

GENERATION STEM

STEM ოცნება



SAN DIEGO STATE
UNIVERSITY
Georgia

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Misho Dgebuadze - Editor in Chief



You are holding the second issue of Generation STEM, an SDSU Georgia student newsletter.

My name is Misho Dgebuadze, the Editor-in-chief of the current issue. A new person is assigned to this post on every issue of the newsletter, which comes out quarterly.

We offer you news concerning STEM fields throughout the world as well as news about SDSU Georgia. Our newsletter also includes stories about the dynamic student life on our campus.

One of the important segments in our newsletter is the "Success Stories" section, where we tell our readers all about the amazing discoveries and achievements of SDSU Georgia students. In this issue, you will find a story about GESA (Georgian Engineers and Scientists Association) which was founded by three students of our university. You will also come across the amazing story about TeddyBot, a toy that can look after a baby while a human caretaker is unavailable.

I hope that you find the second issue of Generation STEM entertaining and enchanting. We will be offering you more interesting stories in May.

Enjoy!

P.S. We are happy to include every STEM related news in our newsletter. If you feel that your story belongs here, feel free to email it to us! We'd be happy to feature it in our next issue.

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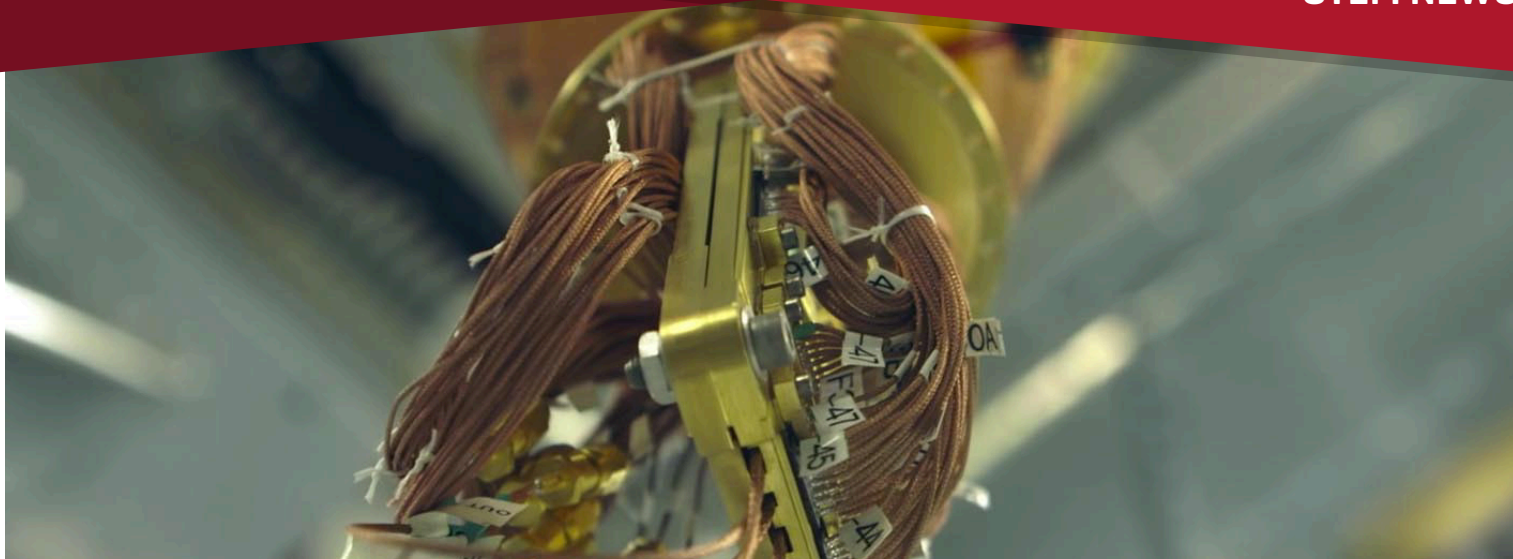
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CORE OF DWAVE - Google and NASA's quantum computer

Progress for Quantum Computing

It was announced by NASA on 28th January that the work on their quantum computing has been completed. In 2013 NASA and Google collectively purchased a 15 million dollar quantum computer D-wave and started working on its software. The work took place in Ames Research center, a NASA laboratory located in Mountain View, California. A quantum computer is a hundred million times faster than a regular computer. However, the system of a quantum computer works on Qubits (the direction of the magnetic field of an electron) which can simultaneously signify both 1 and 0 of the binary code. Therefore, programming on this kind of computer is really challenging. The easiest system that works on a quantum computer took three years to create. NASA plans to use the mentioned computer for carrying out complex astronomical calculations. Google will use it for the development of artificial intelligence.

