

Guide to Poster Session

September 12, 16:00

KIU, K Block, 2nd Floor

On September 12th at 16:00, Kutaisi International University (KIU) hosts the Poster Session organized in the framework of the Georgian-German Science Bridge (GGSB). The aim of the workshop is to bring together worldwide experts from the accelerator groups, medical physicists and physicians, life science and technology from various international partners to summarize achievements in the field and to initiate discussions on further scientific and technological cooperation between the two countries. The Georgian-German Science Bridge (GGSB) comprises 3 pillars: (i) Education, (ii) Research, and (iii) Knowledge transfer. More details of the event can be found on the [link](#).

Posters will be presented by the bachelor, master and doctoral students from the following universities:

- Agricultural University of Georgia (AUG)
- Georgian Technical University (GTU)
- Iv. Javakhishvili Tbilisi State University (TSU)
- Kutaisi International University (KIU)

There are 5 project categories represented during the session:

- Research Projects
- Visual Math Fest 2021
- Visual Math Fest 2022
- Summer Projects
- Curriculum on Display: Final Exam Projects
 - Business Related ICT Projects
 - Game Development Projects

The participants of AUG, GTU, TSU, and KIU will display their posters from Research Project Category.

KIU students will additionally present the other 4 project categories.

Visual Math Fest project ideas are developed by the students themselves, who worked on the implementation of their ideas in groups. The projects represented during the workshop are the finalists of the festival.

Summer Projects are the result of the 4-week contribution of students during the summer 2022.

Business Related ICT projects and Game Development Projects are the products of final examination under the academic courses during the Spring 2022 semester.

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I. Research Projects

M. Abuladze^{2,3}, R. Hetzel¹, L. Kankadze³,
J. Kasper¹, R. Shanidze³, A. Stahl¹.

¹ RWTH Aachen University - Physics Institute III B, Aachen, Germany

² Ivane Javakhishvili Tbilisi State University - Faculty of Physics, Tbilisi, Georgia

³ Kutaisi International University, Kutaisi, Georgia

Simulations for proton therapy at Kutaisi International University

Abstract

In this poster, we present two main simulation tools: Geant4 and matRAD which are widely used in the proton therapy.

The advantage of this type of treatment is a highly conformal dose deposition due to the presence of the Bragg peak. It is often required to irradiate the tumor volume with a precision better than 1 - 2 mm, which means that proton therapy needs not only precise treatment planning but also monitoring and proton range verification during the treatment. One way to monitor the proton range is Prompt Gamma Imaging (PGI) which means to detect gamma rays produced by the excitation of the target nuclei by incident protons.

The results of the Geant4 simulation (version 10.6.3.) of interactions of protons with a carbon target are presented. This includes the study of 4.4 MeV line properties, as multiple differences were observed between simulation and experiment, one of which is a double peak for the $C^{12}(p, p'\gamma 4.44)C^{12}$ spectral line and the study of dose deposition inside the tumor and surrounding area.

MatRAD is an open source software for radiation treatment planning of intensity-modulated photon, proton, and carbon ion therapy written in Matlab. The main features of this code with an example of radiation therapy planning, realized and future projects using this codes are presented.



Speaker: Medea Abramishvili

Ivane Javakhishvili Tbilisi State University

Cohort: 2021

Program: Educational Sciences (PhD)



Determining the Effectiveness of STEM Education in Georgian Schools

STEM education has become a primary focus of many countries because it is crucial for economic advancement and for tackling complex problems of the world, such as climate change, by using multidisciplinary, interdisciplinary, or transdisciplinary approaches. In contrast to traditional learning, in active learning, two-way communication is necessary between the teacher and the students to engage in the learning process. The teacher facilitates the learning process by providing real-world scenarios whereby the students learn by example and construct their own knowledge utilizing scientific evidence. Learning is an important aspect of traditional as well as STEM education. However, traditional education focuses solely on the subjects to be learned and has been heavily dependent on assessments based on their teachings. However, STEM is more focused on raising the curiosity in children and feeding their bugs to explore.

To successfully implement STEM activities into formal education, teachers' motivation must be considered in the first place. Students' attitudes towards STEM subjects are entirely dependent on the teacher's viewpoint. That is why after creating the STEM projects for 10th graders the first that will be done under the framework of research will be workshops for STEM subject teachers from the schools where research will be conducted. For research, I will use the quantitative method of research with experimental design. The target group will be 10th graders from 3-4 schools in Tbilisi. After implementing the suggested STEM projects, while having control classes, will compare the knowledge of students in Science, Mathematics, and Technology by questioners and will provide an additional task for students about problem-solving, and group work, to find out if STEM education affects the development of 21st-century skills.

