This issue:

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HELIOS WORKPACKAGES

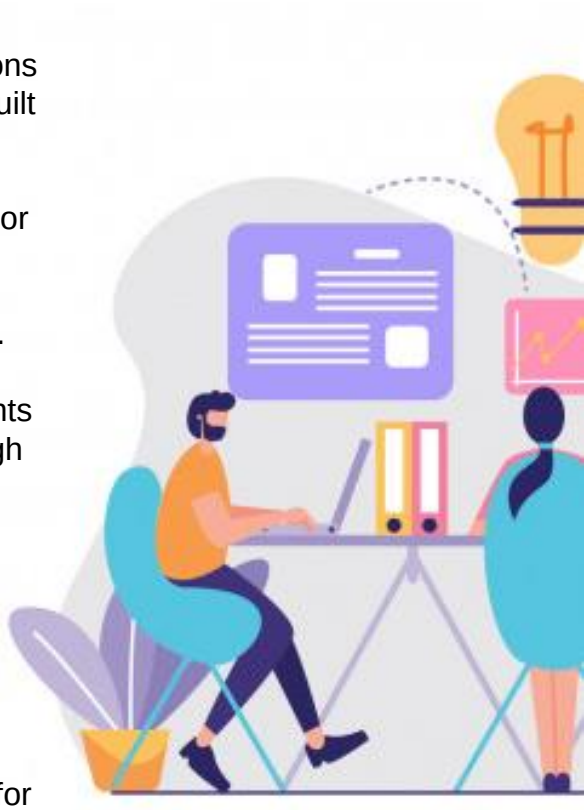
Work Package 2 - Concept design

WP2 has focused the efforts on analysing the implications of COVID-19 pandemic in the future ecosystem to be built on top of HELIOS platform.

After the pandemic, the world faces new requirements for Social Media Networking. A deep view on the characteristics defined for **HELIOS** lets us state that innovation goals clearly matches the new requirements.

The look for automatic matchmaking, smart environments and prosuming opportunities that were catalysed through use-cases, can be practically applied to new social concerns and technological challenges, such as social distancing requirements, blended environments, or proximity tracing applications.

Using the speculative design method, recent brainstorming workshops displayed at Escola Massana imagine this new world as a place to explode **HELIOS** capabilities. The requirements analysis has been used for the location of new opportunities for the future developers working on top of HELIOS platform.



This scheme summarizes the task:

Conditions/Risks	Requirements/Opportunities
Loneliness	Online Social Life (social distancing)
Social Imbalance	Universal Accessibility
Loss of Privacy	Proximity Tracing
Digital Dependency	Smart Objects
Overlapping Contexts	Context Perception
Remote Working	Video Conferencing
Online Consumption	Ethical Shopping
Movement Limitation	Distributed Content Creation
Blended Environment	AR/VR/MR Applications

Work Package 3 – System Development

WP3 finished Final system architecture and API specification (D3.2, M18), which is the main high-level architecture and API plan for the continuing work towards implementing the required modules towards next core release version (M24) and future HELIOS applications later.

D3.2 describes the modular architecture of the HELIOS platform comprising the HELIOS core, extension modules and applications with possible deployment options. The final aim of this architecture is to allow user to have only HELIOS account/profile that can be possibly utilized by multiple applications.

The benefit is that the user's connections can evolve inside the HELIOS core and that information can be available to all HELIOS applications and different contexts to utilize and take advantage.

Only specific data are shared across applications of the core/profile and the applications' own data is private to each specific application and not shared with other applications unless specifically shared by the user.

Besides the architecture update, WP3 has a working version of libp2p (js-libp2p) running in the platform with initial features implemented required for social media messaging, such as direct messages and group messages.

New features are being developed for the p2p part on top of libp2p functionalities. New modules will be integrated with the core to include other features provided by other modules (also described in D3.2 in high-level) as the modules have versions available.

