

Annex 1

PRIZE-WINNERS

23rd European Union Contest for Young Scientists

FIRST PRIZES (€ 7.000 per Project)

Country	Ireland
Contestant	Alexander Amini (16)
Scientific Field	Computing
Project Title	Tennis Sensor Data Analysis: An Automated System for Macro Motion Refinement
Short Summary	Sensors capable of capturing audio, video, and inertial data (such as accelerometers, gyroscopes, and magnetometers) have become so inexpensive, they are often found in smart phones and even remote control toys. However, it is not easy to correlate the performance of an athlete to the huge volumes of raw data captured by such sensors. In this study, I collected and analyzed gigabytes of tennis sensor data. I discovered a technique for automatically distinguishing between 13 different tennis stroke types (e.g., distinguishing a forehand flat versus forehand topspin) using only inertial data with accuracy averaging over 96%, and implemented my technique as computer software. Previously published research was limited to classes of motion (such as forehand, backhand, serve). My findings are relevant to a wide variety of motion assessment scenarios in sports, physical therapy, and emergency responses.

Country	Switzerland
Contestant	Pius Markus Theiler (19)
Scientific Field	Engineering
Project Title	pi Cam - The Development of a Camming Device for Climbing
Short Summary	The project pi Cam describes the development of a revolutionary device for climbing. Camming devices are part of the safety gear used in rock and industrial climbing. They help to create an anchoring point where no preattached bolts exist. The current camming devices are secured in a crack or between two parallel surfaces. The newly invented pi Cam however uses rock protrusions like e.g. flakes, limestone traces or tufa to create anchoring points. Thus, the device enlarges the range of protectable rock formations and increases the safety of the climber. In industrial climbing, too, safety is of the highest priority. On pillars for example pi Cam can provide an anchoring point to workers high above the ground. Obviously pi Cam opens new horizons for climbers in many different situations. It is therefore not surprising that specialists have shown interest in the development and commercial production of this new device and that it has already been applied for patent.*pi=greek small letter.

Country	Lithuania
Contestant	Povilas Kavaliauskas (18)
Scientific Field	Medicine
Project Title	The Role of Houseflies (<i>Musca domestica</i>) in Spreading Antibiotic Resistant Bacteria
Short Summary	Antibiotic resistant bacteria are one of the biggest challenges in the 21st century. At this time resistance mechanisms are already understood, however, how bacteria can spread around is still known little. The aim of my study is to investigate how domestic flies can transmit the most common antibiotic resistant bacteria <i>Staphylococcus aureus</i> and <i>Klebsiella pneumoniae</i> from infected areas to residential premises. I discovered that houseflies cannot transmit bacteria distantly; therefore, the highest risk is for people living nearby to contaminated areas such as hospitals. My study shows, that the most contaminated houseflies reside in hospital premises, and when such fly lands on human skin, there is a high probability that the person will be colonized by antibiotic resistant bacteria, which can cause complicated and sometimes fatal infections.

SECOND PRIZES (€ 5.000 per project)

Country	Contestants	Age	Scientific Field	Project Title
Germany	Benjamin Walter	17	Physics	Scanning Tunnelling Microscopy of Coronene Molecules on Germanium (111)
United Kingdom	Natalie Mitchell	19	Physics	Auto Focusing Methods for Digital Microscopy
Bulgaria	Georgi Atanasov	19	Computing	DriveFreeZ - Driving Simulator
	Georgi Georgiev	19		
	Kalina Petrova	16		

THIRD PRIZES (€ 3.500 per Project)

Country	Contestants	Age	Scientific Field	Project Title
Norway	Alex Bergsaker	17	Social Sciences	Guanxi – the Significance of Relations and Social Networks in Chinese Business
Poland	Michal Miskiewicz	20	Mathematics	The Charm of the 'mi' Set
United Kingdom	Holly Rees	18	Biology	Investigation into Embryonic Stem Cell Differentiation

INTERNATIONAL PRIZE (€ 5.000 per project)

Country	Contestants	Age	Scientific Field	Project Title
New Zealand	Bailey Lovett	18	Environment	Bacterial Bivalves

HONORARY AWARDS

Stockholm International Youth Science 2011

Country	Contestants	Age	Scientific Field	Project Title
Switzerland	Pius Markus Theiler	19	Engineering	pi Cam - The Development of a Camming Device for Climbing
Lithuania	Povilas Kavaliauskas	18	Medicine	The Role of Houseflies (<i>Musca domestica</i>) in Spreading Antibiotic Resistant Bacteria

London International Youth Science Forum 2011

Country	Contestants	Age	Scientific Field	Project Title
Switzerland	Pius Markus Theiler	19	Engineering	pi Cam - The Development of a Camming Device for Climbing
Lithuania	Povilas Kavaliauskas	18	Medicine	The Role of Houseflies (<i>Musca domestica</i>) in Spreading Antibiotic Resistant Bacteria
Ireland	Alexander Amini	16	Computing	Tennis Sensor Data Analysis: An Automated System for Macro Motion Refinement