S. Bilanishvili^{1,2}.

¹Kutaisi International University, Kutaisi, Georgia

² INFN - Laboratori Nazionali di Frascati, Frascati, Italy

Broad Band Waveguide to Coaxial Transition for HOM Suppression in RF Cavities for Future Synchrotron Light Sources

Abstract

In the modern storage ring light sources, exploiting multi-bunch beams, the longitudinal and transverse coupled bunch instabilities are predominantly driven by higher order modes (HOM) of the accelerator RF cavities. In order to suppress the HOM to a harmless level, we propose using a modified broadband waveguide to coaxial line transitions placed on the cavity body, similar to those used for the DAΦNE collider RF cavities. Such a solution has a simple design that avoids the application of the ferrite materials under the ultra-high vacuum and dissipates the HOM power on the external loadings. Different from DAΦNE with a single cavity per ring, where the damping waveguides are placed laterally on the cavity body, we consider the possibility of allocating the waveguides vertically. Since the modern synchrotron light sources require using more RF cavities to compensate for the synchrotron radiation losses, such a solution helps to save the occupied space when placing the cavities in a row next to each other. This paper describes the design optimization process and discusses the obtained results concerning the effectiveness of the HOM suppression and minimization of the impact of the transitions on the fundamental mode parameters.



Speaker: Gocha Chankleliani

Ivane Javakhishvili Tbilisi State University

Cohort: 2019

Program: Medical student (PhD)

Speaker: Davit Tevdoradze

Ivane Javakhishvili Tbilisi State University

Cohort: 2019

Program: Medical student (PhD)

Endovascular Surgery for Acute Gastroduodenal Ulcer Bleeding

Background and objective: Endovascular surgery is an alternative to conventional surgical management when dealing with acute gastroduodenal bleeding from a gastroduodenal ulcer (AGDUB) after a failed endoscopic treatment. The purpose of this study is to analyze the effectiveness and outcomes of endovascular surgery in (AGDUB).

Materials and methods: A retrospective two-center analysis was performed of 45 patients (35 men and 10 women, their ages ranged from 50 to 90) who underwent endovascular surgery for acute gastrointestinal bleeding from gastroduodenal ulcers from 2018 to 2021 at LJ Hospital and Unical Medi Hospital (Kutaisi, Georgia). Interventions were performed with GE Innova 3100 IQ (USA), Shimadzu Trinias F12 (Japan).

Results: The embolization procedure had a technical success rate in 44 cases (97.8%). 30 (66.7%) were prophylactic and 15 (33.3%) therapeutic embolization. One patient (2.2%) had an episode of gastroduodenal rebleeding following embolization. Two (4.4%) patients died. The death was caused by cardiovascular complication (cardiac infarction and ischemic stroke).

Conclusions: Endovascular surgery is a feasible method for the treatment of rebleeding from gastroduodenal ulcers after endoscopic treatment, resulting in high rates of technical and clinical success and low complication rates. Further prospective randomized trials are needed to obtain more evidence.



Speaker: Mariam Gulashvili

Georgian Technical University

Cohort: 2021

Program: Engineering Physics

Innovative Methods of Monitoring and Treatment of Parkinson's Disease

Parkinson's disease is a progressive neurodegenerative process. Multifaceted work is underway around the world to improve both medical and instrumental and surgical treatment methods. It is well known that in the conditions of a pandemic, attention to chronic diseases decreases, which can end tragically for such patients. Therefore, in today's reality, their remote monitoring and management is especially important, which is the main essence of the presented paper.

The following was created within the project: 1. Smart glove for monitoring of Parkinson's one of the most frequent motor manifestation - tremor - same as limb trembling. 2. Monitoring System for not less Frequent Manifestations - bradykinesia – slowness of movement. 3. Using the standing wave property to reduce the deviation of damaged brain tissue.

The 24-hour tremor monitoring system is a "smart glove" with a built-in tensor resistor, from which the signal, after processing by the microprocessor, is reflected on the monitor in the form of tremor frequency and amplitude.

A yellow (contrast) button is attached to the same black glove to monitor bradykinesia. The patient moves it to a black board, where one of the 4 bulbs is lit randomly and the patient is required to press the light bulb as quickly as possible. 24-hour tremor and bradykinesia monitoring systems can be used both in direct interaction between the doctor and the patient, and remotely, which will allow the doctor to make objective assessments and draw appropriate conclusions.

The least invasive method at this time is the focused ultrasound (with MRT control). The main difficulty is the precise direction of the ultrasound to the target point, because due to various processes taking place in a living organism, it is not immobile. The property of the standing wave was used (the ability to grab objects due to low pressure in the nodes), to reduce the deviation of the damaged tissue and to temporarily fire the object.



Speaker: Luka Iremashvili

Tbilisi State University

Cohort: 2021

Program: Faculty of exact and natural sciences (major), Chemistry (minor)



Electrons that Revolutionized Quantum Mechanics

The following research reviews the behavior of the second electron located in the 4S orbital in the forming of d-element atoms (Cr, Mn, Cu, Zn).

As it turns out, the aforementioned electron plays a crucial role in the formation of five different atoms while changing all four of their quantum numbers and then restoring them at intervals of millions of years.