An internal app with minimal social media features is being used internally within the project to evaluate and discover any issues/bugs related to the core components and the robustness of the communication layer.

Work Package 4 – Social Networks Layers and Analysis

WP4 is working to produce the main novelties concerning the social aspects of users in HELIOS.

The main novelty is the trust model. Indeed, in October the deliverable has been submitted and the Trust model is now available and ready to be used in the platform. The Trust model considers several important social aspects which were not well exploited/studied in detail in previous trust models. Principally, the model includes proximity, number of common friends, profile similarity, and the sentimental analysis score produced by the Neurobehavioral module, from UPV.

Concerning the Neurobehavioral module, UPV provided a real scenario where the module has been tested. In detail, UPV collected the responses of 10 egos during conversations with high-trust and low-trust alters. The data includes the mobile conversations with text, image, and accelerometer analysis performed by the module, but also electroencephalogram, electrocardiogram, and electrodermal activity responses of the ego during the conversations.

UPV is currently finishing the analysis of the data, which aims to correlate the neurophysiological responses with the data collected on the mobile phone, validating the process done by the HELIOS‘ module using implicit responses.

Another important feature concerning the creation of the Organic Social Graph has been provided.

UPV and TCD developed software to be used in smart environments, embedded in a Raspberry Pi, which connects with a mobile phone using Bluetooth and sends information to it. They are currently working on the implementation of a function in HELIOS to receive this information, ask the subject if he/she wants to connect to the topic that the smart environment proposes, and in case of saying yes open in the HELIOS app, the topic proposed.

Furthermore, several improvements have been proposed by Tasks 4.3 and 4.8.

In the context of Task 4.3, state-of-the-art and new approaches were explored for mining heterogeneous social graphs in decentralized time-evolving systems to reveal patterns of relations and interactions between users driven by the underlying preferences of HELIOS users, which in turn can be used to improve the quality of HELIOS applications.

Along with the BETA release of the HELIOS platform, the Social Graph Mining extension module was also released with the aim to provide recommendation capabilities to HELIOS users. Each user (or, more precisely, their HELIOS device) carries a different instance of this module and facilitates the process of the next interaction recommendation.

Finally, in the context of Task 4.8, CERTH developed a novel framework for content-aware user profiling, with the purpose to leverage the images stored in a user's device to extract insights about a user's interests and to provide matchmaking opportunities with other users based on profile similarity.

More specifically, Convolutional Neural Network (CNN) models were employed to process a user's image collection for classifying them in a taxonomy of interests and also to further generate an aggregate user profile with the help of Deep Metric Learning-based embeddings.

Special care was taken to design models that are suitable for mobile deployment and respect the privacy of the users by performing all required calculations on the device.

Work Package 5 – Services and User Interfaces

First Working prototypes towards HELIOS Use Cases - h.apps

The HELIOS platform consists of core and extension modules essential for creating feature-rich Social Network Services. HELIOS modules are available to developers to build their own Social Media applications. The HELIOS platform is Android first and the applications built on top of the platform are called h.apps (HELIOS Android Apps). During the last few months, the development of such h.apps was initiated and resulted in three different demos and soon to be released applications.

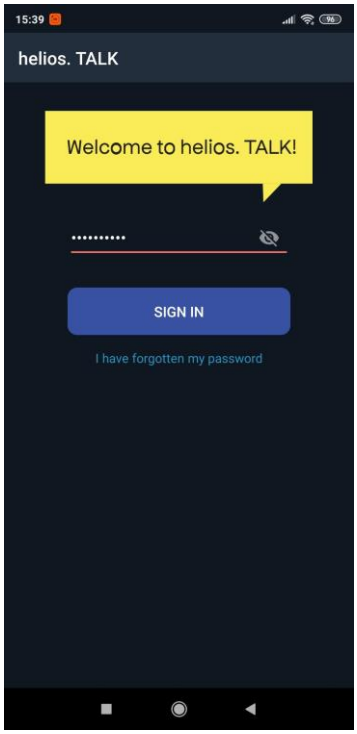
The first alpha version of **helios.TALK h.app** was developed and allows users to communicate in a fully decentralized and confidential mode with their friends in defined contexts. helios.TALK interacts also, with a number of HELIOS Core and Extension Modules:

- Context Management (Core module), which allows the definition and detection of context based on location.
- Contextual Ego Network Management (Core module), which manages and records interactions between users in different contexts.
- Profile API (Core module), which offers a data model for a user's profile.
- Social Graph Mining (Extension module), which accepts as input the Contextual Ego Network and offers a set of next interaction recommendations.
- Video Call from Media Streaming (Extension module), which allows users to perform video calls using Web-RTC technology.

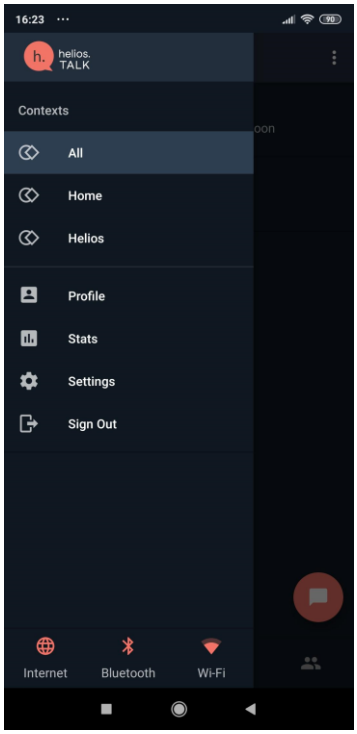
The main features of **helios.TALK** include:

- **Adding Contacts:** users need to exchange links in order to create a rendezvous key and initiate the communication.
- **One-on-one** and **group communications**
- **Manage different contexts:** users can create or remove contexts, define color, link a specific location to a context and add contacts to contexts.
- The application records interactions between users in the **contextual ego network.** Users can access some basic statistics about their contextual ego network in the UI.
- Users can create/update and share their **profile** with their contacts.
- Users can **like/pin messages** of their contacts and access them from the Fav(s) tab
- Users can perform **video calls**.
- Users can receive **suggestions** on next interactions.

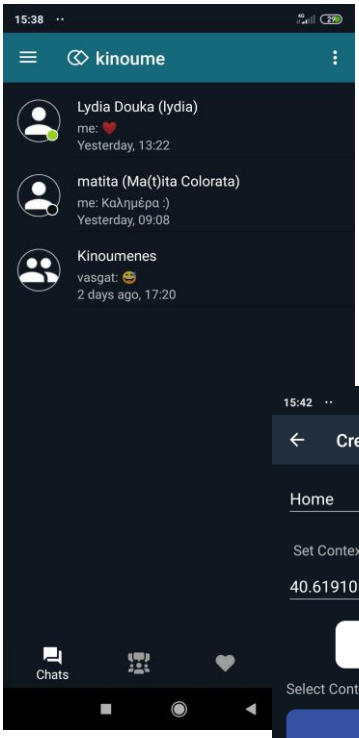
Login activity



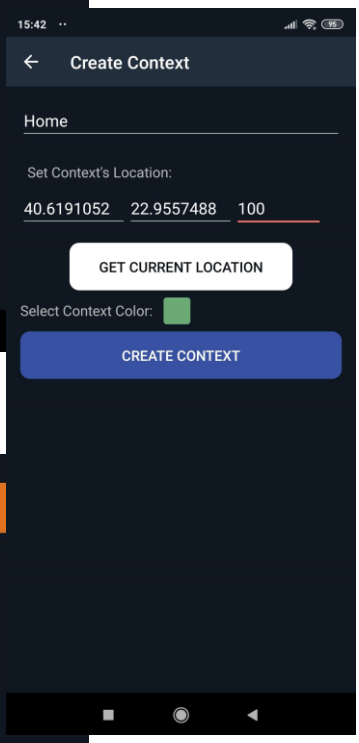
Menu for navigating in different contexts