New Milestone for Artificial Intelligence

On 27th January, Google DeepMind AI program AlphaGo defeated Fan Hui, one of the best players of Go, the Chinese board game. The number of possible ways in which this game can advance is equal to the number of

atoms in the universe. A program capable of carrying out calculations of this amount had yet to be made.

Seoul, the capital city of South Korea, will hold a 5 match challenge featuring AlphaGo and Lee Se-Dol, world champion of Go. The competition will be held on 9th march and the winner will be awarded with one million dollars.

New Elements Discovered

2015 has been a very exciting year for chemists. Elements with the atomic number 113, 115, 117, and 118 have been confirmed by the International Union of Pure and Applied Chemistry (IUPAC), giving them a permanent place on the periodic table. Scientists have been working several years to gather the evidence required by the IUPAC to confirm the existence of these elements. These super heavy elements do not exist in nature. They are created by scientists through the collision of lighter elements. Scientists also believe that two additional heavy elements, 119 and 120, could be discovered soon and added to the periodic table.

OAK RIDGE NATIONAL LABORATORY - first to synthesize element 117



#ApplySDSU – EARLY REGISTRATION AT SAN DIEGO STATE UNIVERSITY GEORGIA

What is ApplySDSU?

Apply SDSU Georgia is a new online application process that enables prospective Georgian students to apply for Conditional Admission and Financial Assistance to SDSU Georgia programs before taking the NAEC exams. By applying through the Apply SDSU, prospective students automatically earn a **\$1000 SCHOLARSHIP** towards first year's tuition.

How to Apply

Applications can be completed through an online application form. Visit georgia.sdsu.edu and click "Apply SDSU Georgia".

When to Apply

Online registration is open starting February 15. Applications must be completed before March 15, 2016. Academically eligible students will receive a Letter of Conditional Acceptance to SDSU Georgia by April 15, 2016. The students need to pay \$100 registration deposit by May 15 to be eligible for conditional admission and \$1000 scholarship.

Conditional Acceptance

Conditional Acceptance is a program offered by many US universities to provide early admission decisions for academically qualified students during their final year of high school (secondary school).

Financial Assistance Opportunities

Prospective students who apply through the Apply SDSU automatically earn **\$1000 scholarship** towards first year's tuition. In addition SDSU offers financial assistance opportunities (25%, 50%, 70% and 100% scholarships) to the students who apply through ApplySDSU and complete Financial Assistance Application as part of their application process (please note that Financial Assistance Application is part of the ApplySDSU process). Students are also eligible for the government grant through NAEC exams – up to 2250 GEL, which will be deducted from the tuition fee.

QUICK FACTS ABOUT SDSU

SDSU was founded in 1897, when the population of California was 1.4 million people, the same as Tbilisi today.

SDSU has over 35,000 current students and over 300,000 alumni.

7,700 faculty and staff serve SDSU's students.

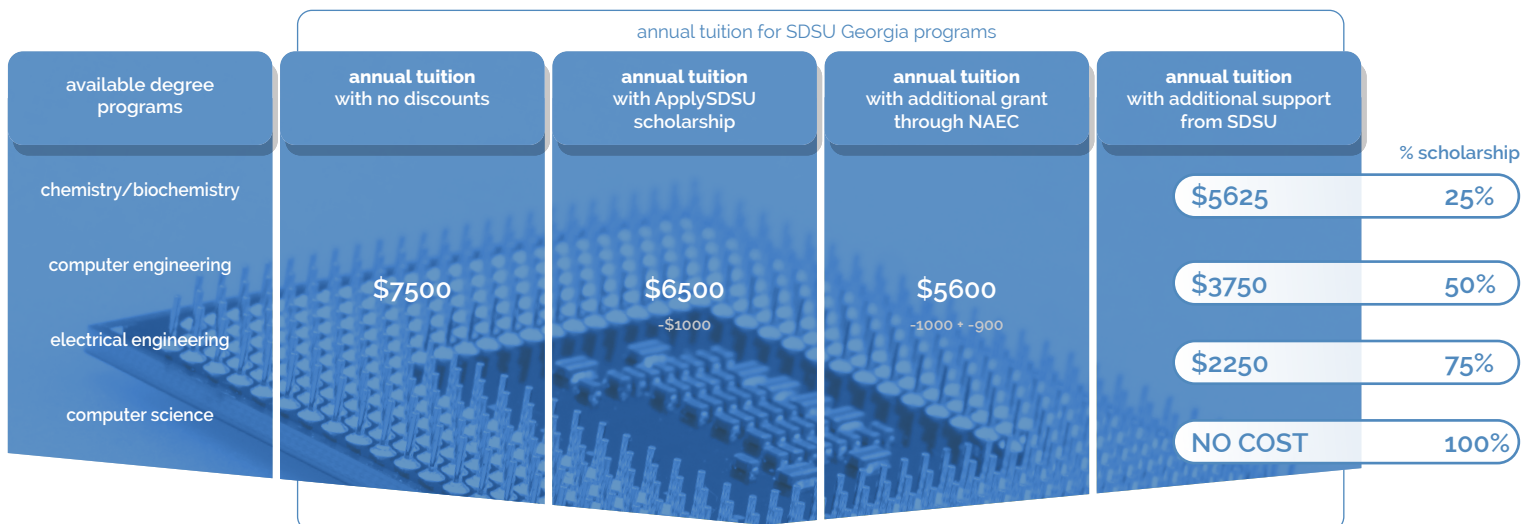
191 degree programs are available to students.

