## Sound-IT

SE-1-1

By: Kevyn Krancenblum; kevinkr@ac.sce.ac.il
Lior Liberov; liorli1@ac.sce.ac.il
Advisor: Dr. Natalia Vanetik
Shamoon College of Engineering, Beer-Sheva

High costs of composing and recording original music for films plague the entertainment industry. Sound-IT is a research project aimed at using artificial intelligence and computer vision to recognize emotions in videos and create music that fit those emotions. We created four models to determine the emotional tone of a video: facial expression recognition, background hue recognition, body emotion recognition, and lip reading. After that, a music that matches the detected emotion is generated. The initial results of the model are positive, with an 85% correlation between music and videos, based on feedback from 65 participants.
***Keywords:*** *action recognition, computer vision, emotion recognition, key points, music generation, RNN*

## GalLavi laser tattoo removal

SE-1-2

By: Yossi Abu; yossiabu6590@gmail.com
Mickey Vitkovsky; vimiki9@gmail.com
Advisor: Dr. Alexander Churkin
Shamoon College of Engineering, Beer-Sheva

Tattoos have been a part of human culture for thousands of years, but as the popularity of tattoos has increased, so has the demand for tattoo removal. The purpose of the project is to provide a friendly and convenient tattoo removal tool. The application shows the user the process and the method of treatment, accompanied by videos and photos, schedules meetings, and creates a visualization of the tattoo removal. The application will be available on Android, iOS, and web platforms.
***Keywords:*** *app, platform, tattoo, tattoo removal, visualization*

## Here app

SE-1-3

By: Omer Attias; omeratt1405@gmail.com
Eliran Ashtamker; ashtamker087@gmail.com
Advisor: Dr. Alexander Churkin
Shamoon College of Engineering, Beer-Sheva

Individuals diagnosed with ADHD often encounter difficulties with daily tasks, rendering timely completion challenging. To address this issue, we developed a unique application has been developed to support this population. This app enables users to structure their day by organizing their thoughts, managing and defining tasks, and setting reminders. Our principal objective is to raise awareness of attention and concentration disorders, mitigate social stigma, and empower users in achieving their goals. The challenges encountered in app development included obtaining Google's approval for calendar synchronization and developing the application for iOS devices.
***Keywords:*** *attention and hyperactivity disorders, awareness, calendar synchronization, empowerment, personalization, reminders, social stigma, task management, thought organization, time management*

## RememberMe

SE-1-4

By: Lin Dahan; lindahan164@gmail.com
Linoy Harush; linoyha93@gmail.com
Advisor: Dr. Alexander Churkin
Shamoon College of Engineering, Beer-Sheva

Loss and grief have always been a part of our lives. We commemorate of the lives of those dear to us in order to help us cope grief, ignoring the grieving process can lead to consequences such as despondency, deep depression and death. The project uses different psychological approaches to cope with grief and takes them into the digital world by using commemoration as a tool. The application allows users to go through the mourning process in a personalized way, by creating a commemorative profile and sharing it with people by scanning a QR code located on the graveside.
***Keywords:*** *application, commemoration, death, deceased, digital world, grave, grief, loss, mourning, psychological approaches*

## Hebrew text simplification using machine-learning

SE-1-5

By: Israel Avihail; israel.avihail@gmail.com
Maor Moav; maormo9876@gmail.com
Ariel Epshtein; ariel32168421@gmail.com
Advisors: Dr. Marina Litvak, Dr. Hadas Chassidim
Shamoon College of Engineering, Beer-Sheva

People with weak language skills, such as young children and the linguistically challenged, face difficulties reading complex text. The Hebrew language's rich morphology presents unique challenges when creating an Automatic Text Simplification system (ATSs). To tackle these challenges we present SimplHe, an ATSs that modifies Hebrew text to enhance readability and understandability by reducing complexity factors such as structure, length, and unfamiliar words using Machine Learning and Natural Language Processing. Our system achieved a 39.2 SARI score on a novel dataset. This system, implemented as a web plugin, may potentially aid people with language barriers.
***Keywords:*** *ATS, Hebrew, language model, NLP, summarization, text readability, text simplification*

## Machine-learning prediction for cancer patients' medication treatment

SE-1-6

By: Tal Ohana; taloh13@gmail.com
Advisors: Dr. Hadas Chassidim [1], Prof. Moshe Elkabats[2], Prof. Angel Porgador[2], Dr. Ofir Cohen[2]
[1]Shamoon College of Engineering, Beer-Sheva
[2]Ben Gurion University, Beer Sheva

Many efforts have been made over the last decade to enhance cancer treatment by utilizing novel biological tools in immunotherapy. Our goal is to develop a machine-learning system that can predict the efficacy of medication therapy for cancer patients. Preliminary data from the BGU lab (IcAR) was used, including cancer cell information, genetic sequencing, and other parameters. Computational examination of different models revealed a correlation in several number of cancer cells of 87% between IcAR functionality and gene expression, determining the best tool for predicting successful and targeted cancer therapy. This approach will bridge the medical-software divide and pave the way for future research.
***Keywords:*** *cancer treatment, computational analysis, drug therapy, future research, immunotherapy, machine learning, successful therapy, targeted therapy*

## BetterLife

SE-1-7

By: Elinor Tamar Elal; elinoel@ac.sce.ac.il
Moran Shalom; moransh2@ac.sce.ac.il
Advisors: Dr. Hadas Chassidim, Ms. Lina Lerner
Shamoon College of Engineering, Beer-Sheva

Anxiety and stress are prevalent in a society such as ours where success and achievement are highly valued. The limited availability and accessibility of specialists such as a psychologist, social worker, psychiatrist may make it difficult for people experiencing anxiety attacks and negatively affect daily functioning such as sleep problems, social isolation, and more. This project aims to provide real-time anxiety support using a dedicated application that connects individuals to anxiety specialists. The system will also provide instructional videos to help manage anxiety attacks and will provide feedback to help individuals improve the management of their anxiety symptoms.
***Keywords:*** *anxiety attack, instructional videos, psychiatrist, psychologist, social worker, stress*