This is unheard of in quantum mechanics.

Introducing the concept of time in quantum mechanics completely changed quantum theory. It would seem that the past quantum numbers of the stated electron did not disappear or disperse, but rather the information about these characteristics was maintained and transferred in time.

This fact puts one of the fundamental laws of quantum theory - Pauli's principle - in doubt.



Speaker: Saba Jorbenadze

Tbilisi State University

Cohort: 2021

Program: Department of Chemistry, Faculty of Exact and Natural Sciences

Advantages of Application of Superficially Porous Silica in High-Performance Liquid Chromatography

Nowadays, porous materials are actively used as adsorbents in chromatographic analyses, which allows to increase the specific surface area of the column packing material and to increase the interaction between the stationary phase and the substances to be separated. This leads to an improvement of separation selectivity (α). On the other hand, along with many advantages, porous materials can also have some disadvantages in terms of peak efficiency (kinetics of separation). Due to the penetration of compounds into the porous structure, peak dispersion occurs and the number of theoretical plates decreases. In high performance liquid chromatography superficially, porous silica is intensely used in the last few years. The purpose of our studies was to find out what characteristics these two adsorbents differ from each other and what advantages superficially porous silica can offer in specific methods.

To this end, we have been researching widely used herbal drugs, specifically valeriana and licorice. We processed and analyzed their roots according to the European Pharmacopoeia [1] method. We determined the contents of sesquiterpenic acids in Valeriana roots and glycyrrhizic acid in licorice roots of different origin.

In the European Pharmacopoeia method, it is recommended to use fully porous silica gel in a 25 cm column (The standard 250x4.5 mm HPLC column packed with 5 micrometer particle size fully porous C18 Silica). However, this method requires a long analysis time and also consumes a considerable amount of expensive and harmful mobile phase. Our goal was to develop a relatively ecological ("green") method, which involves the use of superficially porous silica as an adsorbent in a 5 cm column (50x3.0 mm Zorbax Eclipse Plus C18 column packed with 1.8 micrometer particle size superficially porous silica). This allowed us to reduce both, the analysis time and the consumption of the mobile phase.



Speaker: Aleksandre Kobeshavidze

Agricultural University of Georgia

Cohort: 2018

Program: Mechanical Engineering (Major), Computer Engineering (Minor)



Deep Learning in Finite Element Analysis

Finite Element Analysis (FEA) can be used to evaluate design, maintenance and safety of complex structures in a wide array of applications across many industries including aerospace, automotive and more recently, are rapidly penetrating the biomedical engineering space.

Will FEA endure challenges created by artificial intelligence and maintain the throne in the field of stress analysis?

Structural finite-element analysis (FEA) has been widely used to study the biomechanics of human tissues and organs, as well as tissue–medical device interactions, and treatment strategies. However, patient-specific FEA models usually require complex procedures to set up and long computing times to obtain final simulation results. In this topic we will show stress distributions of the aorta with the help of deep learning model.

To resolve FEA limitations a fully automatic patient specific modelling workflow could be built upon machine learning (ML) techniques: a paradigm-changing ML solution that may render the stress analysis in a few seconds for time-sensitive clinical applications

The results are visualized in two representative aortic shapes. Although there are some subtle differences, the overall stress distributions are very similar. Once the FEA input–output relationship was learned by the DL model, FEA was no longer needed, i.e. replaced by the DL model.



Speaker: Nika Putkaradze

Agricultural University of Georgia (AUG) Cohort:

Cohort: 2019

Program: Electrical and Computer Engineering (Major), Biology (Minor)



Identification and Tracking of Infrared Radiation

Every object with a temperature above absolute zero emits IR (infrared) radiation. There are many applications in which identification of specific ranges of IR are necessary. In some applications, identification isn't enough and tracking the object which emits IR is required. The goal of this project was to make a device which could identify single IR radiation source and then, based on its movement direction, track it. The device can also scan surrounding space and generate 2D IR image.

The brain of the device is ATmega168A microcontroller which receives analog data from four IR diode type sensors. Analog voltage is converted to digital code using the microcontroller's internal ADC. Four sensors are physically arranged in a way so that the high voltage level from the sensor indicates the direction of IR radiation source. Based on voltage levels from IR sensors, PWM (Pulse- Width Modulation) signal is generated on two pins of the microcontroller. PWM is used to control the position of two servo motors. Servo motors can move in 0-180° range, so the device can receive data from the space in the form of half sphere relative to its center.

In tracking mode, received data is used to track IR source in real-time. The device's moving part chases IR radiation source. In the second mode of operation – scanning, the device scans space in front of it and measures IR radiation levels from different directions. Measured data is stored in the microcontroller's EEPROM memory and can be transmitted to a computer via UART (Universal Asynchronous Receiver/Transmitter) protocol, which is translated into USB interface before the datagets to a PC. The data are used to construct 2D IR image, showing all infrared sources in the environment at the time of scanning procedure. Image is constructed using MATLAB software.

