WebValley

2018 International Edition
Casez di Sanzeno (Trentino)
June 17 - July 7, 2018

Call for Participants
https://webvalley.fbk.eu
The 2018 International Edition

Fondazione Bruno Kessler (FBK) is glad to announce the organization of WebValley 2018 - International in Val di Non, Trentino (June 17 - July 07, 2018). The online call for applications will be open Apr 11 - May 31.

WebValley is the FBK summer school for data science and interdisciplinary research: more than 300 students (17-19y old) have attended the WebValley camps since its first edition in 2001. WebValley started as a regional initiative for high school students from Trentino Alto-Adige Südtirol, and it is now grown as an opportunity for national and international students alike.

The 2018 challenge: after a crash course in Data Science, design innovative solutions in the field of Artificial Intelligence applied to Healthcare.

Students and FBK researchers will develop, alongside clinical experts from the OPBG Hospital, a platform that will combine blockchain technologies and Artificial Intelligence methods, preserving data privacy throughout the analysis. Joining WebValley by means of one of our fellowships will provide an unique experience on some of the most interesting themes of smart techs and innovation (GPU cloud computing, deep learning, blockchain, and more), combined with research in computational biology, bioimaging and environmental health.

The students will be the protagonists, supported by FBK researchers and other tutors of international level. The project will be run in a tech lab, set up by FBK in cozy village in Trentino, Italian Alps. Special feature of this edition is the introduction of the principle of privacy-by-design, embedding the sensible data preservation within the planning of the predictive models.

For the 2018 edition, up to 20 seats will be available, sponsored by FBK, the FBK Trustees Board, and partner organizations. Full (including travel) and partial fellowships will be offered covering full tuition, accommodation, leisure time activities, and local travel costs. The team will include students from Trentino, nationals and internationals.

The requirements to participate are:

- High School student (for Italy: 4th year completed)
- Good knowledge of English
- Enthusiasm in science and new technologies
- Above-average school records
- 2 letters: 1 Student Motivation letter and 1 Teacher’s Recommendation letter

Info and on line applications: webvalley.fbk.eu
Welcome to the Lab (4 hs)
Resources (1)
Team Building (2)
The Challenge (1)

Basics & Tools (5)
Web2.0 collaborative tools (2)
The Open Source paradigms (2)
Intellectual properties (1)

Computer Science Background (14)
Linux Operating System (3)
Intro to programming with Python (4)
Virtualization and Cloud Computing (2)
Microsoft Azure (2)

Data Science Methods (8)
Basics of Statistics with R (4)
Interactive Data Visualization (2)
Machine Learning (2)

Bio/Ecoinformatics (6)
R & Python tools (4)
Predictive pipelines in Bio/Ecoinformatics (2)

Predictive Biomarkers (6)
Science, Big Data, and Reproducibility
Feature discovery
Predictive Models for Environment
Basics of network theory
Network visualization

BiolImaging (6)

Privacy by Design (4)

Blockchain for Healthcare (4)

Crash Course on Deep Learning (8)
Introduction to Deep Learning
Deep Learning Tutorial

Teamwork
Lab work, project brainstorming and special topic presentations (70)

Excursion and Leisure Time (50)
Final Presentation (10)

Lab opening times: from 9 to 24
THE AIM
The school aims to introduce students to interdisciplinary research by combining an identified scientific challenge with new technologies. The school strongly encourages the participation of all genders and various backgrounds. The WebValley Lab provides computing resources and devices to test new ways of exploring the principles of Data Science. Students joining the school work in a lively and interactive environment together with a group of researchers from the Bruno Kessler Foundation and selected experts, also interacting through teleconference with other labs.

THE FORMULA
- Create a team of enthusiastic and motivated high school students (17-19 y) tutored by researchers.
- The team accepts a challenge by a collaborating scientist from Ecology, Biology or Social Sciences and develops in three weeks a new web-based prototype for data analysis and management in relation to a problem of ethical interest. In 2018, the data science project will be commissioned by OPBG, one of the largest pediatric hospital in Europe.
- Students are introduced to Open Source software tools (scientific programming, web-mobile interfaces, GIS, databases, data analysis and visualization); they discuss, design and develop the new system interacting with scientists. They learn to select tools, organize their own work plan, and respond with a new solution. A working prototype web solution and technical results are presented at the end of the three weeks period.
- The project activities are developed mostly in teamwork as in a true research environment, that is informal and of high quality in resources, competence and organization. Each student can differently contribute to the project with ideas, software code or data preparation, design of new web interfaces, and project presentation.
- The location: the school is held in a high-tech lab located in a small Alpine village, to demonstrate that web access may support new types of innovative actions also in remote areas, thus combining new technologies and high-quality of life in a natural environment.
- Lab is open all day, but group activities and leisure time are also part of the three weeks course.

