

NEWS FOR A BETTER WORLD

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THE PRESIDENT'S MESSAGE



Dear SCE community,

The new academic year gives us a chance to observe with pride the impressive progress that has been made by the College these past years - in teaching, in research, and in infrastructures - to set new goals for the future.

SCE invests vast resources to strengthen both teaching and learning: developing advanced laboratories; adopting innovative teaching technologies; and expanding the physical and digital spaces that support our students' experiences and deepening knowledge. We believe that high-quality teaching is the infrastructure for personal and social growth; therefore, we never stop renewing and improving.

Regarding research and development, we see a rise in the quantity of research works and publications, and their impact on the economy and the industry. We encourage excellence in research at every stage - be they lecturers or students in advanced study programs, in conjunction with leading academic institutions in Israel and abroad.

I wish you all a new year of innovation, research, and security.

Sincerely,

Prof. Semyon Levitsky
SCE President



HEARTFELT TECHNOLOGY: INNOVATIONS BY SCE GRADUATES



A flak jacket for wheelchairs, an app for psychological support, and aids for I.D.F. wounded - these are but a few of the final projects, 'from a social perspective', developed by SCE students since the "Iron Swords" War.

On the 30th of July 2025, in parallel, both SCE campuses (Be'er-Sheva and Ashdod) were open to the SCE community, to potential applicants for SCE studies, and to the public, who were invited to hear the new graduates' final

project presentations and see their novel research exhibits in a variety of areas. Some of these research projects were developed 'from a social perspective', against the backdrop of the "Iron Swords" War.

GREETINGS FROM SCE'S FOUNDER AND RECTOR



Dear students, faculty members, and partners on our path,

We are opening this year's studies with a sense of deep responsibility and great excitement. This year, more than ever, the College is standing in the heart of academic and social discourse - thanks to our groundbreaking research studies, innovative technological developments, large conferences and strategic - cooperative projects conducted with Industry and leading institutions in Israel and abroad.

We live in an age of accelerating change - novel technologies change the labor market, the educational system, our government, and even our personal lives. Against this background, the College aspires not only to match the pace, but to set the pace by taking the lead. We encourage creative thinking, innovative solutions, and enterprises that grow out of curiosity, positive values, and an entrepreneurial spirit.

This year, we also stand before large challenges as a society - amid complex warfare - while our students and faculty members are active on the home front and on the battle fields. Within the context of this harsh reality, we are obliged to provide a stabilizing anchor, higher education, hope, and a breakthrough.

I wish you all a fruitful, significant, and secure year of learning.

May this year (5786) be one of discovery, action, and impact!

Sincerely,

Professor Jehuda Haddad
SCE Rector



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Among the developments presented:

- A flak jacket for wheelchairs - A system that shields disabled people in wheelchairs from air-raid shrapnel during attacks, developed by students from the Dept. of Mechanical Engineering.
- A refrigerated blood-bank in a battlefield kitbag - A life-saving project developed by students serving in the I.D.F. Reserves from the Dept. of Electrical Engineering and Electronics, one of whom is a field medic, in cooperation with the Dept. of Mechanical Engineering.
- A simulator that prepares children for radiation treatments - This MRI-like simulator reduces anxiety levels and the need for sedation in children with cancer during medical treatments by giving them advanced emotional and psychological preparation. It was developed by students from the Dept. of Mechanical Engineering, in conjunction with the Oncology Dept. at the Hadassah/University Hospital in Jerusalem.
- Bestie - An AI-based application that assists those diagnosed with ADHD, developed in cooperation with the Israeli Organization for ADHD, by students in the Dept. of Industrial Engineering and Management.
- Aurora - A system based on the combination of advanced AI and interactive Chatbot technologies, able to detect cases of mental distress and capable of offering relevant counselling, support, meditations, and tools for emotional regulation, as well as being a social platform that helps users cope with mental challenges, developed by students in the Dept. of Software Engineering.

- LingLinked - A novel app that enables multilingual video communication in real time with people across the globe, thus resolving language barrier problems, developed by students in the Dept. of Software Engineering.
- EZPeeZ - An application for strengthening the female uteropelvic region that combines innovation and humor, while helping women who suffer from weak bladder control, developed by students in the Dept. of Industrial Engineering and Management.

The event in Be'er-Sheva was opened by SCE's Founder and Rector, Prof. Jehuda Haddad, who said: "For the past 30 years, we have been educating and growing, here at SCE, not only generations of excellent engineers but rather engineers with moral and social compasses. The developments displayed here today prove that technology can and must be a tool for the improvement of everyone's quality-of-life. This is heartfelt technology is exactly what

the world needs today."

Prof. Haddad added: "With the completion of this irregular academic year, I want to congratulate you from the bottom of my heart. You have coped with learning under complex security conditions, with uncertainty, and personal hardships. All this attests to your power, determination, and outstanding abilities. This is also my opportunity to thank all our men and women soldiers, who served and are still serving proudly in the Reserves, defending the Homeland."

In Ashdod, the event was opened by the Dean of the College, Prof. Gedalya Mazor. "These final projects are the pinnacle of the academic studies and represent the most complex research and technological challenges. The College is witnessing the grooming of leading engineers, masters of innovative thinking, able to cope with future challenges. SCE graduates are fulfilling that vision and are becoming the spearheads of engineering accomplishment in Israel."

The Faculty of Design and Architecture:

The first graduates of the Dept. of Visual Communication displayed their première exhibit and lectures were held at the NUR Lab.

As part of the concluding events of the academic year, the Dept. of Visual Communication staged an exhibit entitled "Première" - in which the first graduating class members displayed their final projects in the field of Visual Communication at SCE. Meanwhile, the SCE School of Architecture held a series of workshops and lectures at the Negev Urban Research (NUR) Laboratory with its partners, the Massachusetts Institute of Technology (MIT) and the Ben-Gurion University of the Negev. Our Nur Lab is one of ten similar labs in an international network run by the "City Science" research group; each advanced laboratory tackles local challenges with significant global ramifications.



PROF. ABRAMOV APPOINTED SCE BOARD OF TRUSTEES CHAIRMAN



Professor Eli Abramov was appointed to serve as the new Chairman of the SCE Board of Trustees, replacing Roni Milo, who had served in that role for many years.

Previously, Prof. Abramov had served in a variety of senior positions at the College, such that he is bringing his vast research and industrial experience to the job. "I consider it a great honor and am very proud to be a part of the leading academic institution for engineering in Israel," Prof. Abramov stated. "Just as I have actively contributed to the College while in my previous public positions, I will do so, even more so, in this respected position. I thank the Board of Trustees for the great faith they have placed in me." We wish Prof. Abramov success in his new position!

A groundbreaking development: A life-saving flak jacket for those who get around using wheelchairs

A system that protects the disabled from flak while in their wheelchairs has been developed by graduates of SCE's Department of Mechanical Engineering, Hagay Avizrat and Shai Almasi, under the supervision of Dr. Avihai Shurin. This system tackles the difficulty faced by those with mobility impairments when air-raid sirens sound during missile attacks, especially in scenarios where secure shelter cannot be reached in due time.

This innovative project, developed by graduates of SCE's Department of Mechanical Engineering, Hagay Avizrat and Shai Almasi, under the supervision of Dr. Avihai Shurin, proposed a unique solution to this very difficult problem faced by those with mobility impairments when air-raid sirens sound during missile attacks, especially in scenarios where secure shelter cannot be reached in due time.