## Data visualization using a 3D printer for visually impaired students

SE-1-8

By: Areen Abu Caf; areenab@ac.sce.ac.il
Adim Azbarga; adeemaz@ac.sce.ac.il
Advisors: Dr. Hadas Chassidim, Dr. Yochai Twitto
Shamoon College of Engineering, Beer-Sheva

Engineering faculties have a low number of visually impaired students, likely due to the difficulty of courses that include graphic elements. To address this, an application is being developed that can convert graphic data, such as decision trees and symbols, into 3D models for printing on any 3D printer. The system involves two users: printer owner and teacher. They can contact each other through the system and be updated when the print is ready. The illustration of the graphs in a 3D model allows visually impaired students to integrate into a variety of courses in a more accessible way.
***Keywords:*** *3D printer, blind students, conversion between files, data visualization, software engineering, STL files, visual impairments*

## Alzheimer's game therapy

SE-1-9

By: Yuval Efrat; yuvalef@ac.sce.ac.il
Yarden Tamar Hayut; yardenhayut1@gmail.com
Advisor: Dr. Yochai Twitto
Shamoon College of Engineering, Beer-Sheva

Alzheimer's disease is a neurological disorder affecting memory, thinking, and behavior. It is the most common cause of dementia in older adults. Although the causes are not fully understood, studies suggest that stimulating the brain daily can improve cognitive skills and reduce symptoms. To address this, we developed a game app using Flutter and Dart, hosted on Firebase, that contains three games focusing on memory, speed, and thinking skills. Patients can customize difficulty levels based on their progress, and the app provides information on managing the impact of Alzheimer's disease.

***Keywords:*** *Alzheimer's, cognitive skills, dementia, game app, older adults*

## Algorithm & data structure visualizer

SE-1-10

By: Evgeny Odinzov; eodinzov94@gmail.com
Ron Vayner; ronv.sce@gmail.com
Advisor: Dr. Irina Rabaev
Shamoon College of Engineering, Beer-Sheva

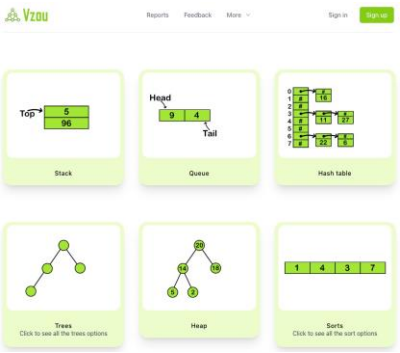
Algorithms and Data Structures are cornerstones of modern-day software development. They are essential for every developer's career and are often intricate and expansive in what they encompass. As such, they are often difficult to learn for newer students.
Our project aims to create an Algorithm Visualization for Data Structures program (AVDS) designed to make these subjects easier to learn by providing students with an interactive UI. AVDSes have been shown to improve the quality of teaching, making them essential in modern studies.

***Keywords:*** *algorithms, algorithm visualization for data structures (AVDS), computer science, data structures, development, learning, teaching, teaching aid, software, software engineering, visualization*

## Data structure and algorithms web simulator

SE-1-11

By: Yovel Aloni; yovelal@ac.sce.ac.il
Gil Ben Hamo; gilbe1@ ac.sce.ac.il
Advisor: Dr. Irina Rabaev
Shamoon College of Engineering, Beer-Sheva




Algorithms and data structures play a critical role in computer science and software engineering, but students often face difficulties in understanding them. Traditional teaching methods have their limitations, thus, more effective visual teaching techniques such as Algorithm Visualization (AV) have been developed. AV illustrates the algorithm's steps through transition effects and animations. We aim to develop an online AV tool to enhance teaching by utilizing animations, pseudocode, runtime information, and user interaction by controlling the input, speed, and steps of the animation. The data collected from the tool can be statistically analyzed to improve the learning experience.
***Keywords:*** *algorithms, algorithm visualization (AV), data structures, teaching methods, usage statistics, user interaction*

## Gender and age classification of handwriting images

SE-1-12

By: Tamar Aminov; tamaram@ac.sce.ac.il
Liran Smadja; liransm@ac.sce.ac.il
Advisors: Dr. Irina Rabaev, Dr. Marina Litvak
Shamoon College of Engineering, Beer-Sheva

Automated age and gender classification from handwriting images has several interesting applications, e.g., for forensic analysis. Recently, deep learning models has been used to analyse handwriting features to predict the age and gender of writers. However, variations in handwriting styles and lack of large, annotated datasets make classification challenging. Our project aims to evaluate the effectiveness of the state-of-the art deep learning models on benchmark datasets to assess their accuracy in classifying the age and gender of writers. We aim to contribute to the development of reliable and accurate techniques for age and gender classification from handwriting images.
***Keywords:*** *automated age and gender classification, deep learning, document image analysis, handwriting analysis*

## Writer identification in handwritten document images

SE-1-13

By: Hamad Abo Sbet; hamadab3@ac.sce.ac.il
Advisors: Dr. Irina Rabaev, Dr. Marina Litvak
Shamoon College of Engineering, Beer-Sheva

The problem of verifying the authorship of handwritten documents is important task in many fields ,e.g., criminology and historical research. This project tackles the writer verification problem using a neural network trained with various methods to enhance accuracy. We decided to use top-rank loss function for this task, coupled with few-shot learning, which has not been used for image identification before, our approach at the current scope wasn't that successful compared to other methods, we think that with reworking it with more thorough testing, we would understand its shortcoming and advantages but for now it's not an advancement.
***Keywords:*** *deep-learning network, document image analysis, few-shot- learning, handwriting analysis, top-rank, writer verification*

## WinGame

SE-1-14

By: Daniel Dahan; Danieda4@ac.sce.ac.il
Roni Jack Vituli; ronizvi@ac.sce.ac.il
Advisor: Dr. Karim Abu Affash
Shamoon College of Engineering, Beer-Sheva