In scanning mode, the device imitates modern IR cameras, but the image produced has much lower resolution and image construction doesn't happen in real-time. Using more sophisticated IR sensors, the device can find use in industrial, scientific, medical and security applications.



Speaker: Ani Rurua

Tbilisi State University

Cohort: 2020

Program: Department of Chemistry Faculty of Exact and Natural Science



Testing of Particulate Matter Sensor NOVA SDS011 Against Scientific Grade Equipment Grimm Aerosol Monitor

Nowadays atmosphere research is one of the most important research topics since change in its chemical composition directly affects human health and global climate change as well. particulate matter that is released in air directly gets inhaled by humans and therefore different dangerous chemicals and heavy metals can reach human body through respiratory system. It should be noted that smaller particles are bearing specific threat because their size easily penetrates respiratory tract. Therefore, particulate matter is one of the most widely spread tuberculosis causing factor. Accordingly, having appropriate and highly developed methods for measuring these dangerous atmosphere pollutants has huge importance.

The aim of this research is to measure amount of particulate matter (pm10 and pm2.5) by using of the light scattering sensor (NOVA SDS011) and scientific grade equipment GRIMM Aerosol Monitor Sensor. As for the working efficacy of sensors, we are comparing sensor measured data to GRIMM data. It should be noted that measurements have been conducted in different locations and times Accumulated data was analyzed by using of MathWorks Matlab software.

II. Visual Math Fest 2021

Speaker: Nino Chkhapelia

Kutaisi International University

Cohort: 2020

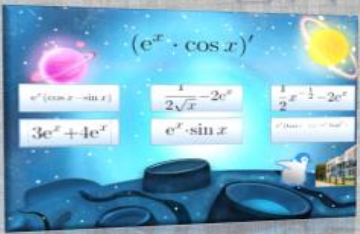
Program: Math (Major), Management (Minor)




Adventure in Math


Adventure in Math is a synthesis of mathematics and computer science. This is an entertaining math game that allows students to learn about derivatives easily and quickly. A player who does not have relevant knowledge in a given field can see formulas, proofs, equip himself with relevant knowledge and start playing. At each stage, the so-called "female scientist" helps them accumulate knowledge. It explains the rules of the game and suggests learning about derivatives. The main character is a penguin, and the final destination is Kutaisi International University. The user must be able to bring the educated penguin to the Kutaisi International University, where a big surprise is waiting for him - during the game, each correct answer brings him closer to funding. Actually, the user enters the school with a 100%, 70% and 50% grant and claims that he is a worthy student of Kutaisi International University. The game is designed for middle school students and students, as they are given the opportunity to follow the path to the university game by game. Finally, Adventure in Math is a synthesis of mathematics and computer science - JAVA and Latex. Each task, approval, is written in Latex, and the Latex code is embedded in Java.

ADVENTURE IN MATH




- Adventure in Math is a synthesis of mathematics and computer science. This is an entertaining math game that allows students to learn about derivatives easily and quickly. A player who does not have relevant knowledge in a given field can see formulas, proofs, equip himself with relevant knowledge and start playing. The main character is a penguin, and the final destination is Kutaisi International University.







Nino Chkhapelia




Mishka Teneshvili



Tsofne Mikadze



Merab Mokverashvili



Elene Nishnianidze

Speaker: Mariam Khuskivadze

Kutaisi International University

Cohort: 2020

Program: Math (Major), Management (Minor)



Harmonograph

A harmonograph is a mechanical device that uses pendulums to create a geometric image. We decided to create a modern version of the machine created in the nineteenth century, which we could manage with the help of a computer. The main goal of our project was to connect mathematics, art and computer engineering. For this we used Arduino Uno, servo motors, elements, servo motor controller and cables. Currently, our harmonograph draws several types of harmonic diagrams, the visual of which depends on the phase and cycle of the 2 motors. The 2 scissor-shaped arms help the machine to easily and continuously get the job done. The device is of course subject to randomization, with a little code modification it is possible to get completely different random patterns.



Harmonograph

A harmonograph is a mechanical apparatus that employs pendulums to create a geometric image.

Our harmonograph is a modern version of an eighteenth-century device.

Khuskivadze Mariam
 Kenchoshvili Elene
 Sakhokia Lizi

Speaker: Teimuraz Pkhakadze

Kutaisi International University

Cohort: 2020

Program: Computer Science (Major), Management (Minor)



The Mirror of Perfect Reflection

Kutaisi International University hosted Visual Math Fest 2021. As a part of the festival, our team created a project, the subject of which is the logo of our own university "K". And, we expressed each of its constituent geometric figures through functions.

Function, or reflection, is one of the basic concepts in mathematics that describes the relationship of one type of variable to another.

In addition, we have combined parallel displacement, rotation, axial and point symmetry and, most importantly, harmonious or divine proportions (golden ratio) $FW: WM = 1.618$ & $MN:NG = 1.618$. The combination of all this allows us to present the logo through "Perceptual Art", thus placing it in a three-dimensional space (area) where bodies and events are located that have a certain location to each other.