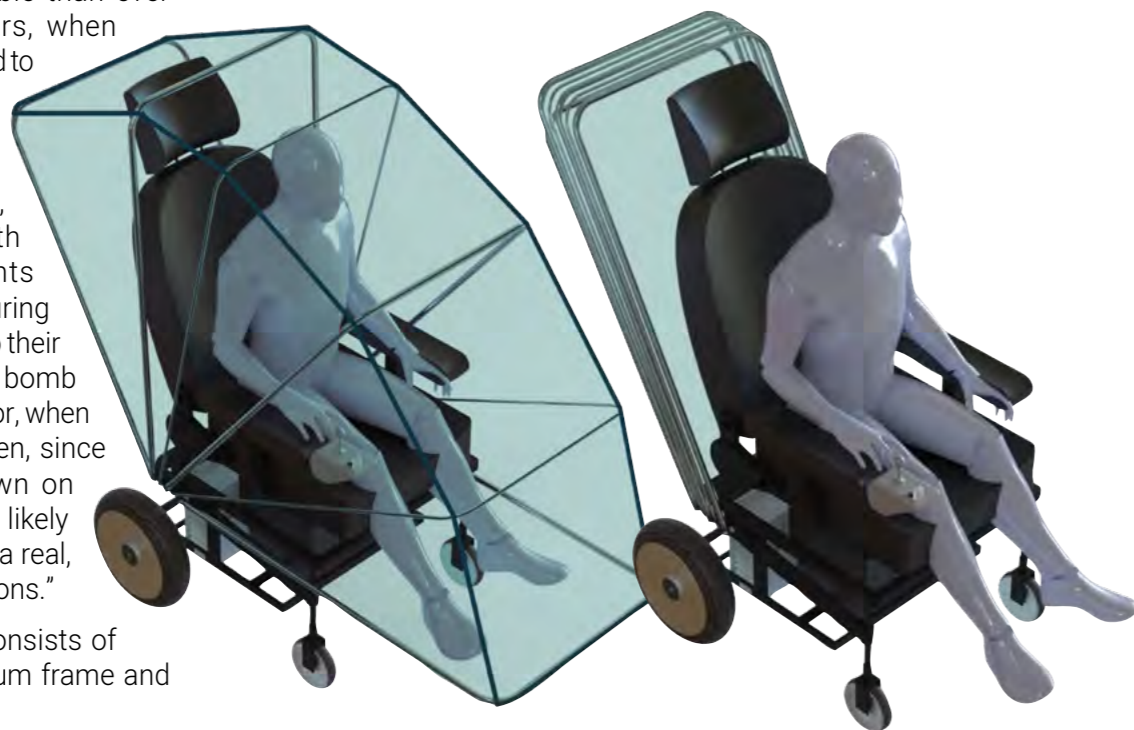
Dr. Shurin, who supports the idea of developing this product, explains: "The need for such a system has become more tangible than ever these past few years, when Israeli citizens have had to cope with frequently repeated security threats. Under the current situation, disabled people with mobility impairments are at greater risk during missile attacks, due to their inability to reach the bomb shelters fast enough, or, when caught out in the open, since they cannot lay down on the ground - they are likely to find themselves in a real, life-threatening positions."

This novel system consists of a lightweight aluminum frame and

Kevlar KM2 Plus fabric, providing shielding against high-velocity shrapnel within a five-meter radius of impact. It is designed for fast, reliable deployment without affecting user mobility or comfort.

It is important to note that, to date, no similar solutions have been found that are able to provide independent shielding from shrapnel for those confined to wheelchairs - this fact, stresses the importance of such an Israeli development, both from the social perspective and for its great commercial potential.

Dr. Guy Ben-Hamu, Head of the Mechanical Engineering Department, Ashdod: "The SCE students bring with them knowledge and high-quality engineering abilities, but essentially creativity and out-of-the-box thinking. SCE's guided 'project-oriented' learning method combines studies, practical experience and real-world engineering tasks, enabling our students to develop quality life-saving products and devices that are very useful to the public, as social action and as contributions to the community."



Annual SCE Research Conference: Presenting research products

SCE faculty members from both campuses participated in the Annual Research Conference, in which SCE researchers displayed their most recent research projects at an event consisting entirely of mutual fructification and enrichment.

The Annual SCE Research Conference was held with the participation of faculty members from both campuses.

The conference opened with SCE's Founder and Rector, Prof. Jehuda Haddad, speaking about diligence and excellence in academic research. The Conference Chairman and Organizer - Dean of the Faculty of Engineering in Be'er-Sheva and Head of the Research and Development Authority - Prof. Victor Kagalovsky proffered his blessings.

In both sessions held throughout the day, SCE's researchers presented their most recent work in the fields of Engineering and Sciences.

Prof. Wafa Elias, Head of the Department of Civil Engineering on the Ashdod Campus, opened the first session with a lecture on the need for an interdisciplinary approach to transportation research. Dr. Guy Ben Hamu, Head of the Department of Mechanical Engineering on the

Ashdod Campus, spoke about the development of a magnesium anode for magnesium-air battery apps. A joint talk given by Prof. Ariela Burg, Head of the Department of Chemical Engineering, with Dr. Moshe Zohar, from the Department of Electrical Engineering and Electronics, both from the Be'er-Sheva Campus, dealt with the development of electrochemical sensors for heavy-metal detection. Another joint lecture was given by two faculty members from the Be'er-Sheva Campus, Dr. Dagan Bakun-Mazor, Head of the Department of Civil Engineering, with Dr. Isaac August, from the Department of Electrical Engineering and Electronics. Their lecture discussed lessons learned from applications made to research foundations regarding the geometric characterization of boulders and grounds by means of remote sensing.

The second session opened with a lecture given by Prof. Shlomo Greenberg, Head of the Department of Computer Sciences, on situational

awareness classification by means of EEG and machine learning. Prof. Leonid Oster, Head of the Physics Unit on the Be'er-Sheva Campus, spoke about thermal and optical luminescence in LiF, Mg, and Ti - a dosimetry app for use in a mixed radiation field. Dr. Ziv Brand, from the Department of Mechanical Engineering on the Be'er-Sheva Campus, lectured on active vibration regulation during chip processing. Finally, Dr. Nir Trabelsi, Head of the Department of Mechanical Engineering on the Be'er-Sheva Campus, concluded the session with his talk on the integration of AI algorithms into the analyses of finite elements and in computational biomechanics.

This productive and enriching day was summarized by the Conference Chairman, Prof. Kagalovsky, with thanks to the lecturers and anticipation of yet another interesting and high-quality conference in the year to come.

EMPOWERMENT - THE NEW WOW! IN THE DESIGN OF TECHNOLOGIES

At the “First Professional Conference for User-Empowered Design in Israel,” Dr. Adi Katz and Yana Sophia, from SCE’s Department of Industrial Engineering and Management on the Ashdod Campus, participated by presented their project that aroused great interest - an innovative application for the empowerment of women by way of strengthening the muscles of their pelvic floor.

Dr. Adi Katz and Ms. Yana Sophia, from SCE’s Department of Industrial Engineering and Management on the Ashdod Campus, served as the main presenters at the “First Professional Conference for User-Empowered Design (UED) in Israel.”

UED is a novel field that intends to create not only technology that works well and looks wonderful but also contributes to the empowerment of its users - even beyond the duration of its use.

Dr. Katz and Ms. Sophia were invited to present their project, which they had developed at SCE’s YOUsability Center (a usability center), and the uses of this app for the empowerment of women by way of strengthening the muscles of their pelvic floor. This is a sensitive topic, both physically and psychologically, and its therapeutic use combines physiotherapeutic exercises, gamification, and lots of humor - enabling relief from symptoms of weak pelvic-floor muscles, while providing a psychological coping mechanism, a sense of control, and self-acceptance of her body that is undergoing changes.

Among the features displayed: “laughter pee” - an exercise done after drinking a lot of water and watching funny videos; “traveling contractions” - an exercise consisting of alternately contracting and releasing the muscles of the pelvic floor while driving in a car;



App developers: Dr. Adi Katz; Yana Sophia; and 2 students: Reut Saban & Hadas Vazana.



From left to right: Dr. Adi Katz; Yana Sophia; & Dr. Hadar Ronen, from Kiryat Ono Academic College.

and “stopping to pee” - navigating to the nearest toilet.