The WinGame project is provides an intuitive and user-friendly platform for esports-games enthusiasts to predict results and bet, aiming to increase user engagement and create a more social gaiming experience. Currently, there are no accessible Israeli websites catering to this market, and navigating foreign sites can be challenging. To address this
gap, WinGame provides an online platform accessible through web browsers and mobile devices. The platform includes features like real-time gaming, live streaming, group betting, news updates, and social betting. WinGame's vision is to provide a secure and convenient site that transcends geographical limitations, connecting game enthusiasts worldwide and presenting the world of games to a wider audience.
***Keywords:*** *bet, esports-games enthusiasts, predict results, social gambling experience, WinGame project*

## More Than Food

SE-2-1

By: Haim Rubin; haimrubin1@gmail.com
Matan Fadida; fadida7@gmail.com
Advisor: Dr. Alexander Churkin
Shamoon College of Engineering, Beer-Sheva

Restaurants can use our application to allow their diners to open the restaurant menu with a QR code, read reviews and ratings on each dish, place an order directly to the kitchen and see the preparation status at any given moment and, at the end of the meal, to pay, receive a tip recommendation, and also divide the payment between the diners. Also, the application will help the staff manage the restaurant and allow the kitchen to receive orders in a pleasant and convenient way.

***Keywords:*** *food order, kitchen, management, menu, orders, payment, QR, rating, restaurants, review, service, tips, waiters*

## Skin disease AI

SE-2-2

By: Nadav Ishai; nadavis@ac.sce.ac.il
Dolev Peretz; peretpe@ ac.sce.ac.il
Advisors: Dr. Marina Litvak, Dr. Natalia Vanetik
Shamoon College of Engineering, Beer-Sheva

Dermatological issues are increasingly common in family clinic visits, and severe facial skin problems can have negative impacts on mental health. Dermatologists play a crucial role in accurately diagnosing skin conditions since accurate diagnosis is essential for successful treatment outcomes. To address this concern, we aim to create a system utilizing machine learning and image processing analysis to automatically diagnose skin diseases. We created a large image dataset for six skin lesion types, then trained and evaluated up to 40 models on this dataset. Our best model achieves 87% accuracy and provides website links explaining the detected lesion type through a user-friendly interface.

***Keywords:*** *CNN, computer vision, image processing, machine-learning, skin disease*

## Automatic detection of privacy violations in GitHub projects

SE-2-3

By: Tomer Ben Shimol; tomerbe3@ac.sce.ac.il
Eliyahu Amuyev; eliam2@ac.sce.ac.il
Advisors: Dr. Marina Litvak[1] , Ms. Jenny Guber[2]
[1]Shamoon College of Engineering, Beer-Sheva
[2]University of Haifa

Privacy violations occur when personal information is accessed or used without consent and detecting them is important to prevent harm and protect privacy. In this project, we trained machine-learning models that can accurately classify issues related to privacy violations. We collected and annotated a new dataset of issues reported in GitHub projects. Then, we experimented with different text representation and classification models like Support vector machine, eXtreme Gradient Booster, etc. and evaluated their accuracy on our dataset. Our findings can assist GitHub users in managing privacy issues more effectively. An accurate classification could enhance trust and help protect sensitive information, benefitting social media and software development collaboration platforms.
***Keywords:*** *classification, privacy, privacy violations*

## Information hiding in an image

SE-2-4

By: Haiel Dahan; haiel12345@gmail.com
Yakir Ovadia; yakirov@ac.sce.ac.il
Advisor: Dr. Michael Kiperberg
Shamoon College of Engineering, Beer-Sheva

The rise of technological innovation and digitalization has led to an increase in data transfer. As a result, information security has become critical. Steganography is one of the techniques used to secure information by hiding confidential data in digital media. However, software like StegExpose can reveal such information, leading to security risks. The project aims to develop a new steganographic method that can identify the most suitable areas, pixels, and bits in digital images for hiding information, making it more secure than existing methods. Our solution will prevent successful steganalysis and disclosure of secret information.
***Keywords:*** *LSB-Steganography, steganlysis, steganography, StegExpose, stego-image*

## Social interface between students and the elderly

SE-2-5

By: Ziv Abutbul; zivabutbul94@gmail.com
Omer Ben David; gunr121@gmail.com
Advisor: Dr. Hadas Chassidim
Shamoon College of Engineering, Beer-Sheva

The aim of GoldMan is to mitigate the problem of loneliness among the elderly. Loneliness is a persistent and prevalent negative emotion that can lead to depression and suicide. The application offers a simple and accessible interface through which elderly people can create social connections with students. The ability to meet younger people increases the likelihood that the elderly will feel valued, and their knowledge and experience will be appreciated. Older adults can search for students in their vicinity who share their interests in order to develop friendly relationships, while students can use their free time to connect with older adults.
***Keywords:*** *depression, elderly, friendly relationships, GoldMan, interests, loneliness, older adults, social connections, students, suicide*

## Gluc Safe

SE-2-6

By: Maxim Shapira; itsjustmax9@gmail.com
Tali Tevlin; tali19te@gmail.com
Advisor: Mrs. Svetlana Rosin
Shamoon College of Engineering, Beer-Sheva

Gluc Safe is an application developed using Flutter and Firebase designed to help individuals with type 1 diabetes manage their glucose levels effectively. The app allows users to track their glucose levels, set medication reminders, and log meals. With an intuitive user interface and visual representations of glucose data through graphs and charts, Gluc Safe enables users to understand the impact of food and medication on their glucose levels. Additionally, users can export their glucose levels data for analysis and sharing with healthcare providers. Gluc Safe is a comprehensive tool that empowers individuals to take control of their diabetes management.
***Keywords:*** *diabetes, Firebase, Flutter, glucose, health, medications, tracking*

