Securing the Connected World

Cyber@BGU

אוניברסיטת בן-גוריון בנגב
Ben-Gurion University of the Negev

Being
Cyber Safe

We have become a digital society, increasingly vulnerable to external threats. Our ever more complicated online systems require ever more sophisticated methods of protection to prevent terror, cybercrime and identity theft. Control systems, online banking, networks, databases, and even personal appliances and electronic devices are all susceptible to attack.

As hackers become more sophisticated, the previous methods of antivirus protection no longer suffice. Moreover, each new platform development demands its own dedicated defenses.

This is a battle of wits fought with lines of code in an ever-expanding cyberspace. Despite its virtual nature, the threat to physical systems remains very real. Unless they are properly protected, basic life-sustaining infrastructures, such as electricity, water and transportation – are susceptible to devastating attacks.

Israel leads the world in the development of online security systems and know-how.

Ben-Gurion University of the Negev (BGU) is at the forefront of this battle, bringing together academic expertise, professional experience and the enthusiasm, drive and passion of our researchers and students to create an environment that encourages innovation while developing real solutions.

Prof. Bracha Shapira
Head, Dept. of Information Systems Engineering (pictured)

The BGU
Advantage

Over the past 15 years, Ben-Gurion University has developed core competencies in a wide range of fields related to information security, particularly as it touches upon mobile devices.

With the launch of the Deutsche Telekom (DT) Innovation Labs@BGU more than a decade ago, those capabilities were intensified. Today, the Deutsche Telekom Innovation Labs@BGU comprises more than 100 researchers, students and technical staff.

BGU was the first university in Israel to introduce cyber study tracks for undergraduate and graduate students, attracting the best and brightest students and researchers from around the world. The Department of Information

Systems Engineering is now the largest in Israel, with significant resources devoted specifically to cyber security.

The Department of Computer Science builds on long years of expertise to innovate in the field, which drew IBM to campus to create a Center of Excellence focused on the protection of critical infrastructure and assets. The multi-faceted challenge of cyber security is also being met by the Departments of Electrical and Computer Engineering, Communication Systems Engineering, Education and Emergency Medicine.

The Israel Defense Forces (IDF) is, over the next five years, moving its most advanced technology units to the growing Advanced Technologies Park (ATP), adjacent to the University, where it will be able to access BGU's research and teaching facilities.

Recognizing these strengths, the Israel National Cyber Bureau and BGU created a Cyber Security Research Center, focused on identifying risks while developing solutions to protect critical national infrastructures. The Israel National Cyber Bureau will also locate its Cyber Emergency Readiness Teams (CERT) in Beer-Sheva.

Prof. Shlomi Dolev
Dept. of Computer Science
(pictured)

CyberSpark – the Israeli Cyber Innovation Arena

CyberSpark was initiated by the Israel National Cyber Bureau to realize the potential of the unique developing ecosystem in Beer-Sheva that includes BGU, the IDF, Israel's CERT and an increasing number of multinational companies that have found a home at the Advanced Technologies Park.

"Beer-Sheva will not only be the cyber capital of Israel, but one of the most important places in the cyber security field in the world," said Prime Minister Benjamin Netanyahu at the launch of CyberSpark – the Israeli Cyber Innovation Arena in January 2014. The Beer-Sheva Municipality has joined a national initiative to promote the city as the "Cyber Capital of Israel." The city was recently recognized in a study by the Brandeis International Business School as one of the international locations showing great promise in shifting global economy and as emerging, up-and-coming hubs that technology companies should consider as they evaluate their global location strategy.

Building on the success of DT, a number of multinational giants have opened Centers of Excellence in Beer-Sheva, including EMC^2-RSA, Lockheed Martin, Oracle and IBM. JVP Cyber Labs is the first incubator for fledgling cyber companies investing in technologies that are set to revolutionize the future of cyber security.

A partnership between BGU, the city of Beer-Sheva, KUD, Ltd. and Gav Yam Negev, the ATP provides state-of-the-art laboratory and office space and potential for growth.

CyberSpark Industry Initiative

This year EMC^2-RSA, Jerusalem Venture Partners JVP, Lockheed Martin and BGN Technologies, the University's technology transfer company, created the CyberSpark Industry Initiative, a non-profit organization that will engage in the international promotion of the Beer-Sheva cyber hub and work to shape the next generation of cyber security experts in the region.