This project aroused great interest thanks to its integration of innovation, human sensitivity, and a design that empowers its users. Its presentation was among the high points of the

conference; Dr. Katz and Ms. Sophia also appeared on a Panel of Experts, where they answered questions from the audience.

Participation in this conference was not only a professional opportunity but also made an important statement -

technology must and can bring about real changes. It was gratifying to see how this project, developed at SCE’s YOUsability Center by students Hadas Vazana and Reut Saban, and a partner, Dr. Hadar Ronen, from the Kiryat Ono Academic College, was given the center stage and provided WOW! moments - just as the UED is meant to do.

[What is User-Empowered Design?]

The UED paradigm is a significant step in the evolution of the development of man-machine interfaces - it places the emphasis on the manner in which technology is harnessed for the good of Humanity and focuses on its broad influence on the lives of its users.

In the present technological era, it is necessary to aspire not merely to design applicable, experiential products but rather to convert them into tools that empower their users, the effects of which go beyond the duration of the apps’ use. This is important, transitional thinking - from thinking just about the users to thinking about the human beings who will use the product.

The idea of ‘empowerment’ is also an interaction with technology invented by Dr. David Galula, who also founded an institute for user empowerment. This is today’s “WOW!” - that changes the relationship between the users and technology. Organizations will demand to adopt ongoing innovation, to foresee new needs, to keep pace with their clients, and to get ahead of their competitors. We are proud of SCE’s YOUsability Center, one of the first in Israel and the world, that deals with and promotes app/product usability.

NO LONGER A TOWER OF BABEL



These SCE students developed the “LingLinked” app for video chats - an advance AI-based application that enables fluent conversations between speakers of different languages and teaches new languages.

Linguistic barriers have been broken - “LingLinked” is a novel app that enables multilingual video communication in real time with people across the globe, developed by students in SCE’s Dept. of Software Engineering.

This application was developed by Gil Cohen and Or Hava, within the framework of their final project, under the mentorship of Dr. Irina Rabaev. It combines, advanced AI technology with voice recognition, machine translation, and text-to-speech technology - to enable fluent conversations between speakers of different languages, each in his/her easiest language. This system was presented to the public on the ‘open day’ held on both SCE campuses on July 30th, 2025.

“When a platform combines a social network with language learning, “LingLinked” cancels one of the most significant challenges in global communication - the language barrier,” explains Dr. Rabaev. “We developed this technology so people can speak in their mother tongues

simultaneously and understand each other in real time.”

In addition to the simultaneous translation function, this app includes a system for interactive, online language learning, among other things, with language level tests in a variety of languages, experiences, and practice exercises, conducted with people across the globe. “We wanted to create a platform that doesn’t just translate but rather helps the users to learn new languages and connect with different cultures,” said Gil Cohen.

Beyond its personal use, this app has social and economic potential for tourism, international relations, the development of global trade connections, education and student exchange, as well as humanitarian aid during international emergency situations.

“We consider “LingLinked” to be a tool that can promote discourse and international cooperation and connects people with different backgrounds from different cultures,” Or Hava added.

The connection between musical preference and mental state is complex and quite different from one person to another. Research has indicated that people frequently choose music that reflects or strengthens their emotional experiences. This preference is impacted by various factors, among which are personal experiences, cultural background, education, and personal traits.

Many studies indicated that 'metal music', which sounds to some people like loud, brutal 'noise', makes its listeners happier. The main reason for this is that it produces a strong sense of community, a release from pressure and anger, and a sense of joy and empowerment. It was announced that Finland is the country in which the citizens are the happiest in the world. Finland takes pride in its plethora of metal bands - the highest per capita - which further emphasizes the significance of this genre's positive affect on psychological wellbeing.

As such, these studies showed that metal music can cause happiness - but is this also true in reverse? That is, do happier people tend to listen to metal music? This issue is being examined by researchers in SCE's Dept. of Industrial Engineering and Management - Dr. Yizhaq Minchuk, from the Be'er-Sheva Campus, and Dr. Alisa Voslinsky, from the Ashdod Campus, after being awarded internal research funding by the College.

It is the first research study in this field to be conducted using quantitative engineering tools, rather than qualitative ones. It is composed of two parts. Part one includes a mathematical model that examines whether the number of metal bands in a certain country (termed 'metal fertility') is dependent on the happiness score of that country as a mediator variable of the gross domestic product (GDP). In this case, the analyses indicated that the higher the GDP, the higher the level of happiness is, and the more metal bands there are.

DO HAPPY PEOPLE LISTEN TO MORE METAL MUSIC?

Finland, that has been mentioned as the country in which the citizens are the happiest in the world, takes pride in its plethora of metal bands - the highest per capita. Researchers, from SCE's Dept. of Industrial Engineering and Management, are investigating the connection between metal music and happiness, in hopes of shedding light on the fundamental dynamics of such musical preferences.

Part two of this research was meant to strengthen the causal connection by delving into the degree of happiness and its connection with metal music per country. We sampled three countries and conducted experimental surveys. The survey has three stages. In the first stage, the participants were asked to answer a series of questions, the purpose of which is to evaluate their present level of happiness. Their responses to statements reflecting various aspects of happiness should provide important insights into their subjective wellbeing. This stage is meant to determine the basic scale of the participants' happiness, that will serve as a key in the examination of the connections between happiness and musical preferences during the following stages of this analysis.

During stage two of this experiment, the participants were asked to indicate if they listen to metal music. "If they confirmed that they do, they were asked to provide at least three names of metal bands with which they are familiar. This stage is meant to confirm the precision of their responses regarding their musical preferences.

In stage three, the participants answer a few demographic questions. Their replies provide data on their background characteristics: age, gender, place of residence, and family status, that help us analyze the connections between their preference for metal music, levels of happiness, and other socio-demographic factors.

By means of these three components, we may comprehensively examine how metal music consumption and familiarity with metal bands are correlated with the levels of happiness and with the demographic variants. This part of our research is reaching completion, with data that strengthen the research hypothesis.

Our research aspires to shed light on the cultural and psychological dynamics at the basis of musical preferences. By combining these two approaches, we hope to get a more comprehensive understanding of the connections between the consumption of metal music, its creation, and the levels of happiness - both on the personal level and on the social level.



PERSONALIZED DESIGNS FOR THEIR SAKE

A cooperative enterprise between the Fighters' House in Be'er-Sheva and students from SCE's Department of Mechanical Engineering Department developed unique products that facilitate the lives of injured I.D.F. soldiers by improving their functioning and independence.

Within the framework of a unique cooperative project initiated by SCE lecturer Naama Agassi in conjunction with the Fighters' House in Be'er-Sheva, students in the Design and Development of Products Track in the Department of Mechanical Engineering developed novel products for the personal use of injured soldiers - to improve their independence and functioning. SCE students met with wounded and rehabilitating soldiers, learning about their daily challenges up close and, accordingly, developed a variety of products to facilitate their lives.

A helpful device for tying shoelaces

Developed by Kobi Segal



Since his injury during the First Intifada, Kobi Segal has only had the full use of one hand. For the past 30 years, he has only worn laceless Blundstone boots, because he can't tie shoelaces by himself. SCE students Adi Katar and Stav 'Argi developed a small device for him that connects to the shoe and enables the required action to be performed with one hand. This small, smart product will enable him to tie the laces of his sports

shoes for the first time in decades, so he may participate in sporting activities previously inaccessible to him.

Kit Belt

Developed by Yotam Gadish and Naftali Cohen



Adi Timor, who was severely wounded in the recent war and lost a leg, was able to return to his hobby of kitesurfing after 10 months of rehabilitation. SCE students Yotam Gadish and Naftali Cohen designed a special sports prosthesis for him that enables him to surf. This smart prosthesis ensures that the leg remains stable and secured on the surfboard; nonetheless, if necessary, Adi can make a rotational movement with his leg and detach from the surfboard to return to the water, as any regular surfer might do.