Speaker: Alexander Sainishvili

Kutaisi International University

Cohort: 2020

Program: Computer Science (Major), Management (Minor)

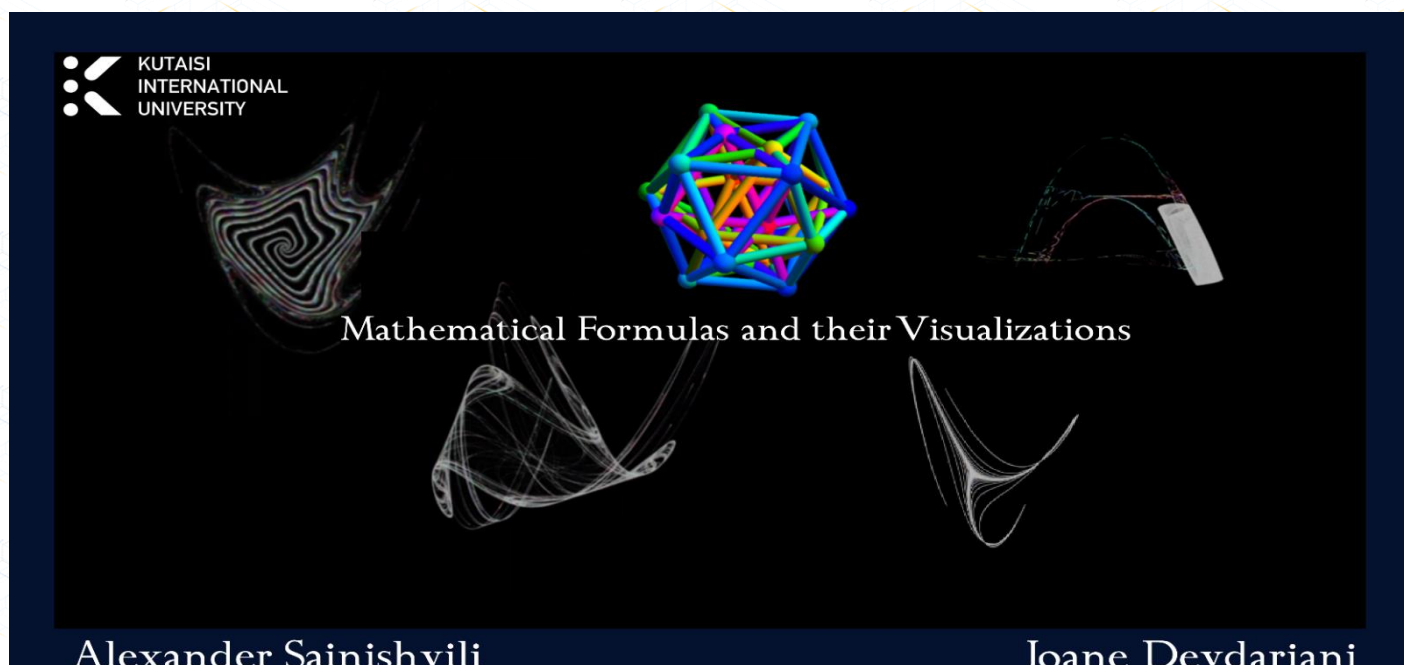


Mathematical Formula Effects and their Visualizations

Mathematics is a vast and fascinating field; through various formulas we can even recreate and explain objects and processes we see in our everyday lives. Following this concept our team decided to use mathematics and various software to allow us to turn formulas into objects, drawings, patterns and so on. Starting with trigonometric formulas that in a 3d space create an endless list of varied shapes and textures and ending with klein bottles and mathematical knots the gallery contains:

- 3D trigonometric functions
- Tupper's self-referential formula
- Fourier series
- Chaos equations
- Fractals
- Perfect Shapes in Higher Dimensions
- 3D mathematical Objects
- Mathematical Knots

The gallery is open for all and can be explored at one's own pace, we have also included all the software needed to recreate any or all of our installations at the end of the gallery.



III. Visual Math Fest 2022

Speaker: Mikheil Dzuliashvili

Kutaisi International University

Cohort: 2021

Program: Computer Science (Major), Management (Minor)



Fractals, Mandelbrot and Julia Sets, Mandelbulb

Objective of our team is to explore the wonderful world of fractals and let everyone know how fascinating 3D generated fractals are. We have built several applications showcasing various types of simulations and with their help users will be able to tweak parameters and visualize their own “mathematical monsters”.

TEAM APOLLO

Our team has been fascinated by the beauty of maths for a long time and we always seek for mysterious, magnificent patterns which can be generated by merging our two favourite fields of study: Mathematics and Computer science. With the help of Shader languages we were able to recreate fractals in 3D space and made several applications which will help you to explore the wonderful world of three dimensional fractals.