## Cleany

SE-2-7

By: Andrey Ruch; andreru@ac.sce.ac.il
Elad Yehuda; eladye2@ac.sce.ac.il
Advisor: Mrs. Svetlana Rosin
Shamoon College of Engineering, Beer-Sheva

Cleanliness and order are crucial for a high quality of life, but finding cleaning staff is a tedious process. The methods for finding work or employees in this field are outdated and based on luck or it's a matter of whether you know someone or not. "Cleany" connects employers and cleaners in a focused way. The interface will allow an equal search process for both sides, providing solutions for finding workers for both short-notice jobs and longer-term duties.
***Keywords:*** *cleanliness, order, web application*

## My Dentist

SE-2-8

By: Itzhak Rahamim; rahamit@ac.sce.ac.il
Chen Kachlon; chenka@ac.sce.ac.il
Advisor: Mrs. Svetlana Rosin
Shamoon College of Engineering, Beer-Sheva

The need for, and dependence on, computerized systems that will improve medical services is increasing over time. The goal of this project is to provide an efficient tool for managing dental clinics while consolidating all the operations needed for dentists in a single application which is supported on web, iOS, and Android platforms. The project ensures that every operation is secure and intuitive for the dentist. It is designed for the private market and will enable management of employees, patient files, financial operations, schedules, and treatments. This way, we will optimize the clinic's services and the quality of its service.
***Keywords:*** *clinic, dentist, doctor, health, management, teeth, treatment*

## CarRace

SE-2-9

By: Alon Teplitsky; alon.ttp@gmail.com
Sagi Biran; sagibit@gmail.com
Advisor: Mrs. Alona Kutsyy
Shamoon College of Engineering, Beer-Sheva

Our project aims to address the challenges faced by the Israeli automobile industry by developing a comprehensive Business Intelligence (BI) system. Currently, the industry lacks a reliable system to collect, store, and analyze large amounts of data from various sources. By implementing our BI system, companies and individuals can gain actionable insights that improve decision-making and competitiveness. The importance of digital transformation in the auto industry has been highlighted in the literature, and our project addresses this need for integration, user training, and adoption. Although we have observed efficiency and innovation, further research is needed to validate our findings

***Keywords:*** *actionable insights, adoption, automobile industry, business intelligence, competitiveness, decision-making, efficiency, innovation, integration, user training*

## Application for secure/encrypted chat

SE-2-10

By: Abed Jamal; abedgm@ac.sce.ac.il
Morad Teaha; moradte@ac.sce.ac.il
Advisor: Mrs. Alona Kutsyy
Shamoon College of Engineering, Beer-Sheva

In the last decade, there were new Chat applications on the market, but accompanying this growth, security became a major concern. People became more concerned about their privacy and with rumors that big companies were tracking their user' activity. To address this issues, we developed our application "Secret Chat" which uses advanced encryption security "AES" to encrypt users' data on it's way to the receiving device. We save all the keys inside the user device rather than on the server and we provide all the API needed for the best user experience.

***Keywords:*** *chat, data security, encryption, end2end, privacy*

## Digital payment application - EasyPay

SE-2-11

By: Shani Melihov; shanibo@ac.sce.ac.il
Linoy Cohen; linoyco@ac.sce.ac.il
Advisor: Mrs. Alona Kutsyy
Shamoon College of Engineering, Beer-Sheva

Today, many payment applications exist to simplify the process of making payments/transferring funds. This has become increasingly popular and has led to widespread adoption by business owners and costumers. However, those without smart devices cannot use these apps. To address this, we developed a web application accessible via any device with internet access. It functions similarly to PayPal, with added features such as creating a secure personal account, transferring/receiving payments from businesses/people, adding up to three credit cards securely, updating personal information, and viewing the last five transactions. Additionally, the application allows actions through NFC, including flexible foreign currency conversion.
***Keywords:*** *digital payment, foreign exchange, NFC chip, Paypal, web application*

## FiTrivia

SE-2-12

By: Shay Weitzman; shaywe@ac.sce.ac.il
Yinon Hadad; yinonyi@ac.sce.ac.il
Advisor: Dr. Irina Rabaev
Shamoon College of Engineering, Beer-Sheva


"FiTrivia" is a cross-platform mobile application that combines trivia questions with physical exercise. Users must perform various exercises, such as squats or push-ups, to answer multiple-choice questions. A machine learning model gets the user's stream video as input, then determines whether the exercise is completed and the duration of the exercise, to award points based on answer accuracy and exercise length. The app aims to encourage users to stay engaged with interactive learning while promoting a healthier lifestyle. Key features include machine learning, exercise tracking, and the gamification of exercise.
***Keywords***: computer vision, cross-training, health and wellness, interactive learning, machine-learning, mobile app, multiple-choice questions, personal fitness, physical activity

## Mock MRI software

SE-2-13

By: Lev Alhazov; leval1@ac.sce.ac.il
Shlomo Shnur; shlomsh7@ac.sce.ac.il
Advisors: Dr. Irina Rabaev, Dr. Hadas Chassidim
Shamoon College of Engineering, Beer-Sheva
In collaboration with the pediatric department of Soroka Hospital, Beer-Sheva

Magnetic Resonance Imaging (MRI) is a non-invasive diagnostic technique that uses strong magnetic fields and radio waves to create detailed images of internal body structures, including in children. However, children often move during scans and may require sedation, which can be costly and risky. Our project aims to improve pre-MRI training efficiency and accuracy by utilizing Farneback's optical flow algorithm for motion detection. This will enable users to detect small movements during scans and help instructors better teach children how to behave during scans, leading to better outcomes in pediatric MRI scans while reducing costs and health risks.