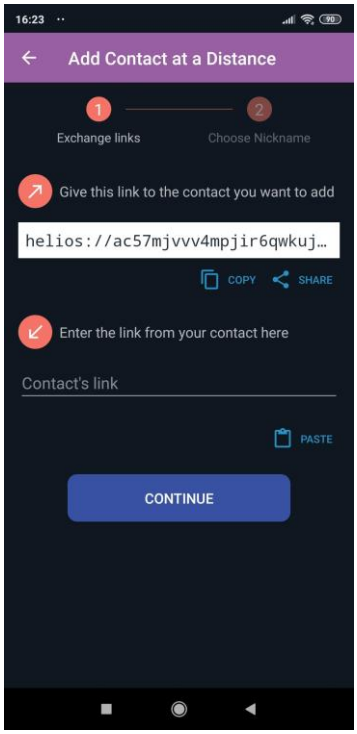
Available chats in a specific context



Favourite messages on HELIOS context

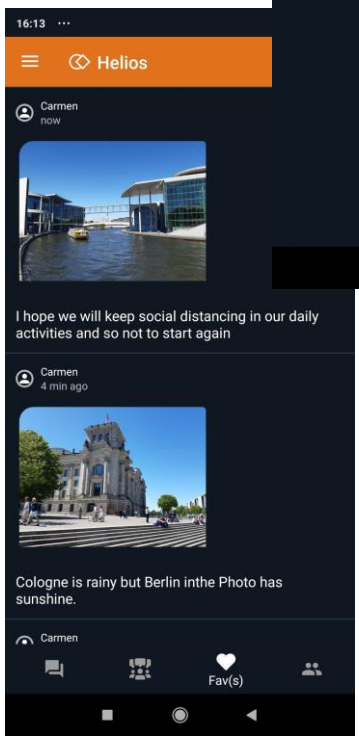


Add contact activity



1-1 conversation activity on a specific context

Favourite messages on HELIOS context



Citizen Journalist Reporter h.app

Developed by SWISS TXT (STXT), is demonstrating the Prosumer Journey, from production to the contribution of pictures and videos. More specifically, it allows users to contribute content anonymously, based on blockchain technology.

The contributions (Video/Pictures) are available on a decentralized P2P network storage (IPFS) to publishers for further distribution on a dedicated Video Exchange Platform (VEP). From the VEP they can be purchased in the future, by accessing the content via a Decentralized App (DApp).

Nevertheless, users can already make a donation on particular content. Ethereum Smart Contracts are used to manage the interactions between the CJ Reporter h.app and the DApp, that allows access to the CJ content in the IPFS network. CJ Rep h.app interacts with a number of helios. core IntentMechanism module and helios. extension - MediaStreaming module.

Video: HELIOS App - CJ Reporter

https://youtu.be/bZdrRwBaySA

helios. VR museum h.app

Allows users to navigate in a museum and interact with artifacts and other people around, in a shared space. The template of the museum was created by using helios.VR Authoring Tool which belongs to helios.Ecosystem.

The h.app supports:

i. multi-user connection and interaction within the VR space of a three-room museum
ii. description of artifacts
iii. experience bar
iv. interaction with artifacts (like, dislike)
v. interaction with other players (through sound, video and text)
vi. storage of user/game analytics in the internal memory

Work Package 6 – System Integration and Operation

WP6 (System integration and operation) satisfied last June an important aim of the HELIOS work plan with the submission of the beta release deliverable (D6.3). The beta release (D6.3) includes consolidated versions of many HELIOS modules and functionalities. However, the main feature of the beta release is that it becomes public.

From July, HELIOS has published a collection of modules, libraries and apps in GitHub to stimulate the external developer community. During the last months, WP6 has fueled the mechanisms for semi-automatic building and libraries generation and now the focus is put on the release candidate deliverable (D6.4), planned for April 2021.

