data to solve problems, act on findings, enter new markets, and gain a competitive advantage.

To narrow this gap, IBM is collaborating with more than 1,000 academic partners to develop curriculum that reflects the mix of technical and problem-solving skills that is necessary to prepare students for Big Data and analytics careers, across all industries. These collaborations span a variety of majors — including business, marketing, mathematics and health services — providing schools with access to IBM Big Data and analytics software, curriculum materials, case study projects, and IBM data scientists who visit classes as guest lecturers.

The following academic institutions are joining forces with IBM:

- **Dublin City University (DCU)** is teaming with IBM to create a new Masters Degree in Computer Science with Big Data, Business Analytics and Smarter Cities. The Masters in Computing (Data Analytics) course content has been developed jointly by IBM and DCU to equip students with deep analytical skills to support the changing face of business today and will help graduate students to develop critical IT skills for urban analysis, consumer behavior, social networks, sentiment analysis, healthcare, and network security. The new program will provide a variety of exclusive resources including access to real-world IBM case studies from cities and organizations around the world. It will be delivered by experts from DCU and IBM and will facilitate collaborative research projects between the two organizations.
- **The George Washington University School of Business** is partnering with IBM to launch a Master of Science degree in Business Analytics this fall. The program is offered full-time for students and part-time for working professionals seeking to enhance their careers. On the technical side, the degree features courses ranging from how to build predictive models to hands-on software training. On the experiential side, the program offers workshops on project management and communications. To help students fine-tune their Big Data skills for specific industries, GWU's degree also features career track electives, such as healthcare, supply chain, marketing and sports analytics.
- **The Georgetown University McDonough School of Business** recently offered a one-week intensive course during the week of July 22, 2013 providing MBA students with a hands-on introduction to Big Data. Students used emerging technologies including IBM InfoSphere BigInsights to dive deeper into sales data, for example, to answer questions about consumer trends, including spending and buying patterns. The course introduced students to the language and methods associated with Big Data, enabling students to learn how to improve business decision-making. The university will continue to teach Big Data methodology in select courses moving forward.
- **The University of Missouri College of Engineering's Department of Computer Science** will offer a new undergraduate course titled "Big Data

Analytics" in the fall 2013 semester to provide students with experience using advanced analytics technologies and techniques that enable businesses to extract insights from Big Data with sophistication, speed and accuracy. Using IBM InfoSphere BigInsights and IBM InfoSphere Streams software, students will process and explore data to extract insight to make informed decisions, whether that data is in-place, in motion or at rest, in large volumes, or structured or unstructured.

- **Mother Teresa Women's University in India** is using IBM analytics to promote academic success, by training their management students on predictive analysis and reporting solutions. The recent three-month long course, designed by IBM for the university, has enabled educators to teach more effectively, helping management students to gain critical analytical skills, and support more accurate and insightful institutional research and decision-making.
- **The National University of Singapore (NUS)** and IBM, in partnership with the Singapore Economic Development Board, will establish the NUS Center for Business Analytics to develop capabilities in Big Data and analytics. The Center will offer an IBM-supported Master of Science in Business Analytics (MSBA) degree and IBM will provide faculty and students with industry expertise, as well as access to the company's analytics solutions. The MSBA program will be conducted by full-time leading experts and faculty members from the business and computing schools of NUS.
- **Northwestern University School of Continuing Studies,** which launched two analytics graduate degrees last year with IBM, is expanding Big Data curricula in two of its continuing education programs. Northwestern's Master of Science degrees in Information Systems and in Predictive Analytics will both include a new "Analytics and Business Intelligence" track, designed to give students experience solving real-world business challenges through use of Big Data technologies. Students will learn about current and emerging Big Data solutions in a project-based environment that provides a foundational knowledge around Big Data -- while also inspiring students to exploit Big Data by studying business applications and trends.
- **The Philippines' Commission on Higher Education** (CHED) is cooperating with IBM to develop specialization tracks on Business Analytics, as a supplement to existing business administration and information technology programs offered by colleges and universities across the country. The special tracks, to be rolled out this 2013-2014 school year will feature an interdisciplinary approach, taking into consideration the relationships among different stakeholders who deal with data, within businesses and organizations. The new 'electives' will include an internship and cover a range of core Big Data and analytics skill-sets, including business analytics, enterprise data management and modeling.
- **Rensselaer Polytechnic Institute** is combining forces with IBM to offer a new graduate program in fall 2013, to prepare students for Big Data and analytics careers. Offered through the Lally School of Management and Technology, Rensselaer's new Master of Science in Business Analytics degree will be a one year, 30 credit program for which IBM will provide curriculum materials, case study projects, software solutions and guest

lecturers. IBM recently donated a Watson system to Rensselaer, to help faculty and students explore new uses for cognitive computing and expand their understanding of Big Data and analytics.