An aid for soaping and wiping the body in the shower

Developed by Roni Gilgor, Dani Shtifman, and Walid Haleb



These students developed a smart device to help the wounded and rehabilitating by attaching to the shower wall by means of a vacuum, enabling them to perform actions like soaping, scrubbing, and drying the body in the shower with only one functioning hand. To this device, various other accessories may be attached by a stretchy tether, such as a towel, a sponge, or a louffa, and each accessory can be pulled away from the device with one hand and rebounds to its prior position on the device when released; this enables easy one-handed use even in areas difficult to reach.

A device for opening bottles and jars

Developed by Ofek Sharvit and Rotem Rodrig

Sharvit and Rodrig created a device that opens jars, bottles and cans and is attached to the middle of a marble counter by means of a vacuum. On this device it is possible to place the container to be opened, where it is held by four silicon-coated teeth for maximal grip. Then, it is possible to open or close the container with one hand.

Arm brace tool holder

Developed by Eddie Litvinov and Tomer Epstein



These students developed a device that attaches to the middle finger, to which a knife or some other tool may be attached, such that it is possible to cut and eat food independently, without relinquishing the use of two items of cutlery simultaneously.

Tide trolley

Developed by Muhammad Fadila and Ibrahim Zir'ani



These two students developed a compact device that helps when carrying a surfboard from the parking lot to the shoreline. This device can include a seat, so that someone who gets around in a wheelchair - like Eyal Sela, for whom this solution was designed - would be able to reach the waterline with surfing gear, even under conditions in which a regular wheelchair would be unsuitable.

MEASURING EMOTIONS AND PSYCHOLOGICAL TRAITS USING AI

The research of Dr. Aviad Elyashar, from the Dept. of Computer Sciences, in conjunction with the Ben-Gurion University of the Negev (BGU), combining the worlds of Psychology, Computer Sciences, and AI, has been published in a leading international periodical.

Dr. Aviad Elyashar, Dept. of Computer Sciences

Dr. Aviad Elyashar, a senior lecturer in the Dept. of Computer Sciences and Head of the Cyber Track, in cooperation with researchers from BGU, have developed a novel method for the evaluation of 'psychological characteristics', such as anxiety, depression, and mental robustness by means of AI, even when they are not intended for human conversation. Within the research parameters, the researchers converted the data found in validated and standard psychological questionnaires, meant for humans, into commands understood by the AI system and examined the responses - the purpose being to objectively evaluate, on the basis of scientific data, the system's ability to 'react' in a manner suggesting the higher or lower levels of certain characteristics. These tests were conducted on 88 different models of AI, and the results were surprising. These systems presented psychological patterns consistent with those of human beings, for example, the strong connection between anxiety and depression, or the positive connection between mental robustness and an optimistic view of life. Moreover, the researchers succeeded in showing that it was possible to change the system's 'psychological profile', for instance, to reduce the tendency towards negative reactions by additional training regarding suitable traits.

To enable the researchers and developers to apply this method in practice, within the framework of this research, a targeted Python package was developed, enabling

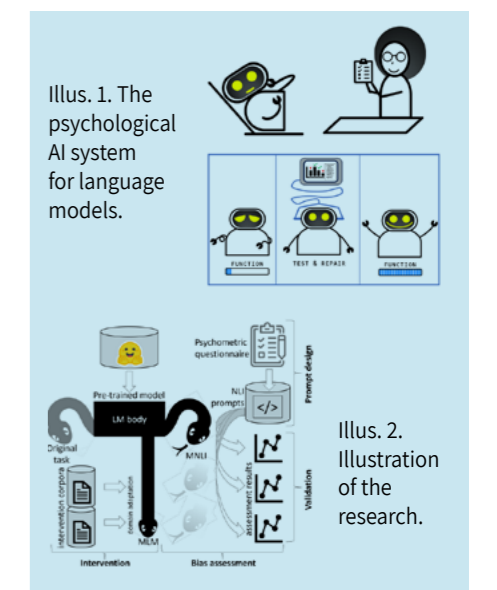
the examination of language models, before releasing them to the public. Similarly, the validated psychological questionnaires used for this research were accessible, such that anyone could evaluate the models in a uniform and objective manner.

This research, that integrates the worlds of Psychology, Computer Sciences, and AI, was published in a leading international periodical and presented at the prestigious International Association for Computational Linguistics (ACL) Conference, dealing with neurolinguistic programming (NLP), where it drew a great deal of interest from researchers and experts in the industry.

To read the full article: <https://arxiv.org/pdf/2409.19655>.

Link to the Python package: <https://pypi.org/project/qlatent>.

For the base code in GitHub: <https://github.com/cnai-lab/qlatent>.





THE HADASSAH - SCE SIMULATOR FOR REDUCED TRAUMA IN CHILDREN

Students from SCE's Department of Mechanical Engineering have developed a smaller, interactive simulator for the preparation of children who must undergo radiation treatment; it will provide them with a positive and calming experience of the process, thus reducing their anxiety levels. It was developed in conjunction with the Pediatric Hemato-Oncology Team at Hadassah Hospital, Ein Kerem. This project took shape thanks to

the enterprising educational staff of Hadassah's School for Hospitalized Children, who 'drafted' SCE students Zohar Kadosh and Yehuda Khalfon, mentored by Dr. Efi Zemach, a faculty member in the Dept. of Mechanical Engineering. At Hadassah, they explain that a child with a cancerous tumor undergoes an average of 30 radiation treatments. Today, the preparation of these children is done by means of simple,

static models that do not demonstrate the movements of the device's components. This novel simulator familiarizes them with the treatment in a playful and soothing way, using a doll (representing the patient) placed on the model simulator bed. The model simulator provides personal interaction suited to each case. Dr. Zemach explains: "The preparation of children for treatments or complex examinations is a subject that has

Approaching a calmer treatment experience - a novel simulator developed by the enterprising educational Pediatric Hemato-Oncology Team at Hadassah Hospital with SCE students prepares children for radiation treatments by reducing their anxiety levels and the need for sedation.

And there is also a personal perspective for Yehuda Khalfon - an exciting moment that brings him full circle. Four years ago, Khalfon, who is 25, a resident of Ofakim, had supported his sister Yael, who contracted cancer. "Yael underwent treatments at the Hadassah Hospital," he said, "where I saw how much such an incident not only shakes up the one who is sick, but the entire family. Then, I was the only family member with a driver's license, so I drove her and my mother to the examinations and treatments. This obliged me to drop out of my studies for almost a year. Today, thank God, Yael is healthy. It was my great privilege to participate in this project with Zohar. We both consider this a kindness and feel it [this opportunity] was Heaven sent throughout the entire development process."

Prof. Jehuda Haddad, Founder and Rector of SCE: "This project exemplifies the power of the cooperation between SCE and the health system. The close working relationship with the Oncology Dept. at Hadassah enabled the students to develop a solution based on real needs, one that responds to the efforts of modern medicine to transform traumatic treatments into

less traumatic ones. It is an excellent example, demonstrating how advanced engineering preparation can bring about solutions that directly affect the quality of the lives of children, as well as of the entire community."

Dr. Gal Goldstein, Director of the Pediatric Hemato-Oncology Dept. at Hadassah Hospital, Ein Kerem: "If you want to produce exciting, creative, and quality things, like this model, you must meet with exciting people who care very much - if you're like them. The cooperative enterprise conducted by SCE students in conjunction with the staff of our School [for Hospitalized Children] and Department is that kind of story. We received a wonderful simulator prototype, which will help many more children. I'm speechless!"

Emunah Steinmetz, a teacher, a ["Tikkun Olam"] maker, and the instigator of this project: "As a teacher within an educational team working in the Oncology Unit, each day, I witnessed the reduction in anxiety and the increase in the children's sense of control. The simulator developed for us enabled us to teach, prepare and calm the children in a respectful, experiential manner - a significant step on the path to suitable, mollified treatment."

greatly developed over the past years in Israel and the world over. The combination of advanced engineering technology with a deep understanding of the medical and psychological needs of the children have created a tool that can essentially change the treatment experience."