Work Package 7 – Piloting, validation and evaluations

COVID has impacted the way HELIOS pilot will be performed. COVID has impacted from the Ethical Requirements for human interaction to the way data is collected.

Analysing the impact and looking at alternative approaches is the task we have at present. A good example is the new interaction through communication platforms.

This has clear implications with GDPR and informed consent. New ethical informed consent has been drafted and it is in the process of being approved.

Other issues such as the number of persons present in a pilot will also impact HELIOS differently according to local regulation. While writing this newsletter different regions of the HELIOS consortium are affected differently, and a general plan is not suitable for the dynamic situation we have at present and in the near future. Still HELIOS has pledged a piloting that continues, and the first measure has been to start with internal piloting. All HELIOS partners will embark on an internal piloting in the following weeks. This should help towards understanding new pilot setting up and evaluation.

Work Package 8 – Exploitation

The exploitation team is working on a presentation to the consortium to kick-off the post-review operations and prepare an exploitation and go-to-market plan for Helios and its technologies.

We are also working to prepare for the next steering committee at the end of November whereWP8 will have a workshop on exploitation strategy.

The HELIOS Platform has been built in a modular, open-source, and extensible manner to ensure that developers can easily create social media apps or services based on HELIOS beyond the end of the project in December 2021.

The Beta Release includes some of the Core and Extension Modules that make part of the HELIOS Ecosystem and architecture. The Core components are at the heart of the system and take care of basic connectivity, security, and social networking functions developed by HELIOS, while the Extension Modules provide additional features on top of the HELIOS core components that can be used to build applications and services.

A dedicated website has been created for the HELIOS Platform, including all components and modules documentation, video tutorials, and much more!

Visit: https://helios-social.com/

Core Components:

- Profile Manager
- Personal Data Storage Manager
- Communication Manager
- Social Ego Network Manager
- Context Manager
- Security & Privacy Manager

Extension Modules:

- Media Streaming
- Graph mining
- Rewarding
- Neuro-behavioral classifier

Click here and check the Video Tutorials on different components!

HELIOS EVENTS & MORE

Events and presentations

9th Annual Global Accessibility Awareness Day

May 21st, 2020 | Virtual

The TransMedia Catalonia research group of the Universitat Autònoma de Barcelona celebrated this day by hosting a TransMedia Catalonia Open Day. Project partner, Pilar Orero, presented "HELIOS–A Context-aware Distributed Social Networking Framework". Watch the video with integrated audio description here: https://youtu.be/Rj-SYQsT_dE

Innovation Week Atos – Internal Only

June 6th, 2020 | Virtual

HELIOS was showcased as a successful research project by our partners from the Research and Innovation Department from Atos on this global internal event focused on innovation. More than 300 attendees joined the session where HELIOS was presented.

Open Expo Europe 2020

June 20th, 2020 | Virtual

Carlos Alberto Martín from Atos Research and Innovation presented the webinar "HELIOS: A new Open-Source platform to create decentralised social networks". The webinar focused on showcasing our capabilities for the development of decentralised apps for Android, using the core components and extension modules, which recently became public with the launch of the Beta Release of the HELIOS platform.

AI4EU Web Café

June 23rd, 2020 | Virtual

HELIOS had a strong representation of speakers during the AI4EU Web Café "COVID-19 and Contact Tracing Apps" which focused on important topics such as trust and privacy. From our side, Ville Ollikainen (VTT), Barbara Guidi (UNIPI), Kevin Koidl (TCD), and Symeon Papadopoulos (CERTH) presented HELIOS vision from different perspectives such as decentralisation of social media, proximity and trust, and disinformation.
Watch the recording of the session here: https://helios-h2020.eu/helios-ai4eu-web-cafe-covid-19-and-contact-tracing-apps-2/

iLRN Showcase

June 23rd, 2020 | Virtual

Dimitrios Ververidis from CERTH presented the VR Authoring Tool of HELIOS Platform, at the Immersive Learning Project Showcase & Competition, iLRN 2020, within the 6th International Conf. Immersive Learning Research Network.