SDSU graduates over 9000 people annually.

SDSU receives over \$115 million per year in research grants and funding.

SDSU has 18 athletics teams, 6 men's teams and 12 women's teams. In the fall of 2015, over 81,000 students applied to SDSU.

SDSU GEORGIA SCHOLARSHIP OPPORTUNITIES 2016



Computer Science Degree Program Now Available at SDSU Georgia

Starting from 2016 students have a new exciting opportunity to obtain a U.S. degree in Computer Science in Tbilisi, Georgia. The new program will be added to the existing BS programs in Computer Engineering, Electrical Engineering and Chemistry/Biochemistry that San Diego State University offers in Georgia. This internationally accredited Bachelor of Science (B.S.) program in Computer Science is designed to provide students a fundamental understanding of modern computing methodology and programming practices along with a complementary knowledge of hardware. Computer Science includes a wide variety of specialties and application areas such as artificial intelligence, robotics, graphics, systems programming, simulation, and computer networks.

Computing technology is found in almost limitless number of settings, ranging from automobiles to household appliances to toys. That is why, a wide range of jobs are open to people trained in Computer Science.

San Diego State University (SDSU) offers high quality, internationally accredited programs in Science, Technology, Engineering and Math (STEM) fields in partnership with three Georgian State Universities: Ivane Javakishvili Tbilisi State University (TSU), Ilia State University (ISU) and Georgian Technical University (GTU). The students will receive an American BS degree.



NASA satellite



servers at a datacenter

WHY STUDY COMPUTER SCIENCE?

Computer science graduates are among the highest paid in the world. In the United States computer science salaries are \$85,000 per year on average.

SDSU Georgia Goes to International Education Fair

On 18-19 February, Expo Georgia hosted the International Educational Fair. More than 100 universities from 14 countries took part in the fair. San Diego State University Georgia dean Dr. Ken Walsh, the university staff and students met thousands of visitors and exchanged information about US degree programs offered by SDSU in Georgia. During these two days, SDSU Georgia students shared their student life and academic experience with participants that were interested in STEM fields. SDSU was awarded a certificate for the most effective communication with visitors. The Fair was visited by approximately 15,000 people.



SDSU STUDENTS helping out at the International Education Fair



NINA MIKADZE and MARIAM GAGUA - Georgian national volleyball champions

Third Place in National Volleyball Championship

From November 13th to December 23rd two computer engineering undergraduates from SDSU Georgia, Mariam Gagua and Nina Mikadze, participated in the Georgian national female volleyball championship. Mariam and Nina played for the Ilia State University volleyball team. The Iliuni team won third place in the championship, receiving bronze medals.

"Sports activities unite students with different interests. Ilia State University prioritizes sports that allow the participants to develop their skills in teamwork. SDSU Georgia students are free to take part in every activity organized by our university," said Petre Tsulukidze, director of sports activities at ISU.

This is a great example of how beneficial learning in two different universities can be. As you may already know, SDSU Georgia program includes choosing one of the three partner universities, which results in getting two diplomas at the end of the four year studying process.