Mikheil Dzuliashvili
Computer Science



Luka Gorgadze
Computer Science



Zuka Kenchuashvili
Computer Science



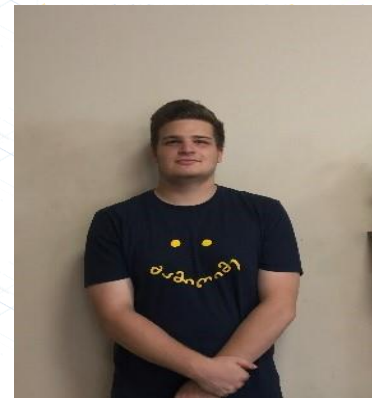
Demetre Shonia
Computer Science

Speaker: Nikoloz Girgvliani

Kutaisi International University

Cohort: 2021

Program: Computer Science (Major), Math (Minor)



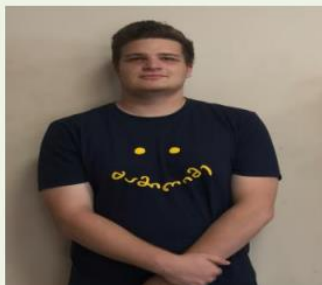
Vectorial Art with Fourier Series

Our team created an application to visualize difficult mathematical concepts, such as Fourier Series. The application allows us to recreate any shape, drawn by hand or by other means using Fourier Series. Each point of the drawn shape is recalculated by application and visualized to make it easily understandable. The application allows users to select vectors manually and change their parameters such as length and rotation angle. Users have the possibility to change initial settings, such as vector length and speed, this allows them to make experiments with Fourier Series. It is possible to further develop the application in a different direction, add more options in the future and expand the possibilities offered at the present stage.

VECTORIAL ART WITH FOURIER SERIES



Luka Gogoladze



Nikoloz Girgvliani



Nika Koghuashvili



Ioane Kapanadze

Speaker: Mariam Mamageishvili

Kutaisi International University

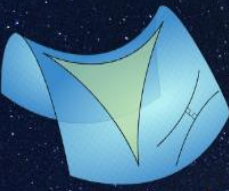
Cohort: 2021

Program: Math(major), Computer science(minor)



Out Of This World

The visualization of hyperbolic geometry is the major focus of our project. We want to use animated video and game to do this. A journey outside of the Earth, across the cosmos, will be shown in the animated video, leading to an undiscovered planet. The mentioned unknown planet is a representation and model of hyperbolic space. Another crucial component of our project is a game. It should demonstrate how non-Euclidean space works, what are the axioms of hyperbolic geometry, and, most importantly, what would hyperbolic space look like. Players of this game will be able to answer these questions.




OUT OF THIS WORLD


visual math fest project

In order to visualize hyperbolic geometry, we want to use
animated video and game.


A journey from the Earth to the undiscovered planet,
the representative of hyperbolic space is shown in the video.

Other part of our project stands for a game,
which demonstrates how non-Euclidean world works,
what are the axioms of hyperbolic geometry, and,
most importantly, what would hyperbolic space look like.







Aanano Tamarashvili




Mariam Mamageishvili




Mariam Shonia



Giga Samkharadze



Gigi Jishkariani



Speaker: Aleksandre Oniani

Kutaisi International University

Cohort: 2021

Program: Computer Science (Major), Math (Minor)

Games and Their Theories

Our project's goal is to create visualizations of some famous games from game theory, writing AI of these games, which will be playing against the players the best possible way for it. Also, in some games, players can choose the difficulty of AI, so it will be quite a smooth and interesting process for consumers to keep up with the game step by step and solve (guess) the perfect strategies himself/herself.

Math π Rates

Game Theory and their strategies



Alexander Oniani
Computer Science



Nika Pankvelashvili
Computer Science



Zaur Bokelavadze
Mathematics









IV. Summer Projects

Speaker: Lasha Shavgulidze

Kutaisi International University

Cohort: 2020

Program: Math (Major), Computer Science (Minor)



Studying Vibrating String from Video

This study aims to identify the possibility of determining wave equation from the vibrating string when we only know its visual form. There were many challenges throughout this experiment. In order to conduct, the research I generated the algorithm which takes analytical solution of the wave equation with different time intervals and transforms it as MP4. In this research for obtaining equation of vibrating string I used numerical solution of wave equation. As we know, video data is a collection of video frames. Thus, in order to extract any data from the video file, first we need to extract its frames. video frames combined with time make up the new variable FPS (frames per second). The study showed that the greater the video's FPS, the noisier the frame came to be, which caused error. To avoid this error, I used derivative Filters, through which I cleaned up the picture and tried to extract information from the frame.



My next step was to transfer the existing curve from the video to the coordinate plane, but this caused inaccuracies, because single point on coordinate plane was corresponding to multiple pixels in the video, which led to difficulty finding the correct points. In the end, I recovered constants of wave equation per frame. Numerical solution of the wave equation with recovered constants is compared with analytic solution. I am getting more accurate results when the video file has low FPS.