***Keywords***: accuracy, computer vision, cost reduction, efficiency, Farneback, GUI, magnetic resonance imaging (MRI), mock MRI, motion artifacts, motion detection, optical flow, pre-MRI training, risk reduction

## Plant classification

SE-2-14

By: Fadi Amon; fadiam@ac.sce.ac.il
Rasheed Abu Mdegem; rasheab1@ac.sce.ac.il
Advisors: Dr. Irina Rabaev, Dr. Marina Litvak
Shamoon College of Engineering, Beer-Sheva

Identifying rare desert plants remains challenging due to the unavailability of large datasets of rare species. As of today, classical deep-learning models require a lot of training data. To address this issue, this project aims to develop a plant classifier using a Neural Network model using the Few-Shot Learning (FSL) method. FSL is particularly known for its effectiveness on small datasets, hence we employed it here to train the neural network on a small dataset of rare plants, resulting in high classification accuracy for these elusive plants.

***Keywords:*** *Few-Shot Learning (FSL), neural network, plant classification, rare desert plants, small database*

## Bsitter

SE-3-1

By: Mali Bartal; malibartal@gmail.com
Advisor: Dr. Alexander Churkin
Shamoon College of Engineering, Be'er-Sheva

In recent years, searching for jobs via social networks has become common since it allows people to do so easily at any time.
The aim of this project is to create a social network connecting babysitters and customers. In the application, there is a database of customers and babysitters which can be mapped by filtering fields including: location, fee, and availability. There is a chat function to provide communication between customers and babysitters. Also, it is possible to see reviews of a babysitter and thus assess the quality of the service they provide.
***Keywords:*** *babysitting, chat, job search, social network, the stable marriage problem*

## EasyCook mobile application

SE-3-2

By: Liron Himbert; lironbenharrouch@gmail.com
Udi Elbaz; juadh006@gmail.com
Advisor: Dr. Irina Rabaev
Shamoon College of Engineering, Beer-Sheva

EasyCook is a smart device application designed to help you make the most out of the food products you have at home. By utilizing an API database of food products, the app helps you create a personal pantry and search for recipes based on its contents. With features like an OCR algorithm for adding products through receipt pictures and an intuitive interface for recipe creation, EasyCook is an all-in-one solution for reducing food waste, saving time and money, and promoting healthy eating habits. The result is an app that makes cooking fun and easy.
***Keywords:*** *API, cooking, food management, mobile application, OCR, pantry, recipes*

## FunPun

SE-3-3

By: Boaz Bitton; Boaz2119@gmail.com
Matan Ben Ishay; Matan12333445@gmail.com
Advisor: Dr. Karim Abu Affash
Shamoon College of Engineering, Beer-Sheva

English is a vital language taught in many schools worldwide, but students of varying ages in Israel often struggle due to limited vocabulary. This project addresses this issue by implementing an innovative teaching method focused on memory associations. Research indicates that traditional teaching methods which mainly include books and boards are ineffective for modern learners, making this approach essential. The unique process that relies on puns aims to enhance vocabulary acquisition and memory retention, leading to higher test scores and increased speaking confidence. The ultimate goal is to help students communicate more effectively in English, a skill essential in today's global society.
***Keywords:*** *association, English, innovative teaching method, positive reinforcement, vocabulary*

## Workers community

SE-3-4

By: Shahd Alnaami; shahdal@ac.sce.ac.il
Advisor: Dr. Karim Abu Affash
Shamoon College of Engineering, Beer-Sheva

Finding reliable skilled workers for small jobs is a challenge. The Worker's community project is a local mobile application that provides a platform for skilled workers to showcase their work, reach more customers, and earn additional income. The app's location-based feature enables users to quickly find workers who are nearby and available to complete the job as soon as possible. The app is ideal for people who know about repairing things such as electrical appliances or painting walls, and who are looking for job opportunities.
***Keywords:*** *customers, income, job opportunities, mobile application, skilled workers, workers community*

## Sudoku - Think Better

SE-3-5

By: Israa Qweder; israaqw@ac.sce.ac.il
Ranin Abu Jaafar; raninab@ac.sce.ac.il
Rawan Afinsh; rawanaf@ac.sce.ac.il
Advisor: Dr. Yochai Twitto
Shamoon College of Engineering, Beer-Sheva

Sudoku is a popular game that requires a solution whilst taking constraints into account. Sometimes a player stops playing before finishing a game due to the difficulty of the board. We present a sudoku app that includes hints, based on an SAT optimization algorithm, that allows us to guide players if they have difficulty solving the problem. In doing so, we encourage the player to complete the puzzle without looking at the full solution. The project was developed using the React Native JavaScript programming language in the Visual Studio Code workspace and Firebase as a database in Android Studio.
***Keywords:*** *gameplay, optimization, SAT, Sudoku*

## A new dataset for automatic recognition of complex sentences in Hebrew texts

SE-3-6

By: Shira Malka; shirma3@ac.sce.ac.il
Ron Bar Zvi; ron.bzeve@gmail.com
Advisors: Dr. Natalia Vanetik, Dr. Marina Litvak
Shamoon College of Engineering, Beer-Sheva

State institution websites are usually written with elevated Hebrew language, which can cause reading and comprehension issues, especially for disadvantaged groups such as immigrants, the elderly and people with intellectual disabilities. Sentence simplification aims to modify a sentence in order to make it easier to comprehend. Since Hebrew is a low-resourced language, we built our own dataset comprising of 1000 sentences collected from governmental websites and annotated with binary labels related to sentence complexity. This dataset can be employed in the future for training machine learning models for automatic detection of complex sentences. We reached 0.4 Kappa score agreement on sentence complexity labels.
***Keywords:*** *Hebrew, machine-learning, natural language processing, sentence simplification, text simplifier*

## Find4MyCar

SE-3-7

By: Bahjat Nsasra; bahjans@ac.sce.ac.il
Advisor: Dr. Alexander Churkin
Shamoon College of Engineering, Beer-Sheva

Car breakdowns are normal, and it is not possible to predict when or where a breakdown will occur. The problem is the lack of information and the difficulty of searching for a suitable tow truck company for the current type of car, close to the location of the breakdown.A similar problem can arise when searching for a suitable garage for a defect that occurred with the car. The Find4MyCar application searches for towing companies or garages closest to user's location, taking into account the vehicle type, types and availability of towing vehicles, and the type of malfunction.
***Keywords:*** *car breakdowns, garage search, location, towing company search, vehicle types*