A Trip to Kazbegi

The students of SDSU Georgia organized a field trip to the picturesque, mountainous region of Kazbegi with their professors and the vice dean, Halil Guven, to explore one of the most attractive sites in the country. During the two day trip they visited

Ananuri, a 17th century fortress that stands at the verge of the beautiful Jinali water reservoir, Darial gorge, and the stunning Gergeti Trinity church.

Awards at the Hackaton

Students of SDSU Georgia were able to achieve another significant victory in a joint competition held by Garage 48 and Georgia's Innovation and Technology Agency (Hackathon).

Lana Rekhviashvili, Ana Lomashvili and Mariam Miqava invented an Eco-Battery which enables us to charge our mobile phones whenever we go cycling. This battery can charge mobile phones in two different ways - either with solar panels or with the mechanism connected to the dynamo of the bike. This project was awarded the second place of the competition.



SDSU STUDENTS and STAFF on Kazbegi trip

SDSU Students at the White Ribbon Campaign

White Ribbon Campaign was held at Tbilisi Mall on the 30th of January 2016 to support Gender Equality in Education. The event was held by Millennium Challenge Account - Georgia (MCA) and San Diego State University Georgia. The White Ribbon Campaign is a global movement of men and boys working to end male violence against women and girls.

The campaign was intended to raise awareness about the prevalence of male violence against women, with the ribbon symbolizing "the idea of men giving up their arms." Active in over 60 countries, the movement seeks to promote healthy relationships, gender equity, and a compassionate vision of masculinity. San Diego State University has joined this event to show the importance of gender equality and promote girls who choose STEM.



SDSU STUDENTS at Tbilisi mall for white ribbon campaign

Google HashCode - Tbilisi 2016

On February 11, Google Hash Code programming competition, took place in Tbilisi, Georgia with a cooperation between San Diego State University - Georgia and Georgian Technical University. Giga Vashakidze, freshman of San Diego State University - Georgia, was the hub organiser.

Google Hash Code is a team-based programming competition organized by Google for students and industry professionals (18+). Google offers a real-life engineering problem to solve in real time.

This year, 250 hubs in Europe, the Middle East and Africa were established. Teams from Georgia were able to join SDSU-G hub. Hubs are a fun way for participants living in the same area to compete side-by-side during the Online Qualification Round. This is a great way to increase the level of excitement and competition, and allow participants meet new people in the process.

100 people have registered in SDSU-Georgia hub, and 14 of them were girls. They were students from local universities and industry professionals from STEM fields. (STEM fields include professionals in Science, Technology, Engineering and Mathematics).

Participants had 4 hours to work on engineering problem, which was given by Google team, then they were required to submit their work in Judge System. During the competition, teams were able to monitor live results of other registered teams in the hub to compare their work and make necessary changes quickly.

The task was about making online shopping easier with the help of drones. The problem offered a fleet of drones, a list of customer orders and availability of the individual

products in warehouses. Teams should have scheduled the drone operations so that the orders were completed as soon as possible.

Overall, 17 000 participants took part in the competition. One Georgian team made it to the 27th place and has qualified for the final round. The group will travel to France, to visit Google's Paris office on March 19th. Also, a number of Georgian teams took different places in the top 800 list.

All participants had an opportunity to submit their resumes during registration. There might be job proposals from Google for the teams who will perform well in this competition. This is the best place for STEM field professionals to work and all of them are trying to join Google Team.

getting ready for Google Hashcode



PHOTO COMPETITION

In 2015 San Diego State University Georgia organized a special photo story competition for the first cohort of students: "A PICTURE IS WORTH A THOUSAND WORDS". The winners were: 1st place - Luka Lomtadze, 2nd place - Zura Bakuridze, 3rd place - Temo Chichua. Finalists will participate in a special exhibition in 2016.



3RD PLACE

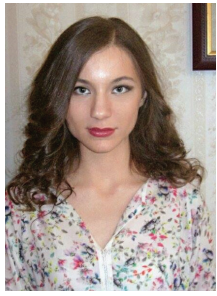
2ND PLACE



1ST PLACE

Why I Joined the Empower Women Club

Nino Grigalashvili



I am very excited to have a chance to be involved in empowering women and to introduce to you the first women's club at San Diego State University Georgia. Empower Women is SDSU's newest club, created to support women personally, socially, academically and professionally. Our main goal is to create bonds with each other and with women in STEM fields in

order to support us through our studies and help us realize our career goals. This group of talented students shares a special bond. First, we are women, who have made the brave choice to delve into the science and engineering - the male-dominated fields, in a country that still holds strong traditional values. We have overcome many obstacles to get where we are and are ready to face many more in the years to come. Even more, we are ready to encourage and support other women to follow our steps. We believe that together we are unstoppable.