V. Curriculum on Display: Final Exam Projects

Business Related ICT Projects

Speaker: Aleko Khantadze

Kutaisi International University

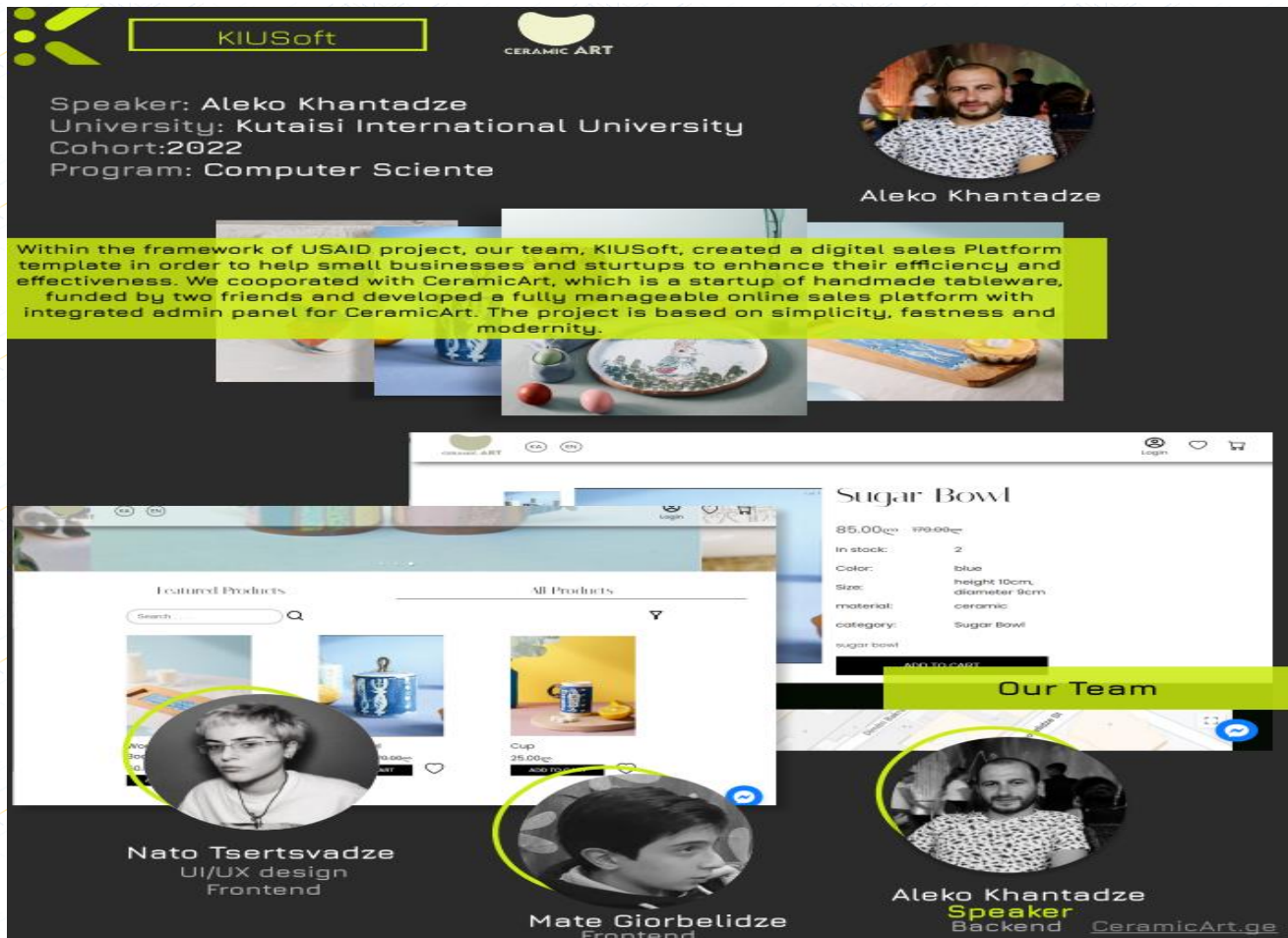
Cohort: 2020

Program: Computer Science (Major); Math (Minor)



Online Platform for Sales

Within the framework of USAID project, our team, KIUSoft, created a digital sales Platform in order to help small businesses and startups to enhance their efficiency and effectiveness. First, we designed a template of the website and finished the core functionality, after the first presentation we had two prospective customers: EcoWood and CeramicArt. We choose to cooperate with CeramicArt, which is a startup of handmade tableware, funded by two friends, Nino Kopaladze and Ana Japaridze. Finally, according to their instructions, we made several changes and made website as customized as possible. We have created admin panel, so now they are able to manage and operate website without our help. All in all, it was a good experience for all of us. Technologies used: Flask, ReactJS and Figma Nato Tsertsvadze.