SPECIAL DONATED PRIZES

There are 25 special donated prizes: a five-day visit of a technical and cultural nature to the

European Patent Office in Munich and a one-week stay at each of the seven members of

EIROforum[1]:

- CERN: The European Laboratory for Particle Physics
- EFDA: The European Fusion Development Agreement
- EMBL: The European Molecular Biology Laboratory

- ESA: The European Space Agency
- ESO: The European Southern Observatory
- ESRF: The European Synchrotron Radiation Facility
- ILL: The Institut Laue-Langevin

The European Patent Office, Munich, Germany

Country	Contestants	Age	Scientific Field	Project Title
CH	Pius Markus Theiler	19	Engineering	Pi Cam - The Development Of A Camming Device For Climbing
TK	Emir Aycan Bedel	16	Biology	Using Enzymatic Biofuel Cells In Photosynthesis To Produce Electrical Energy
	Cern Öztürk	16		
LT	Dalia Bartkevičiūtė	18	Chemistry	Mushroom Dyes For Tapestry Restoration
	Gailė Tumėnaitė	15		

EIROForum Prizes

CERN: The European Laboratory for Particle Physics

Country	Contestants	Age	Scientific Field	Project Title
FR	Florentin Delaine	18	Engineering	Artificial Intelligence And Rubik's Cube
	Joseph Gennetay	18		
	Jason Loyau	19		

EFDA-JET

Country	Contestants	Age	Scientific Field	Project Title
EG	Azza Abdel Hamid Faiad	16	Environment	Production Of Hydrocarbon Fuel By Catalytic Cracking Of High Density Polyethylene Wastes

ESA

Country	Contestants	Age	Scientific Field	Project Title
IT	Andrea Emilio Amedeo Bracesco	19	Physics	Following Kepler's Path
	Jacopo Prinetto	20		
	Federica Villa	19		

EMBL

Country	Contestants	Age	Scientific Field	Project Title
USA	Erica Portnoy	18	Biology	A Novel Approach To Mapping Protein Interactions During Pilus Biogenesis By Using In Vivo Photocrosslinking

ESO

Country	Contestants	Age	Scientific Field	Project Title
USA	Jane Cox	17	Physics	Using Amino Acid Analysis To Distinguish Chondritic Meteorites

ILL

Country	Contestants	Age	Scientific Field	Project Title
LV	Andris Alfrēds Avots	17	Chemistry	The Usage And Properties Of Rigid Foam Polyurethane Material Derived From Tall Oil By Using Cyclopentane As A Blowing Agent
	Raivis Eglitis	18		

ESRF

Country	Contestants	Age	Scientific Field	Project Title
SK	Michal Habera	18	Physics	Influence Of Magnetic Field On Free-surface Ferrofluid Flow
	Michal Fabian	18		

The Joint Research Centre (JRC) Prizes

Institute for Health and Consumer Protection (IHCP)

Country	Contestants	Age	Scientific Field	Project Title
TK	Melisa Tokmak	17	Physics	Analysis Of Optical Activities Of Different Honey Samples With Empirical Methods
	Aliye Bihter Günal	17		

Institute for Protection and Security of the Citizen (IPSC)

Country	Contestants	Age	Scientific Field	Project Title
CZ	Bedřich Said	18	Computing	Swarm Robotics Simulator

Institute for Environment and Sustainability (IES)

Country	Contestants	Age	Scientific Field	Project Title
UK	Martin Richard Thompson	17	Engineering	Optical Characterisation & Mechanical Design For Accurate Imaging

Institute for Reference Materials and Measurements (IRMM)

Country	Contestants	Age	Scientific Field	Project Title
DE	Gabriel Salg	16	Chemistry	The New Magic Formula For Eliminating Bad Breath: C42h70o35
	Nicolas Scheidig	17		

The Intel ISEF 2012 Prizes

Country	Contestants	Age	Scientific Field	Project Title
IL	Gal Oren	20	Engineering	Antileaks - A Device For Detection And Discontinuation Of Leakages In Water Supply Systems
	Nerya Yair Stroh	20		
MT	Melvin Zammit	17	Engineering	3 Dimensional Display
DE	Danial Sanusi	18	Mathematics	(almost) Unit-distance Points In The Polychromatic Plane - Colourings Of The N-dimensional Space
	Xianghui Zhong	18		
	Fabian Henneke	18		

Year of Chemistry Prize

Country	Contestants	Age	Scientific Field	Project Title
FI	Jarkko Etula	20	Chemistry	Comparison of 3 Finnish Berries as Sensitizers in a Dye-Sensitized Solar Cell

Host Organisation Special Donated Prizes

Orion Special Prize

Country	Contestants	Age	Scientific Field	Project Title
CZ	Pavel Svec	20	Chemistry	Synthesis And Testing Of Tetramethyl[5]helquat

The Federation of Finnish Technology Industries Prize

Country	Contestants	Age	Scientific Field	Project Title
EUSCH	Stijn Hofstee	17	Physics	Kite Based Wind Generator
	Danylo Matselyukh	17		