Experts' Vision Chat: The Future of Social Media

June 30th, 2020 | Virtual

HELIOS & ARTICONF projects announced their collaboration for the "Experts' Vision Chat", a unique initiative where experts from both projects are available to answer questions about different topics. With the occasion of the International Social Media Day, Kevin Koidl from Trinity College Dublin (HELIOS project) and Pedro Jacobetty from University of Edinburgh (ARTICONF project), replied to 19 contributions from people all over the world interested on various topics such as privacy, fake news, VR, decentralisation, among others. Check the questions and answers: https://helios-h2020.eu/news-events/#vialog

BRAIN 2020

July 7th, 2020 | Virtual

Our partners from LINKS Foundation participated at the 1st Workshop on Blockchain Theory and Applications celebrated in conjunction with the 25th IEEE Symposium on Computers and Communications with the presentation of the paper **"Tokenization and Blockchain Tokens Classification: a morphological framework".**

HCI 2020

July 19th, 2020 | Virtual

Our partners from Universitat Politècnica de València in Spain presented the poster **"Speech Emotion Recognition from Social Media Voice Messages Recorded in the Wild"** at the 22nd International Conference on Human-Computer Interaction. Over 2,400 individuals from 77 countries registered to attend this year's conference.

Experts' Vision Chat: Citizen Journalism by HELIOS & ARTICONF

September 8th, 2020 | Virtual

With the occasion of the International Day of Solidarity of Journalists, the second Experts' Vision Chat focused on discussing Citizen Journalism with Robin Ribback from SWISS TXT (HELIOS project) and Alexandre Ulisses from MOG Technologies (ARTICONF project). The experts replied to 13 questions on topics such as rewarding, echo chambers, fake news, reliability, among others. Check the questions and answers here: https://helios-h2020.eu/news-events/#articonf-helios

FRUCT 27th

September 7th, 2020 | Trento, Italy + Virtual

Our partner Tommi Meskanen from the University of Helsinki, presented the paper **"Privacy-Preserving Peer Discovery for Group Management in P2P Networks"** at the 27th Conference on Open Innovations Association FRUCT

GoodTechs 2020

September 14th – 16th, 2020

During the event endorsed by the European Alliance for Innovation, HELIOS partners actively participated on the presentation of three papers, and on the organisation of the **special session Open Challenges in Online Social Networks (OASIS)**. The session was led by Barbara Guidi (UNIPI) and Kevin Koidl (TCD) and focused on how the rapid growth of Social Media's popularity has opened new challenging problems which involve numerous fields in computer science. These issues have implications on community discovery, information diffusion, social graph analysis, trust and security and so on.

- "Evaluating Posts on the Steemit Blockchain: Analysis on Topics Based on Contextual Cues"
- "A Rewarding Model for the Next Generation Social Media"
- "Fixing Social Media with the Blockchain"

7th International Symposium Live Subtitling and Accessibility

November 5th-6th, 2020 | Virtual

Organised by the Universitat Autònoma of Barcelona, this event is an important meeting point for professionals, users, trainers and researchers, to exchange their views about most diverse fields of interest including live and multimedia reporting, new technological developments, live editing, accessibility services, and much more.

During the event, our partner Robin Ribback from SWISS TXT held the presentation "Project HELIOS: The anonymous multilingual citizen journalist (CJ)" within the Panel 4: New Platforms and User Needs moderated by our also partner, Pilar Orero from Universitat Autònoma of Barcelona.