## Buy Investment

SE-3-8

By: Ofir Golan; ofirgo@ac.sce.ac.il
Gabriel Levin; gabrile@ac.sce.ac.il
Advisor: Dr. Alexander Churkin
Shamoon College of Engineering, Beer-Sheva

In recent years, inflation has been rising annually, causing money saved in the bank to lose value without investment. However, many people are not familiar with the world of investment, and some are afraid to invest their personal funds without adequate knowledge. Additionally, there has been a significant increase in online shopping. The aim of this project is to bridge the gap between the stock market and online shopping, encouraging users to invest as part of their daily routine. The application will enable users to invest a percentage of their online purchases in stocks and monitor their investments. By investing small amounts in Plus500, users can make a secure investment and watch their revenues grow over time. Alternatively, for those willing to take risks and keep up-to-date with market news, investing in shares of a fast-growing company may yield even greater returns.
***Keywords:*** *inflation, investment, shopping, stocks, stock market*

## Chibis & Dungeons

SE-3-9

By: Tal Shaked; talsh16@ac.sce.ac.il
Rafael Azriaiev; rafaeaz@ac.sce.ac.il
Advisor: Mrs. Alona Kutsyy
Shamoon College of Engineering, Beer-Sheva

The mobile gaming market often struggles with efficient in-game item transactions. The auction house system addresses this issue using an implementation of it in a mobile RPG Chibis & Dungeons, allowing players to trade items effortlessly, creating a seamless experience. In addition to providing a fun game, the auction house system is designed as a DLL for integration into other mobile games. This enables developers to easily incorporate the feature, fostering new levels of interactivity and excitement for players. By offering this innovative solution, our aim is to revolutionize the gaming landscape, opening doors for developers to craft distinctive experiences while enhancing player enjoyment.
***Keywords:*** *auction house, DLL, game development, gaming, mobile application, RPG, trading*

## Quite-Waves

SE-3-10

By: Israel Hen; israelhen153@gmail.com
Avigdor Tolidano; avigtoli1991@gmail.com
Advisor: Mrs. Alona Kutsyy
Shamoon College of Engineering, Beer-Sheva

To address the wide range of IoT devices, we have developed a framework that focuses on finding security vulnerabilities in IoT, specifically network cameras. Our goal is to encourage manufacturers and developers to proactively address security issues in IoT devices. Our framework provides a user-friendly and plug-in additions to enhance testing robustness such as web camera stream testing. By targeting potential vulnerabilities such as default/weak passwords in network cameras, we wish to inspire further research and development of more robust security protocols for IoT devices. In order to increase consumers trust in this technology.
***Keywords:*** *awareness, Bluetooth, cameras, IoT, proactive security, vulnerabilities, Wi-Fi*

## Hiding data in executables

SE-3-11

By: Daniel Arbiv; daniear2@ac.sce.ac.il
Advisor: Dr. Michael Kiperberg
Shamoon College of Engineering, Beer-Sheva

This project implements a steganography technique for hiding binary data within an executable file. The program can encode binary data within the file without altering its functionality by replacing assembly instructions with equivalent ones according to a binary input. This approach provides a secure and efficient way to transfer sensitive data within existing files without detection. Additionally, using steganography techniques adds an extra layer of security by hiding the existence of the data. This project combines the principles of assembly programming, binary manipulation, and steganography to provide a unique and effective data-hiding solution.
***Keywords:*** *assembly instructions, binary data, binary manipulation, data hiding, executable, steganography*

## Do Not Copy

SE-3-12

By: Tal Ohayon; taloh2@ac.sce.ac.il
Refael Robinov; refarob@ac.sce.ac.il
Advisor: Dr. Michael Kiperberg
Shamoon College of Engineering, Beer-Sheva

This project aims to deal with academic misconduct, especially copying from other students, through an innovative test administration system. A personalized exam form is created for each student using a unique algorithm based on the lecturer's exam prototype, which reduces the potential for copying. The software automates the answering and grading process, optimizing the testing process and reducing human error, there is no human involvement. The system operates in two stages: issuing a unique exam form after reading the student's ID card and recording the response to a comprehension question. The goal is to increase academic integrity by introducing individual exams to students, ultimately reducing cheating during exams.
***Keywords:*** *computerized exam, copying, dishonesty, illegal tools, student ID card, testing process*

## Eat&Fit

SE-3-13

By: Viktorya Hlustov; vickyhl@ac.sce.ac.il
Yuval Avitan; yuvalav1@ac.sce.il
Advisors: Dr. Michael Kiperberg, Alex Veksler
Shamoon College of Engineering, Beer-Sheva

In recent years, awareness of fitness, nutrition, and global obesity has increased. Many studies provide information and tools for health improvement. After the long-term effects of the coronavirus epidemic, there is a need for solutions for a healthy lifestyle. The target audience of our website, "Eat&Fit," is people interested in weight loss/weight maintenance. The project aims to encourage people to adopt a healthy lifestyle. Measures of success in our project are people achieving their goals and maintaining a healthy lifestyle.
***Keywords:*** *calories, diet, fitness, healthy lifestyle, nutrition, nutrition menus, success indicators, the coronavirus epidemic*

## ScheduleME

SE-3-14

By: Netanel Menashe Barel; netanelbarel75@gmail.com
Yahav Barel Berkovich; yahav2811@gmail.com
Advisor: Dr. Michael Kiperberg
Shamoon College of Engineering, Beer-Sheva

ScheduleMe is a web application that simplifies event scheduling. It uses advanced algorithms and flexible customization options to automatically generate optimized schedules that meet users' constraints and preferences. Users can input their desired parameters, such as date ranges, time windows, and participant availability, and the app will create a schedule that fits their requirements. The app also offers real-time collaboration tools and integrates with popular calendar platforms such as Google Calendar and Outlook. With ScheduleMe, users can streamline their event planning process and reduce stress by automating scheduling tasks, whether they are planning a conference, a meeting, or a social event.