In accordance with the defined needs of the Hadassah staff, the SCE students made great efforts to create a solution that is not only technologically effective, but also safe, reliable, and economically accessible. One of the main achievements of this simulator is that it combines innovative technology with easy, low-cost maintenance. These qualities make this novel simulator a practical solution that may be applied at additional hospitals.



IDENTIFYING FAKES

A novel system for the identification of fake photos created by AI has been developed by students in SCE's Software Engineering Department. Thus far, this system has achieved 84% precision in identifying deepfakes by focusing on manipulations in photos of scenery and events.

Within the context of producing their final project, three SCE students from the Department of Software Engineering, in the Data Science track, developed an innovative system for the identification of AI-created deepfake photos. This threesome - Ms. Yuval Nirenberg, Ms. Arbel Zagag, and Ms. Danielle Bar - developed a system combining advanced machine learning and image processing. First, a trained autoencoder is activated, which produces a vector representation. Then, this representation is realized via SRM and DCT models, in conjunction with neural networks, for the sake of classification.

For research purposes, these students created a unique database



of photographs called GW (Gaza War), consisting of over 2,000 real and fake photos related to the fighting in the Gaza Strip, as well as taking advantage of two other existing databases (open to the public) for future use and research. Their system is based on a hybrid approach and has achieved 84% precision in identifying fakes by focusing on manipulations in photos

of scenery and events, not only faked faces.

The goal of this research was to cope with the growing threat of the dissemination of fake data, especially during periods of geopolitical fighting and conflicts, by using AI-based tools able to locate fakes hidden to the human eye. This project was conducted under conditions of limited time and resources, within the framework of their studies - and yet, it succeeded in producing significant scientific outcomes that contribute to the global struggle against the deepfake phenomenon.

OPENING DOORS IN Google

SCE students from the Department of Computer Sciences visited the Google offices in Tel Aviv and learned about the paths and tools for integrating into the high-tech worlds



As part of a broad program run by the Lauder Employment Center in Be'er-Sheva, third-year (junior) SCE students from the Department of Computer Sciences on the Be'er-Sheva Campus visited the Google offices in Tel Aviv. The tour of the Google offices and the whole Lauder Employment Center program were meant to prepare the students for their integration into the labor market.

The students met with Eli Kaplan, Head of "Security and Compliance Professional Services" in Google Cloud EMEA. He gave them a

thorough survey on the subjects: cloud computing; industrial challenges; innovation and creativity; and career opportunities in the worlds of Computer Sciences. Kaplan regaled them with his personal career story and presented paths and tools for integration into the leading technology companies. Two additional Google employees also shared their professional experiences and offered their insights about joining

the high-tech industry.

Keren Cohen, Director of the Lauder Employment Center, said that the direct contact between the students and the employers would enable the students to better understand the reality of employment. She stated: "We believe that the right connection between Academia and Industry does not merely provide opportunities but rather changes reality."

REKINDLING THE DAWN



From left to right: Osnat Shabtay; Matan Nitzan; and Oriya Hazan.

"Aurora" is an advanced AI- and interactive chatbot-based system that offers advanced, immediate, and individually-suited responses to mental distress. It was developed by students in the SCE Department of Software Engineering in answer to the collective mental distress in the wake of ongoing war.

In a period of collective mental distress due to the ongoing war, during which the length of time it takes to get the required therapeutic and psychological treatments continues to grow longer - project "Aurora," recently developed by students from SCE's Department of Software Engineering, offers an advanced technological solution, providing mental support.

Within the framework of their final project, and under the mentorship of Dr. Irina Rabaev, three SCE students: Ms. Oriya Hazan, Ms. Osnat Shabtay, and Ms. Matan Nitzan, created an integrative software system, offering immediate, personally-tailored support, 24/7, for people coping with trauma, stress and mental distress.

This is an advanced AI- and interactive chatbot-based system that combines advanced technologies, such as machine learning, textual analysis, databases and vectors together with the analysis of human emotions (affective science). By means of dynamic user-behavior analytics (UBA) and advanced algorithms, the system identifies various existing conditions and patterns of mental distress and offers personally-suited suggestions, including counselling and emotional support, breathing exercises, and meditation, as well as providing a social platform that enables members to share their experiences and to mutually support each other.

This system is named "Aurora," symbolizing the rising of light after darkness. Of course, it is programmed to function in an anonymous manner, such that it ensures privacy and creates a safe atmosphere for cooperation and coping with mental challenges.

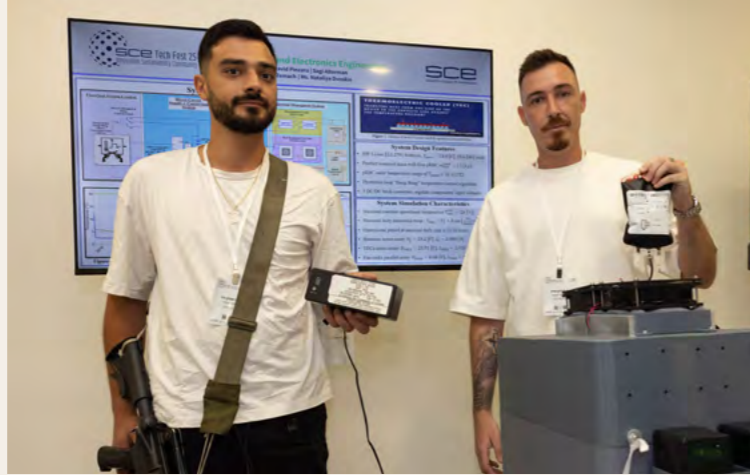
The initial idea was conceived during the "Iron Swords" War. One of the members of the development team, Ms. Matan Nitzan, has been serving in the I.D.F. as a Training Officer in the National Rescue Unit of the Homeland Command since October 7th, 2023, and has served over 300 days of I.D.F. Reserves duty. During her prolonged service, she was exposed to cases of severe distress, suffered by male and female soldiers serving with her. In fact, both Hazan's and Shabtay's partners - her "Aurora" development team colleagues' spouses - are both fighters in I.D.F.'s Golani Brigade and had done long-term service. Mental distress, tension and worry about loved ones was their lot, as it is for many citizens in the State of Israel.

Ms. Nitzan spoke for the three of them: "From our personal experiences, we understood that there's a need for a technological solution that will really benefit the hundreds of thousands of Israeli men and women since October 7, who are experiencing distress and have been waiting many long months to see a psychologist, in need of counselling and emotional support or who yearn

for information regarding their rights. [...] The system we developed is based on three main features: the identification and diagnosis of the mental distress in real time; the provision of self-treatment methods and tools, and the opportunity to join a cooperative support group, in which members share their cases, personal experiences and coping strategies, when facing their psychological/ mental health challenges. To date, there's no other system in the market that is able to do those three things in one application. The uniqueness of our system is that it 'learns' [about] the user and suggests personally appropriate solutions."

Dr. Rabaev emphasizes that: "This system wasn't meant to replace professional treatment, but rather to provide an accessible layer of support, always available and secure for everyone." She adds: "Aurora is not just any app - it's an initiative with a mission! Beyond the technological development, the team did market research, conducted a user survey, did a review of the literature, and consulted with professionals in the fields of medicine and law, to ensure a regulatory, secure and reliable match. This project embodies the aspiration for the integration of engineering, humaneness and vision - to rekindle the dawn for all those coping with the darkness."

A kitbag that saves lives on the battlefield



Students from the Dept. of Electrical Engineering and Electronics developed a light-weight kitbag with controlled refrigeration for carrying blood-bags into the battlefield. This battery-powered cooler will increase the survival rate of those wounded in battle.