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THE GOALS
1. Encourage smart students to be entrepreneurs in science
2. Interdisciplinarity
3. Transform internet into an innovation building environment
4. Develop team-work, collaboration, fast-prototyping attitudes
5. Use sophisticated open source methods in an informal teaching environment
6. Expose to challenging research themes of strong ethical interest
7. Using high quality data from scientific or statistical institutions
8. Promote the adoption of standard formats and sharing data policies

For the organizers: learn from young people which are the new skills of our future colleagues.

See the website for highlights, video and articles about the WebValley initiative.
Facebook: @webvalleyinternational
Twitter: @WebValley
YouTube: WebValley Playlist on Fondazione Bruno Kessler channel
IN THE HEART OF BRENTA DOLOMITES AND MADDALENE
(http://www.visitvaldinon.com)
In 2018, the WebValley School will be held in Val di Non. This green and sunny plateau has many scenic mountain destinations, like the Brenta Dolomites and the beautiful Maddalene group, hamlets where traces of ancient history and culture are preserved: here the nature offers a wealth of natural environments and landscapes in an unique Alpine ecosystem.

The valley centre with the artificial lake of Santa Giustina is surrounded by green hills with castles immersed in fruit orchard and forests: ancient and fascinating mansions that are definitely worth a visit.

The most imposing is perhaps Castel Thun, at the entrance of the valley, which is one of the most prestigious cultural and museum centers in the whole Alpine region. On the south in the heart of the Adamello-Brenta Nature Park, Lake Tovel stands out like a natural jewel.

The undisputed "queen" of the Val di Non produce remains the apple: juicy and delicious in all its assorted varieties (Golden delicious, Red delicious, Renetta...), apples are also the main ingredient of appetizing desserts and cakes like strudel. Some years ago the apples of the Val di Non were awarded the PDO (Protected Designation of Origin) label which ensures the high quality of the product.
Top Research institute in Italy, ranked at the 1st place for scientific excellence within 3 different subject areas (ICT, History and Sociology) and for the economic and social impact according to the quality of research Anvur, promoted by the Italian Ministry for Education, Research an University. Fondazione Bruno Kessler is a research non-profit public interest entity. Being the result of a history that is more than half a century old, through 2 scientific hubs, 7 research centers, 410 researchers, 2 specialized libraries, 7 laboratories, FBK aims to results of excellence in science and technology with particular emphasis on interdisciplinary approaches and to the applicative dimension. We achieve this thanks to our constant attention to collaborations and exchange activities with research organizations, both institutional and corporate, national and international, which extend our innovation capability and involve the community and the local economy in the circulation of knowledge and technologies. [http://www.fbk.eu/](http://www.fbk.eu/)

The Predictive Models for Biomedicine and Environment Research Unit (MPBA)
The core group organizing the Summer School is a team of MPBA researchers and WebValley alumni from former editions. The Predictive Models for Biomedicine and Environment (MPBA) Research Unit develops predictive analytics systems based on machine learning, with applications on complex data, in particular in health, environmental risk, and a wide range of applications. MPBA aims at creating interdisciplinary data science environments backed by state-of-art web infrastructures, using Open Source software and with a commitment to the reproducibility of analyses. The new challenge for the unit is to build novel applications of Deep Learning from complex data, in a network of international collaborations with top research institutions, public bodies and industry. MPBA is a research unit of the FBK ICT Center, in its Complex Data Analytics Research Line. [https://mpbalab.fbk.eu/](https://mpbalab.fbk.eu/)
SPECIAL THANKS TO

Provincia Autonoma di Trento
FBK Board of Directors
Trentino Network
US Society for Science - INTEL ISEF
APT Val di Non
Comunità della Val di Non
Comune di Sanzeno
Azure Microsoft
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Ospedale Pediatrico Bambino Gesù - IRCCS, Roma
DBA Group
Orobix

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