***Keywords:*** *constraints optimization, event scheduling, web application*

## Easy Kitchen

SE-4-1

By: Somaa Altory; alturso@ac.sce.ac.il
Tmeem Nsasra; tmeemns@ac.sce.ac.il
Advisor: Dr. Irina Rabaev
Shamoon College of Engineering, Beer-Sheva

Have you ever struggled to come up with meal ideas despite having a fully stocked pantry? Our app is here to help. With features like pantry management (add/delete recipes), the ability to mark recipes as favorites, a huge ingredients database, and the option to add ingredients using barcodes, our application makes cooking quicker, easier, and more convenient. Users can browse recipes, search by category, and filter recipes based on available ingredients. You never need to worry about your food expiration date as you will be notified. Say goodbye to kitchen stress and hello to delicious meals with our app. ***Keywords:*** *firebase, kitchen aid, mobile app, pantry management, recipes*

## Spy-Touch

SE-4-2

By: Sergey Glotov; sergegl@ac.sce.ac.il
Vladislav Charny; vlad.charny@gmail.com
Advisor: Dr. Michael Kiperberg
Shamoon College of Engineering, Beer-Sheva

Today, messaging applications are widespread, but their services need higher levels of security. Spy-Touch is a messaging app designed to provide users with a highly secure and private communication platform. The app includes various features to help maintain confidentiality and privacy, such as end-to-end encryption and disappearing messages. One of the standout features of Spy-Touch is the ability to hide it from the phone screen for added privacy. The app is designed to focus on security, ensuring that users can communicate freely without fearing their private information being compromised.
***Keywords:*** *communicate, encryption, privacy, secured*

## E-Commerce website

SE-4-3

By: Wasem Jbaren; wasemjbaren@gmail.com
Advisor: Dr. Michael Kiperberg
Shamoon College of Engineering, Beer-Sheva

The site is intended for buying and assembling computers. The site is divided into categories and manufacturers. Each category includes products for purchase. In addition, the site provides a cart that allows customers to collect the products they want to buy. Users can pay for their products using a credit card with the option of receiving a delivery service. The site will provide the customers with all computer products in an efficient way while assisting the customer with a novel method of computer assembly.
***Keywords:*** *credit card, e-commerce, PC, website*

## EasyPark

SE-4-4

By: Yosef Haimjan; yosefha4@ac.sce.ac.il
Shalev Gabay; Shalega@ac.sce.ac.il
Advisor: Dr. Michael Kiperberg

In today's world, finding a open parking spot has become a major concern for car owners as the number of vehicles on the roads continues to increase, leading to a shortage of parking spaces. To address this challenge, our final project focuses on the development of a user-friendly application that enables car owners to locate and share available parking spaces. The primary goal of this project is to provide a convenient solution that not only optimizes the utilization of parking spaces but also promotes healthy competition in the market while allowing users to generate additional income.
***Keywords:*** *additional income, application, parking solutions, quality of life, sharing parking, supply and demand, user experience, vehicle*

## Telecar Chatbot

SE-4-5

By: Shaked Turgeman; shakedtls@gmail.com
Anton Finkelshtien; antonfin1902@gmail.com
Advisor: Mrs. Alona Kutsyy
Shamoon College of Engineering, Beer-Sheva

Due to the high price the demand for home electric charging, it is not possible for all users to purchase elecric cars. The "Telecar" project uses a simple Chatbot interface to connect potential drivers to cars owners'. Today. the uses of Chatbot apps are very common in many big companies. Telegram is a popular and secure application, with all communication end to end encrypted. After a first sign-in, The Tele-Car bot allows users to set a schedule for car lease, publish posts and search for existing "car-on-demand" posts according to some parameters by the user choise.

***Keywords:*** *chatbot paging simple GUI, object-relational mapping, telegram API, telegram bot*

## Ideal Body

SE-4-6

By: Eytan Babaev; eytanba@ac.sce.ac.il
Yuval Varshavski; yuvalvarshevsky@gmail.com
Advisor: Ms. Victoria Brayman
Shamoon College of Engineering, Beer-Sheva

“Ideal Body” is an application that helps users track their progress in losing weight and to reach their ideal weight. The application offers a variety of tools that will help them achieve their goals, such as daily monitoring of calorie intake and expenditure, monitoring the amount of water drunk per day, monitoring of weight loss progress, and various training and nutrition programs . The app is user-friendly and easy to use , and helps users to create a healthy lifestyle that works for them, helps them to stay on track and reach their ideal weight.

***Keywords:*** *fitness, health, healthy lifestyle, motivation, nutrition, weight loss*

## The security of NFT platform

SE-4-7

By: Michael Shveynfurt; mihaish@ac.sc.ac.il
Artiomm Bodilovski; artiobo@ac.sce.ac.il
Anna Shveynfurt; rabynan@ac.sce.ac.il
Advisor: Mrs. Alona Kytsyy
Shamoon College of Engineering, Beer-Sheva

NFTs decentralized digital signature certificates of ownership for virtual/physical assets. Anyone can develop and trade them, anything can be an NFT. They have become very popular but the technology behind them is complex, leading to security issues that can cause informational and financial losses. In our project, we will research the veracity of security issues involved in the creation of NFTs and all technologies behind them such as blockchain and smart contracts. The purpose of the project is to research and find a solution to the security problem embedded in NFTs and their creation.
***Keywords:*** *blockchain, new technologies, NFT, security, smart contracts, WEB 3*

## The Mexican game

SE-4-8

By: Ilan Malka; ilanma@ac.sce.ac.il
Tal Mimouni; talmi2@ac.sce.ac.il
Advisor: Dr. Karim Abu Affash
Shamoon College of Engineering, Beer-Sheva