Scientific Publications and Posters

"Blockchain-based access control management for Decentralized Online Social Networks"

Mohsin Ur Rahman, Barbara Guidi, Fabrizio Baiardi (University of Pisa)

Journal of Parallel and Distributed Computing, Volume 144, Pages 41-54, Elsevier

"Speech Emotion Recognition from Social Media Voice Messages Recorded in the Wild"

Lucía Gómez-Zaragozá, Javier Marín-Morales, Elena Parra, Jaime Guixeres, and Mariano Alcañiz (Universitat Politècnica de València)

Conference Poster – HCI International 2020 - 22nd International Conference on Human-Computer Interaction – Springer Proceedings, Part I

"Tokenization and Blockchain Tokens Classification: a morphological framework"

Pierluigi Freni, Enrico Ferro & Roberto Moncada (LINKS Foundation)

1st Workshop on Blockchain Theory and Applications (BRAIN 2020) in conjunction with ISCC 2020

"Unsupervised Evaluation of Multiple Node Ranks by Reconstructing Local Structures"

Emmanouil Krasanakis, Symeon Papadopoulos, Yiannis Kompatsiaris (CERTH-ITI)

Journal Applied Network Science (ANS), Article number: 48, Springer.

"Privacy-Preserving Peer Discovery for Group Management in P2P Networks"

Tommi Meskanen, Valtteri Niemi (University of Helsinki), Jarkko Kuusijarvi (VTT)

27th Conference of Open Innovations Association FRUCT

"Fixing Social Media with the Blockchain"

Pierluigi Freni, Enrico Ferro, Gabriele Ceci (LINKS Foundation)

GoodTechs '20: Proceedings of the 6th EAI International Conference on Smart Objects and Technologies for Social Good - Association for Computing Machinery.

"Evaluating Posts on the Steemi Blockchain: Analysis on Topics Based on Textual Cues"

Kristina Kapanova, Kevin Koidl (Trinity College)
Barbara Guidi, Andrea Michienzi (University of Pisa)

GoodTechs '20: Proceedings of the 6th EAI International Conference on Smart Objects and Technologies for Social Good - Association for Computing Machinery.

"A Rewarding Model for the next generation Social Media"

Barbara Guidi, Laura Ricci (University of Pisa)
Vanessa Clemente, Tomas Garcia (Wordline Iberia)

GoodTechs '20: Proceedings of the 6th EAI International Conference on Smart Objects and Technologies for Social Good - Association for Computing Machinery.

"Emotion Recognition in Immersive Virtual Reality: From Statistics to Affective Computing"

Javier Marin-Morales, Carmen Llinares, Jaime Guixeres, Mariano Alcañiz (Universitat Politècnica de València)

Emotion Recognition in Immersive Virtual Reality: From Statistics to Affective Computing. Sensors 2020, 20, 5163. MDPI Journal.

HELIOS Social Media

Followers 352
Tweets +383
Likes +1730
Impressions 265K

Followers 548
Posts +391
Page Views +1830
Post Reach +8650
Post Engagement +3550

New! YouTube Channel

Subscribe now HELIOS EU Project

Don't miss the series of Video Tutorials showcasing the different Core Components and Extension Modules from the **HELIOS BETA Platform.**

MEET HELIOS PARTNERS

CERTH
CENTRE FOR
RESEARCH & TECHNOLOGY
HELLAS

The Centre for Research and Technology-Hellas (CERTH), founded in 2000, is the only research centre in Northern Greece, and one of the largest in the country. CERTH is essentially a self-supported Research Centre generating an average annual turnover of ~€ 25 million coming from: (a) >30% bilateral industrial research contracts, (b) >60% competitive research projects, (c) <10% as government institutional funding. More than 700 people work at CERTH, with the majority being scientists.

CERTH has received numerous awards and distinctions such as the European Descartes Prize, the European Research Council (ERC) Advanced Grant, Microsoft International Contest Prize, the Trading Agents Competition Award and many more. It is listed among the Top-10 of the EU's Research Centres in attracting competitive research. The participating team, namely the Multimedia Knowledge and Social Data Analytics Laboratory (MKLab), part of the Information Technologies Institute, has significant experience and scientific expertise on the technical aspects of the HELIOS project, namely the collection, indexing and mining of multimedia and social network data from heterogeneous Internet sources, as well as the development of sophisticated multimedia retrieval web applications and services.