KIUSoft CERAMIC ART

Speaker: Aleko Khantadze
 University: Kutaisi International University
 Cohort: 2022
 Program: Computer Science

Aleko Khantadze

Within the framework of USAID project, our team, KIUSoft, created a digital sales Platform in order to help small businesses and startups to enhance their efficiency and effectiveness. We cooperated with CeramicArt, which is a startup of handmade tableware, funded by two friends and developed a fully manageable online sales platform with integrated admin panel for CeramicArt. The project is based on simplicity, fastness and modernity.

Sugar Bowl
 85.00ლ - 170.00ლ
 In stock: 2
 Color: blue
 Size: height 10cm, diameter 9cm
 material: ceramic
 category: Sugar Bowl
 ADD TO CART

Our Team

Nato Tsertsvadze
 UI/UX design
 Frontend

Mate Giorbelidze
 Frontend

Aleko Khantadze
 Speaker
 Backend CeramicArt.ge

Speaker: Teimuraz Pkhakadze

Kutaisi International University

Cohort: 2020

Program: Computer Science (Major), Management (Minor)



Online Platform for Sales

Kutaisi International University hosted Information technology for industry development. As a part of the project, our team created a web, which involved developing an ecommerce platform where products can be bought without leaving home, with the help of the internet.

The act of conducting business using computer networks is known as electronic commerce. To buy or sell things a person can utilize all of the internet's features while seated in front of a computer.

We made it so that platform can reach as many people as possible at the correct moment to boost sales, profitability and to increase the visibility of the company.

In conclusion, combining all of this, the customer essentially eliminates the requirement for a physical storefront and saves money on a number of fixed costs including rent, staffing, stock upkeep, and more.



Speaker: Alexander Sainishvili

Kutaisi International University

Cohort: 2020

Program: Computer Science (Major), Management (Minor)



Online Platform for Marketing

The field of commerce has been greatly disrupted both by new technologies, as well as the covid pandemic and its ensuing recession. Distance working has become the norm and most commercial activities are now done remotely through various forms of digital communication. With the frontrunner of this trend the E-commerce market predicted to balloon to an unprecedented 40+ Trillion dollars by 2030, up from 21 trillion in 2021.

Despite this many businesses have failed to adapt and often continue to hold on to old ways of doing business. While so far these methods have managed to keep companies afloat the cracks are starting to show. In the US many business owners are already predicting that long term employment will become a rarity not only due to the companies themselves moving more towards “gig” workers, but due to high competition between companies driving employees to switch quickly.

ClickSpace however is a startup focused on capitalizing on these very trends. With a service focused on providing support and products for digital commerce and communication and a HR model capitalizing on the short term, task-based approach of the upcoming labor force clickspace manages to cut down on 80% of the costs traditionally associated with creating a web-based application such as a website, app, or a management system. Mostly thanks to the modular development model that can easily be picked up by a new employee and does not require expensive and time-consuming onboarding to get the hang of.

Alexander Sainishvili
Luka Karoiani

Ioane Devdariani

Dachi Skhiladze
Irakli Oqropiridze



ClickSpace

Web Development & Freelancing

Speaker: Luka Samkharadze

Kutaisi International University

Cohort: 2020

Program: Computer Science (Major), Math (Minor)



Online Platform for Sales

“Avangardi” web-app is an online store for the wood materials and kitchen furniture. Website is equipped with a bearer token dependent authorization/authentication system. We use Django as a backend and ReactJS as a frontend system.

Users are able to add items in their personal cart, then go to checkout and pay online. Apart from that, they can send the special request for the wood materials and get the auto-calculated price in milliseconds for any size they want.



Game Development Projects

Speaker: David Petriashvili

Kutaisi International University

Cohort: 2020

Program: Computer Science (Major), Management (Minor)



EosEngine

EosEngine – “the engine of the dawn”, is a 3D game engine made by using LWJGL and written from scratch, including its math libraries and other components. The goal of our project was to learn how video games depend on an engine and what goes into making a toolset, which can then be used by a user/developer to make video games. As a final product to present, we have made an interactive demo, which will show the capabilities of the engine, including its model loading, manipulation of them by using controls, shaders and much more.



A 3D Game engine written from scratch using LWJGL



Meshes



Shaders



Input
and much more...



Lights



Camera

Made by KIU Students



**Adam
Karam**



**Giorgi
Tsartsidze**



**Alexander
Sainishvili**



**David
Petriashvili**

Speaker: Luka Samkharadze

Kutaisi International University

Cohort: 2020

Program: Computer Science (Major), Math (Minor)



Paichnidi

“Paichnidi” is a 3D game engine built in Kotlin, which uses LWJGL (Lightweight Java Game Library) and OpenGL. Developers can use our engine to build 3D games using meshes, shaders and many other components. Apart from that, they are able to make it rich with lighting setup and camera movement options.

As an input for the game, players can use mouse or keyboard, of course, but except that we developed a beta version of hand tracker input which helps us detect the motion of the hand of the player and convert some gestures into a digital information, which later can be used as an input for the game engine.