One of the consequences of confinement due to COVID-19 has been a sharp increase in the demand of mobile games. Our project is a game in Android application format, inspired by a real game played with a pair of dice and an object used to hide them. It is possible to play it locally on one smartphone with several friends, the goal being to be the last remaining player on the board by trapping your opponents.
The game is easy to use and accessible to everyone. The purpose of this application is to have fun with friends, while thinking and working on your ability to develop strategies.
***Keywords:*** *android, application, dice, fun, game, strategy*

## Interactive Class

SE-4-9

By: Adan Rwashdi; adanrw@ac.sce.ac.il
Advisor: Dr. Yochai Twitto
Shamoon College of Engineering, Beer-Sheva

Effective communication within the educational environment is crucial for student success. The Interactive Classroom App addresses this need by providing a platform that facilitates real-time collaboration and knowledge sharing between students. The app aims to foster an open learning environment where students feel comfortable seeking clarification and actively participating in discussions. By enabling students to review, rate, and comment on questions posted by their peers, the app promotes collaborative learning. Moreover, it enables lecturers to gain valuable insights into class performance. The Interactive Classroom App has the potential to enhance student outcomes and promote a deeper understanding of course material.
***Keywords:*** *cooperative learning, interactive learning environment, interactive questions, statistical class data, tracking understanding levels*

## Nov-ill

SE-4-10

By: Lyale Azbarka; lyaleaz@ac.sce.ac.il
Mohammed Assad; mohamas1@ac.sce.ac.il
Advisor: Dr. Yochai Twitto
Shamoon College of Engineering, Beer-Sheva

Nov-ill is a digital store app for private pharmacies, enabling them to deliver their products through a digital interface. The system aims to provide customers with easy access to private pharmacy products. Patients can upload a prescription and the medications are delivered to their homes. The project aims to improve the availability of medication and enable private pharmacies to save on operating costs and digital marketing. Additionally, the app increases sales by improving the availability of products to customers, thereby increasing revenue. It also promotes competition by enabling private pharmacies to enter the digital market and compete with big pharmacies.
***Keywords:*** *availability of medicines, digital interface, digital market competition, digital store application, private pharmacies, sales volume, savings in operating costs and digital marketing*

## DARNA

SE-4-11

By: Ahmed Alshafaee; ahmedal1@ac.sce.ac.il
Arkan Abo Shheta; arkanab@ac.sce.ac.il
Advisor: Dr. Karim Abu Affash
Shamoon College of Engineering, Beer-Sheva

The DARNA app is a social platform for property management that enables building managers to efficiently manage their properties with a focus on the needs of tenants and renters. The app provides a convenient mobile interface for communication with tenants. Features include collaboration, reminders, expense tracking, fault management, and more to provide value to customers and improve the work of building management representatives.
***Keywords:*** *DARNA, landlord, payment reminders, tenants, viewing expenses*

## Easy beasy

SE-4-12

By: Sujood Eldda; sujood.eldda@gmail.com
Arin Alnbary; arinalnbary@gmail.com
Advisor: Dr. Karim Abu Affash
Shamoon College of Engineering, Beer-Sheva

Customers spend much time in supermarkets trying to locate the exact locations of desired products. When a food chain offers online purchasing services, the time to pick up the products becomes supercritical. The project aims to make the physical shopping experience more efficient. The system will allow customers to locate products they want and guide them to each product's location in the supermarket while using barcode scanning that allows for more functionality and payment without waiting in line, which will streamline the buying process.
***Keywords:*** *navigation, payment, QR code, scanning, supermarket, time utilization*

## GO-HSTT

SE-4-13

By: Salem Guda; salemgu@ac.sce.ac.il
Samer Elkrinawi; samerel@ac.sce.ac.il
Advisor: Dr. Yochai Twitto
Shamoon College of Engineering, Beer-Sheva

Building a timetable for high schools is a global problem for educational institutions. Managing these systems on an ongoing basis is another challenge. The problem consists of resources and constraints. The resources include teachers, study hours, study rooms, study subjects, and more. The constraints include time constraints, room availability, and availability of teachers. The GO-HSTT app allows administrators to build a timetable considering resources, constraints, and other requirements. The application contributes to the efficiency of the utilization of the study rooms; the teachers' time; and the time used in planning, building, and upgrading the school timetable by the school administrators.
***Keywords:*** *constraints handling, efficient resources utilization, high school timetable, resource placement*

## MyBaby

SE-4-14

By: Eden Barsheshet; edenba2@ac.sce.ac.il
Advisor: Mrs. Victoria Breiman
Shamoon College of Engineering, Beer-Sheva

As a result of global inflation and increasing prices, supermarkets and drugstores are reporting an increase in the number of thefts of baby food products. In parallel, non-profit organizations are receiving more requests from parents who are in financial distress.
"A father spent a whole night in detention after he stole food for his baby from Super-Pharm(drugstores) in the city where he lives".
The aim of this project is to establish a place where parents can give basic baby products to other parents who are unable to purchase them due to their socioeconomic situation.

***Keywords:*** *basic baby products, inflation, non-profit organization*

# Stuck service

SE-4-15

By: Osama Khawaled; osamakh@ac.sce.ac.il
Mohammed Abbas; mohamab38@ac.sce.ac.il
Advisors: Mrs. Victoria Brayman[1], Prof. Ayala Bitan[2], Dr. Yona Fridman[2],
[1]Shamoon College of Engineering, Beer-Sheva
[2]"Filtuna" Factory, Beer-Sheva

Stuck Service is a software application that provides a reliable and fast roadside assistance service to people whose cars are stuck on the street due to issues such as flat tires or energy loss ...etc. The app dispatches helpers with ability to assist with the problem in every possible way like electricity help, pushing car ...etc, and users can track the status of their requests in real-time and rate service providers based on the quality of service received. Stuck Service also offers an income opportunity to helpers by providing the service in exchange for money. Overall, Stuck Service is an excellent choice for anyone in need of roadside assistance.

***Keywords:*** *energy loss, flat tires, income opportunity, rating system, roadside assistance, stuck service*