This is a life-saving project - a refrigerated blood-bank in a battlefield kitbag. Sagi Alterman and Ofek David Pinzaru, students from the Dept. of Electrical Engineering and Electronics, mentored by Dr. Efi Zemach and Dr. Nataliya Dvoskin, instigated this project to increase the survival rate of those wounded during combat and to minimize their damage in the long run, by having properly cooled blood-bags at hand in the field.

Ofek recounted: "After more than half a year of Reserve duty as a battlefield medic, I learned that about 70% of the preventable casualties in the field occur due to blood loss. [...] The interim from the moment of the injury to the moment it is treated is what is known as 'the golden hour'. If an [injured] soldier receives a blood transfusion during that period, his/her survival rate is much greater. The blood-bags must be kept cool, even on the battlefield. To date, the I.D.F. has portable refrigerators with ice and simple cooler boxes. Alterman's and Pinzaru's intention was to develop a light-weight field kitbag that soldiers could carry with them."

Blood becomes spoiled not only

due to it overheating, but also if it is overcooled. The cooler boxes in use today do not have temperature regulation; as such, the medicinal qualities are not always maintained, because many blood-bags become spoiled and are wasted. This innovative kitbag provides a novel solution - it's built with a 'brain' - units that supply the voltage to the cooling unit, the ventilators, the control unit and panel. The system constantly monitors the temperature of the blood, and the moment the blood starts to heat up, a warning light goes on. Once the system reaches 4°C, the cooling temporarily switches off. Ofek told us: "By means of blood transfusions, in many instances, lives can be saved, the survival rate of the injured is increased, and the long-term damage is reduced. Those were our project goals - to save lives."

Both Sagi and Ofek explained: "The primary innovation was the use of batteries. [...] The I.D.F. is equipped with batteries, even deep in the battlefield. When they die, they can be replaced. There's no need for a permanent source of electricity, nor of ice-cubes. You put in batteries and get a cooler." An additional advantage of this novel system, developed by

SCE students, is that it immediately signals the onset of overheating or overcooling of the blood-bags. Such deviations are likely to spoil the blood, making it unusable, which is a waste of precious blood.

Dr. Zemach said: "As a prototype, we're talking about an amazing product, small and light weight." Dr. Dvoskin added: "This product successfully applied the broad knowledge they'd gleaned during their studies - for the purpose of saving lives."

From the laboratory deep into the battlefield

Ofek and Sagi describe that, beyond its use in the arena familiar to them (the Gaza Strip), they hope that sometime, down the line, their system will become assimilated elsewhere, in other places in which handling blood is difficult. "Today, the forces located deep in enemy territory cannot receive blood transfusions in any way except via helicopter landings by Unit 669. Our product is adaptable. The system's computer can function 24/7, if there are charged batteries, thus enabling [military] action throughout entire days. All the soldiers need is an additional supply of batteries."

The future of customer service is already here

SCE students of Industrial Engineering and Management are helping major industries identify the hidden emotions underlying customer critiques.

Emely Ben-Sadon and Yarin Horev-Saada, women students of Industrial Engineering and Management at SCE, developed an innovative AI-based application for the analysis of the emotions hidden behind the critiques received by airline companies. The goal - to improve the passengers' experiences.

Behind this project are also challenging personal experiences they, themselves, had while studying and working on this project. Emely, who emigrated to Israel from Austria and had settled in Kibbutz Nir 'Oz, was living there for over four years. Due to a last-minute decision, she and her partner hadn't been in the kibbutz on October 7th, 2023, and they also hadn't partied (as they'd previously intended) at the Nova party - a coincidence that proved to be fated. Emely had followed the events going on at the kibbutz via WhatsApp friends' groups. That same week, her partner was drafted into I.D.F. Reserves service and later, she chose to volunteer and support her community that had suffered such traumatic loss.

Yarin's partner was already serving on Reserve duty from the first day of fighting, while she coped alone with her new and challenging routine that included studies, working on the project, pregnancy and childbirth. She explained: "The studies and the project were my fortifying anchors that enabled me to hold my own and concentrate on something else."

Despite the complex reality, neither woman gave up her studies and they invested many hours on their final project. Thus, the app they developed was born - an innovative technological tool - meant to help airlines cope with the large quantities of customers' appeals and criticisms, generally requiring many employees and resources to do the data analyses. The app they developed automatically analyzes the critiques and identifies the emotional tones each exudes - positive, negative, or neutral. It provides the airlines with a clear picture of the passengers' emotions and of the factors that caused them, such as seating comfort, stewardess service, and food quality - responding rapidly to negative criticism, thus successfully protecting their prestige.

This system is also suited to small businesses dealing in other areas that receive a large volume of criticisms. The app suggests precise solutions, quickly and economically, as compared to other solutions performing similar, more costly, analyses.

To date, Yarin is residing with her family in Moshav Shokeda in the heart of the Gaza Envelope, stemming from the desire to remain there and to strengthen the community, in parallel with her studies and fresh motherhood. Emely is living in Be'er-Sheva, where she continues to study and work, and also to support the Nir 'Oz community, from which she was forced to distance herself since October 7, 2023. Both women continue to make progress on their project and hope to expand its usefulness, to reach outside the academic framework.

Yarin: "While my husband was serving in the Reserves, immediately following October 7, I remained by myself in the



Gaza Envelope, in my first pregnancy, coping with security-related stress, my studies and my [obstetric] examinations. More than once, I drove to bring food to the soldiers at the Erez Border Crossing. Even after having the baby, I continued to work on the final project, with a newborn at home, and without taking my foot off the gas. It was a challenging period, but I had a sense of mission and capability."

Emely: "The period after October 7 and the long, continuous Reserves service of my partner was difficult. My friendship with Yarin and working on the project gave me strength, and her home also became my second home. Our togetherness helped us get through this period and to produce a successful project."

Prof. Baruch Keren, Head of the Department of Industrial Engineering and Management: "Emely and Yarin succeeded in combining their advanced engineering abilities with practical, creative thinking. They used AI technologies and machine learning and transformed them into applicable tools, able to change the way in which companies understand their clients. This is a good example of our students' ability to create novel solutions even during especially stressful times."



The atmosphere is positively charged



On both SCE's campuses, 1,017 graduates participated in the ceremonies conferring their degrees. The Department of Electrical Engineering and Electronics 'made history' with four student couples who completed their studies together. We send our best wishes to all the fledgling engineering!



This year, 1,017 Bachelors and Masters engineering graduates participated in the ceremonial marches held on both SCE's campuses, Be'er-Sheva and Ashdod. In attendance at these exciting degree conferment ceremonies were: SCE's Founder and Rector, Prof. Jehuda Haddad; College President, Prof. Semyon Levitsky; Be'er-Sheva's Mayor, Ruvik Danilovich; and Ashdod's Mayor, Dr. Yehiel Lasri. Prof. Haddad addressed SCE's 11 fallen students/soldiers during the "Iron Swords" War, and his hopes and prayers for the peaceful return of all the hostages and soldiers. Furthermore, he spoke of the enormous contribution of Israel's engineers to the Israeli industry: "...from the 'Iron Dome' and to the

intelligence systems, from cyber solutions and to medical robotics - Israeli engineers are involved in all these, providing creative ideas, breakthroughs, and irreplaceable action." Prof. Semyon Levitsky noted that many of the students had been called up for lengthy periods, and that the College made great efforts to create a learning and economic buffer that would enable them to continue their studies. At the Be'er-Sheva ceremony, four graduating couples stood out, who had studied together in the Department of Electrical Engineering and Electronics. Amid the circuits and diagrams, lifelong partnerships were formed. Lest anyone was doubtful