IBM Awards Universities for Big Data and Analytics Curricula Development

IBM also announced the winners of its 2013 Big Data and Analytics Faculty Awards [6] in which 14 university professors from around the world will receive $10,000 each for top rated curricula designed to develop the business and technical skills required for data-crunching jobs. The winning proposals include programs focused on computer science/electrical engineering, business administration, economics, strategic management, and math and statistics.

The winners include:

- Nitesh Chawla, Frank Freimann Collegiate, Associate Professor, University of Notre Dame: Develop novel data science program that requires immersion of an individual in a domain to innovate by conducting data exploration, feature engineering, machine learning, inform system design and database design, and conduct what-if analysis.
- David Dischiave, Assistant Professor, Syracuse University, School of Information Studies: Assess computing best practices for industry professionals to select the computing for appropriate use (fit for purpose) where the solution can be deployed for best results. Findings will guide the development of course materials for the data analytics, database management systems, database security, data warehousing and data mining courses.
- David Douglas, Professor, University of Arkansas: Development of course modules designed for teaching customer insights and discovery using a number of datasets hosted by the University of Arkansas including demographic data provided by major corporations with a focus on data mining and visualization of Big Data.
- Michael Garrett, Professor, Universiteit Leiden (Netherlands), General & Scientific Director of the Netherlands Institute for Radio Astronomy (ASTRON): Develop a data intensive digital radio astronomy instrument to study time-variable radio phenomena, with a particular focus on SETI (Search for Extraterrestrial Intelligence). A range of novel algorithms will be developed for this system, including generic anomaly detection, statistical analysis and machine learning techniques that would be applicable to other fields outside of astronomy.
- Jose Incera, Professor, Instituto Tecnologico Autonomo de Mexico: Develop big data laboratory projects and courseware to enable students to become world-class Data Architects, Information Strategists, Big Data Developers, and Business Analysts.
- John Keane, Professor University of Manchester (UK): Develop technical case studies investigating design/implementation of big data problems for use in enhanced data engineering course.
- Svetlana Maltseva, Dean of Business Informatics, Higher School of

Economics (Moscow): Develop a new master's program focused on development of appropriate skills of the students in Big Data.
- Jeff Pittges, Associate Professor, Radford University: Extend Database Instructional Games (DIG) online learning environment to include InfoSphere BigInsights for text analysis of customer feedback and add Cognos to replace Microsoft Access Reports and QlikView dashboards.
- Jeffrey Popyack, Associate Professor, Drexel University: Build curriculum to introduce frameworks such as Amazon S3, InfoSphere BigInsights, Hadoop, and MapReduce into the Computer Architecture and Artificial Intelligence tracks of the Computer Science curriculum, with an emphasis on parallelism, scalability, big data and machine learning.
- W. "R.P." Raghupathi, Professor, Fordham University: Develop new 'big data analytics' an 'applied practicum course' elective enabling students to understand strategic issues surrounding big data analytics such as governance, ethics, privacy and security, and data quality.
- Alexander Rasin, Assistant Professor, DePaul University: To provide graduating professionals with practical data mining skills Dr. Rasin will develop a graduate data mining course based on Apache Hadoop and Mahout that leverages IBM BigInsights and IBM SmartCloud.
- Dr. Praveen Rao, Assistant Professor, University of Missouri-Kansas City: Develop a new big data course that will cover the storage, retrieval, analysis, and visualization of large volumes of structured and unstructured data using IBM software and IBM SmartCloud.
- Dr. Jan Sedivy, Czech Technical University (Ceske vysoke uceni technicke v Praze - Prague): Extend current Mobile Development course to Big Data and Cloud, including lectures by IBM experts motivating students to study Map-Reduce programming to prepare them for the career of Big Data Developers and to build start-up businesses in this area.
- Janet Smart, GOTO Academic Project Manager, Said Business School Oxford University (UK): Create an innovative learning environment that will equip students with the skills and insight to understand the issues around the growth and use of Big Data.

The IBM Faculty Awards support basic research, curriculum innovation, and educational assistance in focus areas that are fundamental to innovation in the 21st Century and strategic to IBM's core business. The focus areas of particular interest include: smarter planet and cities; healthcare and personalized education; mobile first and social technologies; big data and business analytics; cyber security and cloud computing; and multi-core and hybrid systems

In most cases, completed course materials will be provided to the IBM academic initiative for use by other member schools.

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