The CyberSpark Industry Initiative has become the central coordinating body for joint cyber industry activities with government agencies, the IDF, the public and academia.

The Initiative is formulating a multi-year business plan, leveraging the region's significant strengths and maximizing its potential in the field of cyber security technology.

It is marketing the region and the city of Beer-Sheva as a global cyber security center, encouraging joint academia-industry partnerships and supporting the articulation of plans to recruit and develop human resources in the field, as well as incentive plans to draw other companies, whether international or Israeli, to establish projects or base themselves in the region.

Two new programs have already been launched: the Cyber Executive Academy @ CyberSpark, Israel – an International School of Cyber Training for Senior Executives and Decision Makers and a CyberSpark Affiliates program. Accessing the cumulative knowledge of the CyberSpark partners, these professional programs offer participating companies and organizations access to the people and ideas that are shaping cybe security strategy and technologies today.

Prof. Lior Rokach
of the Dept. of Information
Systems Engineering (pictured)

BGU's Cyber
Competencies

BGU has demonstrated competencies in a wide range of fields, including mobile network security, cross-platform malware detection, and security analytics and user profiling for both private and public users. These skills are essential in order to ensure the protection of national infrastructures.

Additional expertise includes:
- Secure mobile computing architectures
- Honeypots – network, social, OS
- Machine learning-based threat detection
- Privacy-preserving algorithms
- Deep understanding of targeted attacks and security mechanisms
- Malware analysis and prevention
- Security risk analysis

Research outcomes serve as the basis for safeguards for information systems and will combat threats by providing reliable protection from unauthorized access and rapid threat recognition.

These benefits are coupled with system-wide preventive measures against the proliferation of infected data, prediction of attack escalation for intelligent decisions, enhanced survivability of critical infrastructure and other applications for the yet unidentified challenges that lie ahead.

Prof. Yuval Elovici
Director, Deutsche Telekom Innovation Labs@BGU
Head of the Cyber Security Research Center
Dept. of Information Systems Engineering (pictured)

The BGU Cyber Security Research Center

BGU and the Israel National Cyber Bureau have created a center for the protection of cyberspace. The new Center harnesses the University's expertise to drive research and foster the development of cyber security technologies.

At the heart of the endeavor is a dedicated initiative to promote academic research in the field, enabling members of the Center to engage in basic research.

Construction of the new Carole and Marcus Weinstein Information Systems Engineering and Cyber Security Building has begun. The state-of-the-art building is expected to open its doors in the summer of 2016. In the meantime, the Cyber Security Research Center is temporarily based at the Advanced Technologies Park, where it is nurtured in the hothouse of innovation that exists there.

The new six-floor building will be a hub of activity, largely comprised of the Department of Information Systems Engineering and the Cyber Security Research Center.

The Center will include the Cyber Attack Simulation Lab, Malware Analysis Lab, Mobile Security Lab, Embedded Systems Security Lab and the Secure Cyber Lab, designated for confidential research and designed in accordance with those needs.

The presence on campus of a new building dedicated to cyber security reflects the importance of the discipline at BGU and its emergence as a force to be reckoned with worldwide.

An artist's rendering of the Carole and Marcus Weinstein Information Systems Engineering and Cyber Security Building (pictured)

Partnering
for Growth

Collaborative research opportunities abound in this rapidly growing field. BGN Technologies is eager to welcome additional companies and entities to the burgeoning Beer-Sheva hub.

For more information, please contact Zafrir Levy at: zafrirl@bgu.ac.il.

Our donors partner with BGU to educate the next generation of cyber experts and drive the research and development of cyber technologies that will thwart cyber threats in the future. For further information please visit our website at: http://in.bgu.ac.il/en/associates or support us online at: www.bgu.ac.il/give2bgu.

Founded in 1969, Ben-Gurion University of the Negev is advancing research in areas in which it has a demonstrated strength – from alternative energies to biotechnologies, cyber security to robotics – particularly in fields that advance the economic development of the Negev. With five faculties and three campuses in the Negev, BGU is expanding its regional and global reach. Increasingly recognized for its research the world over, the University's faculty are making the discoveries that will shape the 21st Century.

The University is also planning for growth in emerging disciplines, while investing in the essential basic sciences that lead to unexpected lifesaving discoveries, and preparing for the game-changing move of the Israel Defense Forces' most elite units to the region. BGN, the University's technology transfer company, is working to ensure that the adjacent Advanced Technologies Park continues to grow.

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