- it was quite obvious that the atmosphere was positively charged. Kesem and Alex Igrushin, both 29 and from Moshav Beit HaGadi, arrived together to study at SCE and during the course of their degree studies, they became a married couple and parents. "Our mutual support was critical to our academic success," they both said. "We helped each other, and submitted our final project as a team, which was natural for us." One of the blatant challenges they experienced was when Kesem attended an Officers' Training Course during her degree studies and the second was when their first son was born "...in the middle of fourth-year of studies." Their tip for other couples studying together: "Support one another, even



in the most difficult moments, and never forget to enjoy the journey." Maya, 27 from Netivot and Dor Hagbi, 28 from Moshav Yakhini met during their second year of studies in the Electricity Lab. "It all started when I smiled at him," said Maya, "Dor always said that was the moment he fell in love with me." Their studies intertwined with their couplehood in amusing and challenging ways. Now, they're graduating together and are full of pride. Their tip for other student couples? "Be best friends first. That's what lasts the longest." Shoham is 25 and Yahav Hamias is 28, and both come from Moshav Beit HaGadi. They began the same study track as friendly study-buddies and ended up as a married couple. "We

started out learning together before becoming a couple," they said. She (Shoham) explained: "The hardest period was when Yahav served in the Reserves throughout the fourth year. Studying became a greater challenge... Once we'd completed the final semester and we understood that we'd made it through together and we felt enormous relief." Their tip: "Keep the lines of communication open, support each other, and remember - first and foremost - you're a team!" Linoy and Ben Abergel are both 28 and from Be'er-Sheva. They arrived at SCE as a solid couple with a two-year-old relationship behind them. She studied in the morning track and he in the evening track, which required them to be flexible and coordinated.



"We made many concessions on this path," Linoy stated. "Our studies were part of our couplehood. And our time together consisted of going to classes, studying for exams, and doing assignments. They got married while preparing their final project and moving into another apartment when Ben was given a new position in the military." Dr. Dmitry Baimel, Head of the Department of Electrical Engineering and Electronics on the Be'er-Sheva Campus: "It's very exciting to see that in the same place, where we prepare the future's electrical and electronics' engineers, we are also creating the next generation, in both senses. I'm very glad that our graduates found love alongside learning, and I wish them great success!"

“GrowWise”: Smart tools for managing an agricultural farm



Women students from SCE developed a smart system for agricultural management that may save farms thousands of shekels per month. “GrowWise” combines the technologies of open artificial intelligence (OpenAI) with global climate forecast data for informed decision making and more efficient use of resources.

An interesting final project developed by two SCE students provides an advanced technological solution to the managerial challenges faced by the Israeli agricultural branch. This system, “GrowWise,” was developed by May Zohar and Sapir Ovadya, mentored by Ms. Alona Kutsyy, a faculty member of SCE’s Department of Software Engineering. This outstanding final project was displayed and presented on Wednesday, 30.7.2025, in Minkoff Hall.

In an age when the field of Agriculture is coping with ever-growing challenges, ranging from the climate crisis to the price fluctuations of production factors (inputs) and to human resources management - the “GrowWise” system provides farmers with data-based smart tools for informed decision making, thus making their use of the available resources more efficient.

May Zohar, a co-developer of this system, says: “The idea to develop this system came up during the [Gaza] War, when we watched the news reports and heard the stories about the farmers, who were desperately

seeking help with managing their farms from a distance. [...] In addition, we found out that many farmers are still running their farms using traditional methods, so they are having trouble keeping track of all the operational and economic aspects.”

Ms. Zohar added that “GrowWise” was created to simplify management from afar by giving farmers the full, updated pictures of their farms, thus improving their profitability.

This system includes six advanced modules:

- Management of parcels of land and greenhouses - digital monitoring of all the farm’s crops.
- Smart irrigation planning - combining up-to-date climate data and tailoring the required water quantities to suit each crop.
- Advanced inventory management - Monitoring the inputs, tools and equipment.
- Analyzing growth trends - identifying problems and opportunities in real time.
- Expenditure and income management - by means of an

individually suited, designated calculator.

- Recruitment of manpower - by means of a farmers’ social network.

The “GrowWise” technology combines: the “Flask” system; a MongoDB cloud database; and OpenAI technology; along with global climate forecast data. This combination enables the system to provide precise insights, relevant to each farm.

Sapir Ovadya adds: “One of the significant advantages of our system is that it can adjust itself to the specific needs of each farmer. The interface is simple, user-friendly, so that even farmers who aren’t ‘tech-savvy’ can gain immediate benefit from it.”

As part of the development process, our system’s pilot is currently being tested by farmers in the southern region, and the first results are promising. “We believe that this system has the potential to save thousands of shekels per month per farm, especially thanks to its efficient use of water and other production factors,” May and Sapir remarked.



Link to the system: [/https://growwiseweb.onrender.com](https://growwiseweb.onrender.com)

Improving the ability to preserve the quality of drinking water

A joint research group, working with SCE researchers Dr. Moshe Zohar from the Dept. of Electrical and Electronic Engineering and Prof. Ariela Burg from the Chemistry Department, is currently developing sensors for the electrochemical detection of heavy metals. The goal - to find a cheap, portable solution, easy to use for testing water quality in the field.

Water is a source of life; where there is no water, there is no life. Therefore, it is essential to maintain water quality, the sources of which are becoming depleted due to the world's accelerated population growth. Besides the preservation of the water sources, it is crucial to conduct quality testing of potable water before it reaches our faucets.

In the period of the ancient Roman Empire, the water pipes were made of lead, which polluted the potable water. Even today, some old plumbing infrastructures still have water pipes with lead components, probably emitting lead into the drinking water. Heavy metals, particularly lead, are known to negatively affect human physiological processes. For example, the enzymes - biological catalysts with important functions in all the biological systems, contain metal ions, such as iron. When lead penetrates a body, it may replace the metal ions in the enzymes, thus disrupting enzymatic action and causing damage to various biological systems, especially to the functioning of the human body.

According to the document "Regulations for the People's Health" (which includes a list of all the substances, their concentrations, and their permitted thresholds in drinking water, used when testing our drinking water), the maximum

permissible concentration of heavy metals in drinking water is usually given in parts per billion (ppb). For instance, the maximum permissible concentration of lead in drinking water is up to 10 ppb (10 micrograms per liter of water); for mercury - 1 ppb; and for cadmium - up to 5 ppb. These thresholds oblige various industries to treat the wastewater resulting from their production processes, to reduce concentrated pollutants, among which are the heavy metals, to prevent damage to the environment and the potable water sources.

A widely used technique for detecting heavy metals is 'inductively coupled plasma' (ICP). ICP has many advantages; for example, it can simultaneously and precisely detect many heavy metals. It is also the device authorized by the authorities for the testing of heavy metal concentrations in potable water. Nonetheless, it also has disadvantages: the device is large, expensive, and its use requires trained personnel. These disadvantages prevent its use in the field, at the water source being tested. Similarly, since it frequently requires hours or days to get the test results, in cases of malfunctions, the metal concentrations rise and it will be impossible to know in real time - to provide an immediate solution.

For these reasons, many groups across the globe, among them SCE's

research group, with Dr. Moshe Zohar and Prof. Ariela Burg, are seeking a better, alternative solution. The SCE team is actively developing sensors using electrochemical detection. Each metal in a tested sample has its own, unique electric signal - sort of a 'finger print' the sensor can locate. Electrochemical sensors are mobile, low-cost, and no special training is required for their use.

The sensors being developed at SCE employ a special technique based on nanolithography - this method patterns accumulated nanoclusters (a nanometer is a millionth of a meter; for instance, the width of a piece of paper is 100,000 times wider than a single nanometric fiber). These nanoclusters contain substances that trap heavy metals, thus enabling the emission of an electrical signal. The use of such sensors, the creation and activation of which follow the principles of green engineering, will lead to more efficient water testing.

If we return to the problem of the old pipes, it becomes clear that the entire process of their replacement will be long. Meanwhile, our cheap, simple, mobile identification device can serve for the determination of the priorities of the company replacing the pipes, as well as providing the answers for regular consumers, who can quickly and easily check their water quality at home with this sensor.