CERTH contributes to the innovation activities of the project by: a) contributing to the design of the system architecture (WP3); b) defining a rich typology of social graphs and their lifecycle by analyzing the project use cases(T4.1); c) developing methods for the construction of time-aware social graphs, integrating the influence of transient connections and ad-hoc interactions and mining the graphs (T4.2, T4.3); d) building efficient media classification/filtering models through content-aware social graphs mining and revealing implicit and non-implicit links between users (T4.8); e)providing 3D authoring tools for V-space creation (WP5) and f) building novel network discovering services based on context-dimensions and trust (WP5).

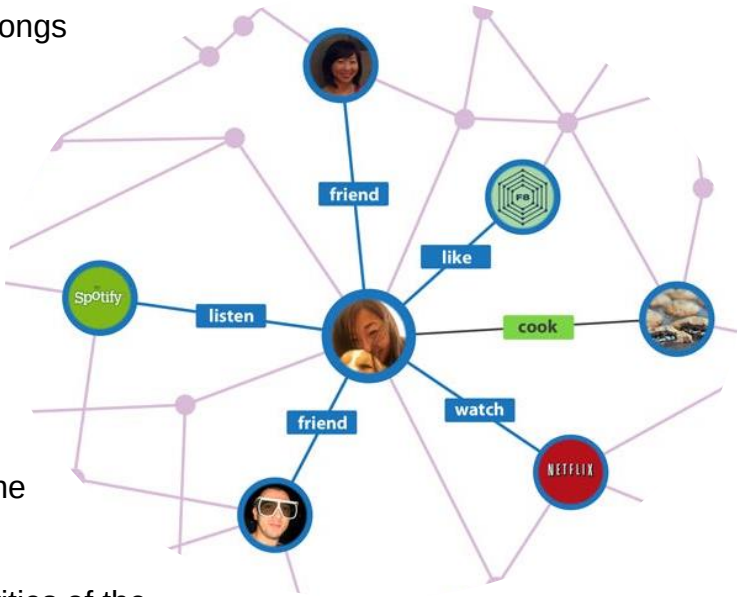
CERTH also participate in all relevant horizontal project activities, i.e., project management (WP1), use case analysis, requirements definition (WP2), system integration and operation (WP6), and dissemination and exploitation planning (WP8).

MEET HELIOS PARTNERS

UNIVERSITÀ DI PISA

The University of Pisa (UNIPI), founded in 1343, is one of the most ancient and prestigious universities in Europe. Today it is a prestigious modern centre of teaching and advanced research. The Shanghai ARWA 2017 ranking places the University of Pisa amongst the top 3 - 7 best universities in Italy.

The team participating in this project belongs to the Department of Computer Science and the Department of Philology, Literature and Linguistics. The Department of Computer Science consists of about 60 Professors and Researchers.



The Department's research funding comes through national, EC agencies, and industry funded projects spanning many areas, including cloud computing, data mining, social networks and machine learning.

UNIPI contributes to the innovation activities of the project. In detail, UNIPI participates to the project management (WP1) and to the use case analysis and requirements definition (WP2). UNIPI contributes to the design of the system architecture (WP3) and to discovery trust-based services. Finally, leads the work packages WP4 focused on the definition of heterogeneous social graphs, analyzing them and all its subgraphs based on both context and time.

Visit our websites

www.helios-h2020.eu www.helios-social.eu

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HeliosEUProject Helios HELIOS EU Project

Partners of the project

VTT, Atos, CERTH Centre for Research & Technology Hellas, Grassroots Arts, LINKS, Nagoon, Swiss TXT Digital Navigator, Trinity College Dublin, Università di Pisa, UAB Universitat Autònoma de Barcelona, Universitat Politècnica de València, Universität Passau, University of Helsinki, Worldline, Escola Massana. Centre d'Art i Disseny.

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