The activities organized by our club include events like the movie night. The first movie night was organized in cooperation with International Women Association/IWA. We had a chance to watch "In Bloom" a Georgian submission on Oscars in 2014 and hold a lively discussion. Although our club is new, we have huge plans for the future. We want to plan trips, special fundraising events, add more clubs and just do the job that bonds each other and makes us stronger. We, girls have already set goals and are very keen on reaching them.



NINO SHATARISHVILI in SDSU Georgia chemistry lab



MAGDA APTSIAURI demonstrating chemistry to children





TEDDYBOT

Teddybot: Toy of the 21st century

Lana Gasparian

The pace of life is very fast nowadays. There are many families in which all of the adults have jobs and need help when it comes to paying enough attention to the children. Taking care of toddlers is the most challenging part. It was with this reality in mind, that the first draft of Teddybot was created in September 2015. At a first glance, Teddybot is a simple teddy bear. However, the team of girls (SDSU Students: Ana Lomashvili, Lana Rekhviashvili, Eka Dadiani) who participated in Hackathon, equipped it with special features. Teddybot is connected to the parent with a mobile application, meaning that its every action is controlled. The toy can track sleep pace and turn on a slow melody to lull the child, read a book, etc. At the same time, the parent gets notified. Teddybot functions change as the child grows up. For example, educational games are added.

"In the future, Teddybot will gain more advanced functions."

In the future, Teddybot will gain more advanced functions. The breath rate controller will be improved, which means that depending on the age of the baby, the teddy will be able to determine which sleep phase the child is in. The program works on Raspberry Pi and some additional sensors. A slightly changed version of OpenElec-like system is used to run the machine, which can connect to android mobile phones. The development of the Teddybot program is still not finished. A lot of people are interested in purchasing this unique item. However, the creators of Teddybot have decided not to bring the product to the market until it is fully developed. The girls, who are one of the six best companies of SEED Forum, are currently planning to receive financial assistance in Tallinn.

One day the toy will develop into a diverse technical gadget, but the most important thing is that the purpose of Teddybot remains the same: to entertain and help people.

GESA: A Club for Innovators

Misho Dgebuadze



TEMO CHICHUA answering questions for the press

Creation of GESA is connected to three SDSU Georgia students: Temo Chichua, Alexandre Toidze and Nika Minashvili. All three being interested in the same field, they decided to found an establishment that would help school children transform their scientific ideas into actual projects. In less than a year's time, the club managed to bring six teams together, teams that are made up by talented young Georgians. The ages of the members vary from 13 to 18 years old.

The teams already managed to achieve significant victories in two different competitions – "Leonardo Da Vinci" and "Millennium Innovation Awards" contests.

The five projects that were presented at the Leonardo Da Vinci competition resulted in five – three main and two special prizes for the GESA teams.

On the "Millennium Innovation" contest, two of the mentioned teams managed to succeed. Team "Solar," the GESA team that took the first place of the competition, will be visiting NASA Kennedy Space Center. Temo Chichua, founder of GESA and an undergraduate at SDSU Georgia was mentoring one of the successful teams in the mentioned tournament. This is probably why Giorgi Margiani, member of "Solar," has decided to apply to SDSU Georgia himself.

Helping youngsters is not the only purpose of GESA. They plan to establish a research center in Georgia. As they explain, research centers are scarce in our country and native scientists choose to work abroad. The members of GESA managed to create a union between three laboratories – FabLab, Technical University Laboratory and the Laboratory of Scientific Library.

Impressive achievements of GESA in such a short time give us hope for even bigger accomplishments in the future. Plans that GESA members are working on include projects such as establishing a Georgian center of Science: It's a Girl Thing. This will motivate girls to take part in various scientific events.

Furthermore, GESA also plans to carry out its own scientific competition. The six mentioned teams currently work in the fields of biology, cosmic engineering and energetics. In the future, the list will be longer as software developing, chemistry, food technologies etc. will be added.

GESA plays a big role when it comes to popularizing STEM (Science, Technology, Engineering, Math) fields in Georgia and creates unique opportunities for youngsters to participate in scientific events.



SDSU STUDENT demonstrating solar project to diplomats



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S SCIENCE STEM MATH

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sailboats in San Diego bay