Academic Faculty | Prof. Vladimir Frid Dept. of Civil Engineering, Ashdod Campus



For almost four decades, Prof. Vladimir Frid has dedicated his professional life to listening to the 'hidden voices' of boulders and grounds. His work helps us to better understand earthquakes, to improve the safety of buildings, and even to transform industrial wastes into valuable raw material.

Since the mid-1980s, Prof. Frid has been researching a curious phenomenon - when a boulder breaks under pressure, it emits pulses of electromagnetic radiation, a natural signal that, in future, may provide us with an early warning before an earthquake. His research work led him from the laboratory out into the field,

especially in the Israeli areas of the Syro-African Rift.

Besides dealing with earthquakes, Prof. Frid developed novel methods for 'asking' the ground 'questions'. By means of sound waves (sonar), radar, and electric currents, it is possible to know what is hidden underneath the surface. Is the ground stable enough for construction? Are there underwater cracks? Are conditions developing for a dangerous avalanche? Recently, Prof. Frid combined the above techniques with AI, thus creating 'acoustic fingerprints' of different grounds. Soon, engineers will be able to quickly identify dangerous ground at building sites - thus saving time, money, and most importantly, lives.

Over the past few years, Prof. Frid has focussed on the unused hills of flint amassed in Israel's sand quarries. In his labs, with international cooperation, he is developing new technologies based on a microwave app, able to disintegrate the flint, to turn it into raw material for the production of concrete and asphalt. The success of his research is likely to reduce the amount of destructive quarrying for

sand, while providing the construction industry with a green, self-sustaining solution.

Prof. Frid is a consummate teacher. He teaches a variety of courses - from earthquake engineering to methods for digging tunnels - and he always sees to it that his students meet the reality in the field. His students do not suffice with theories and book learning - they go to building sites, conduct experiments in certified labs, and get a real opportunity "to touch the earth." "Civil Engineering is a profession that solves problems," he says, "and the best way to learn is to cope with real problems, not just equations."

Behind all his research studies (from predicting earthquakes to flint recycling), there is one clear conception - Science must serve society! His goal isn't merely to publish academic articles, but rather to promise more secure communities, greener construction, and education bound to reality - or as he likes to put it: "Every crack in a boulder tells a story. My job is to listen to those stories, and to turn them into knowledge that helps people."

Construction Unit | Dr. Julia Goldbaum, Manager of the Laboratories Physics Unit, Be'er-Sheva Campus



I live in Be'er-Sheva, married to Leonid (a professional Electrical Engineer), and a mother of three: David, Dina, and Michael. I received B.Sc. and M.Sc. degrees in Physics from the Ben-Gurion University of the Negev (BGU), and since completing my Doctorate, I have been teaching. I adore this field and have twice received commendations as an 'outstanding lecturer' at SCE and the adjacent Technological College, both in Be'er-Sheva. Besides teaching Physics, I also teach additional

subjects in the field of Engineering, such as thermodynamics, hydraulic systems, and natural gas systems.

About two years ago, I was put in charge of the laboratories in the Physics Unit on the Be'er-Sheva Campus. This is a very interesting and challenging position, one which combines teaching Physics and giving instruction in the labs, as well as managing them - which entailed preparing experiments for their performance; instructing new coaches; and developing future experiments. The Physics labs are very important, since they enable familiarization with the laws of Physics, learning various measurement methods, and reaching the understanding that there is no ideal world - meaning that all measurements are imprecise in some way. Since 7 October 2023, and the call-up of many students to I.D.F. Reserves duty, I felt the need to facilitate their remedial studies [mastery of the material they had missed]. I began offering private lessons

to our Reservists, helping them complete their [mandatory] lab experiments. During the academic year of 5785 [2024/25], I was appointed as the "Reservists' Companion" in the Physics Unit. I really enjoyed that role and I was happy to combine my two jobs.

It's important to note the great support I received from the staff of the Physics Unit, always ready to lend a hand and help. Among them, there are a few volunteers who also help the Reservists to catch-up. I, too, grant private lessons, as much as I'm able. I feel it's my mission.

During vacations, I enjoy hiking in nature, especially in the mountains. In the winter, I go to ski with my family, and in the summer, I climb mountain paths, some especially challenging. I've been fortunate to have climbed two snowy mountains over 5,000 meters in height.

In addition to all this, mentored by Emeritus Prof. Avinoam Rabinovitch at BGU, I do scientific research on the crystallization process and structures of agates.



"Dream, believe, and taste a bit of everything. Always remember a big amile."

Remembering Liav Atiya

In cooperation with Netivei Israel, on the Be'er-Sheva Campus, SCE's Department of Civil Engineering held a two-day Hackathon in memory of Liav Atiya, who fell while fighting in the southern Gaza Strip in December 2023. This was the second Hackathon held in his memory, with 12 teams of fourth-year students participating, who had been his colleagues at SCE.

The challenge was devised and presented by people from Netivei Israel - to develop engineering solutions that will upgrade biking path infrastructures in Israel, thus promoting cycling as a means of daily

transportation, towards the reduction of traffic jams and in support of green transportation.

The contesting students were asked to combine their knowledge of management and construction

planning, while accompanied by mentors from Industry and Academia - builders and experts on bicycling paths, drainage and industrialized construction - with whom they might consult.

After two days of intensive work, four of the teams had made the final round. The final event was held in the presence of Liav's family, the other students, faculty members, and guests from Netivei Israel. The audience, which included Liav's mother, participated in the judging process.

Two teams won - Team no.5, that planned a bike path across a stream along an agricultural path, and Team

Remember



no.10, that planned a bike path above sewage conduits alongside a path. These two winning teams received significant monetary prizes. The Hackathon concluded with some words from Liav's mother, Rivka, in his memory.

Dr. Dagan Bakun-Mazor, Head of the Department of Civil Engineering: "It's always a great honor to welcome Liav's family here. We felt it was very important to hold a Hackathon this year, especially for the fourth-year students, Liav's classmates, right before they complete their degrees. These challenges express real needs arising from the field; and we thank our partners at Netivei Israel for the good and successful path we took together from the planning stage and throughout the event. The Hackathons at SCE, and particularly in the Civil Engineering Department, are an excellent way to prepare the students for the real world by encouraging creativity, excellence, and teamwork. I wish all the graduates of the class of 5785/(2024/25) success on their professional paths. May we all be worthy of Liav's memory!

"A legacy of love and giving": Rivka Atiya's words in memory of her son, Liav



"On the 25th day of Kislev 5784 (8 December 2023), the State of Israel lost Liav Atiya, who fell in battle in Khan Yunis. Liav, young, courageous, and determined, who was supposed to start his third year of Civil Engineering studies, paid the highest possible price in the struggle for Israel's security.

A lover of people and nature, Liav left his compassionate and sensitive mark on all who knew him. As it is written in the [Hebrew] Bible: "Love your fellow human as yourself" (Leviticus 19:18). Liav lived by that value every moment and left in his wake a legacy of love and giving. His memory will remain etched the hearts of his family, his partner (Hadar), his friends, and his comrades in arms. Our dream is for his legacy to accompany the coming generations for many years, serving as a source of inspiration and strength.

"We thank the Administration, the teams, and the crew from Netivei Israel, for their blessed efforts in Liav's memory. We aspire to carry Liav's legacy in our hearts all the way. This Hackathon, held at SCE for the second time, was meant to perpetuate Liav's memory by promoting innovative engineering enterprises that contribute to the transportation infrastructures in Israel and to encourage the use of green transportation."

The logo for Shamoan College of Engineering (SCE) is centered within a white diamond shape. The letters 'SCE' are rendered in a bold, white, stylized font. Below the letters, the full name 'SHAMOON COLLEGE OF ENGINEERING' is written in a smaller, white, sans-serif font. The background of the entire image is a dark teal gradient with a pattern of small, glowing teal dots that create a sense of depth and movement, resembling a starfield or a digital data stream. A large, faint pink diamond shape is also visible on the left side of the image, partially overlapping the white diamond.

SCE
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