



NJ Big Data Alliance

A PARTNERSHIP TO ADVANCE COMPUTING INNOVATION AND EDUCATION

The formation of the New Jersey Big Data Alliance (NJBDA) all began with a super computer. In 2013, Rutgers University secured \$10 million in funding from the State Higher Education Bond Act to purchase the state's first super computer. Wanting to share this incredible resource with the rest of the state, Rutgers reached out to several other academic institutions to discuss how they could work together to make the super computer easily accessible to other academics and government agencies. After seeing the tremendous interest in this collaboration, the NJBDA was formed.

Over the last six years, a total of 16 academic members, Edge, industry, and state government agencies have joined the Alliance. They participate in monthly planning calls, symposiums, workshops, and many other activities. The NJBDA now has a governance structure and created a memorandum of agreement that outlines the terms and conditions for membership. In addition, several committees were

created in targeted areas including, government relations, research collaboration, industry engagement, advanced technologies, education and training, academic engagement, and entrepreneurship.

Helping Secure a Highly Skilled Workforce

The NJBDA is focused on identifying areas of synergy, developing joint programs, providing access to advanced computation resources, increasing research competitiveness, and driving economic development in New Jersey. An important part of accomplishing this mission is ensuring students are gaining the skillsets they need to be valuable employees upon graduation. In a data-driven economy, many companies are seeking a well-trained workforce with advanced technical and analytics training.

"The NJBDA hosts workforce forums where companies can discuss issues with utilizing big data and what challenges they may be encountering," shares Peggy Brennan-Tonetta,

Ph.D., Executive Director, Economic Development and Innovation, Rutgers New Jersey Agricultural Experiment Station and co-founder and President of the NJBDA. "This insight allows the NJBDA, as a consortium of higher education institutions, to design courses and training programs to build a highly skilled workforce to meet these needs."

Additionally, the Alliance is extending their reach to the state's high school community to expose younger students to data analytics and coding and showcase the skills needed to compete in today's job market after they graduate from college. The Alliance hopes to inspire the K-12 and higher education communities to join forces in improving big data education and training. "We must work together to provide the advanced skills our students need, so when they graduate, they can build their lives and careers in New Jersey," shares Brennan-Tonetta. "Working together, while partnering with the business sector, ensures companies have a great pool of people to hire from and allows the state to further grow and flourish."

Creating a Stronger New Jersey

The NJBDA is helping New Jersey to further build its cyberinfrastructure and cybersecurity capabilities to

attract and retain businesses and remain competitive in today's environment. "We are currently working with legislators to pass a bill that would enable the NJBDA to work with the Office of Information Technology and the New Jersey Cybersecurity and Communications Integration Cell (NJCCIC), to develop a robust cyberinfrastructure and cybersecurity plan for the state," explains Brennan-Tonetta. As big data is becoming mainstream in all businesses, the need to protect that data is a critical risk management strategy. Having strong capabilities in this area is essential in order for New Jersey to remain competitive. Being aware of the cyber-society we now live in is also important for individual protection. "We need to be informed consumers and be aware of the pervasiveness of big data and technology. With technology developing so quickly, we must find ways to protect people's privacy."

Research days hosted by the NJBDA also offer a chance for members to come together and exchange information and identify joint research opportunities. "The NJBDA provides a mechanism for academia, government, and industry to connect and collaborate on research proposals to further advance big data initiatives," says Brennan-Tonetta.

The Future of Big Data

Big data will continue to transform society, as today's cloud-based world keeps evolving and changing. The rapid transactions that happen every day produce and compile data at an astounding rate and using this information to glean valuable insight is essential for competitive growth. "Big data will shape our future, the things we buy and how those products and services are delivered," says Brennan-Tonetta.

Big data is a major driver of new innovation and discoveries in scientific and medical research. This is due to the capabilities now

available to rapidly generate, store, and analyze data to find solutions that would have in the past, taken many years to find.

The NJBDA recently completed a report on how big data will transform industry clusters and the skills that will be needed to support them in a data-driven economy. This report for the Governor's Task Force on the Future of Work, *New Jersey Big Data Workforce Roadmap: An Examination of the Challenges and Opportunities for New Jersey's Workforce to Successfully Compete in a Data-Driven Economy*, released in September 2019, explores current and future technologies in several business sectors, including the food, biomedical and logistics industries, and looks at the skills needed to utilize these technologies. The report also includes an analysis of the course curriculum at member institutions and identifies areas where additional training needs to be developed.

On the forefront of the latest trends and research, NJBDA members bring unique knowledge and experience to the table. The Alliance is dedicated to helping prepare the state's workforce and businesses for an environment that relies on big data. Through these partnerships, NJBDA members are furthering innovation and data-driven economic development in the state. The goal is to help establish New Jersey as a national leader in the era of big data.

Membership in the NJBDA is open to any higher education institution, business, government entity or non-profit in New Jersey. More information can be found at www.njbigdata.org.



THE 4 V'S OF BIG DATA

Big data affects organizations in nearly every industry and can be broken down into four V's: volume, velocity, variety and variability.



VOLUME



VELOCITY



VARIABILITY



VARIETY

Large volumes of data are collected from a variety of sources, including social media, transactional data and machine data and have become more popular as mobile technology has expanded — with people producing large amounts of data on their devices every day. Data streams also come in a rapid velocity in a variety of formats, including both structured and unstructured data. Additionally, data flows can be variable, being triggered by daily or seasonal events or social media trends.

The importance of this concept is not in the amount of data created, but how the data is used to gain information to drive key business decisions. By combining powerful analytics with big data, organizations can unlock valuable insight into becoming more effective and customer focused. Career opportunities in big data management and analytics are rapidly growing, with experienced technology professionals in high demand. To meet this growing request for skilled employees, ensuring graduates have proper training and education will be vital.

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