Fraunhofer PORTUGAL

Newsletter 03
MARCH 2021

Decentralised Health

Technology has an enormous impact in Health, and can contribute to facilitate, streamline and simplify processes, both from the point of view of clinicians and institutions, and also from the perspective of the patient/end user. Improving healthcare quality and coverage is the goal!

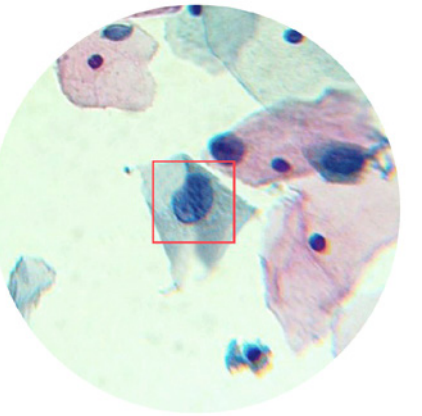
Take a few minutes and get to know the work Fraunhofer Portugal AICOS has been developing in this field.
You will not regret it!

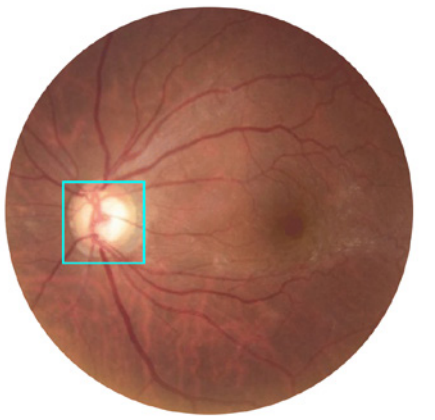
SmartHealth4All Mobilizer Project

The SmartHealth4All is a Mobilizer Project in which FhP-AICOS, Health Cluster Portugal (HCP), Siemens, FEUP, INESCTEC, CITEVE, among many other partners participate.

It aims to boost, in Portugal, an ecosystem dedicated to research and development, production, commercialization and dissemination of medical Smart Health technologies, based on information, communication, electronics and on future and emerging technologies.

Keep an eye out for our official channels and follow the evolution of the project!





TAMI – High-performing XAI Systems for Application in Medicine

Led by First Solutions, TAMI is a three-year project (2020-2023) being developed in partnership with Fraunhofer Portugal AICOS, INESC TEC, Administração Regional de Saúde do Norte and Carnegie Mellon University.

TAMI (Transparent Artificial Medical Intelligence) is an international project aiming, specially, at building high-performing Explainable Artificial Intelligence (XAI) systems for application in medicine, whose outputs can be understood and cross-examined by users through human-friendly explanations of the automated results.

Read more

Highlight_

At Fraunhofer Portugal AICOS we envision healthcare as a continuum process, where predictive, preventive, personalized, and participatory medicine play a key role. Find out more about our work and watch the video which combines the three dimensions of our technologies.

How can we guide non-experts into using it?

How does the device fit into dermatology care provision?

Can we effectively support microscopy-based diagnosis?

How can we automatize sample analysis, minimizing scanning time?

At first glance, these might just seem randomly chosen questions, however, they are far more relevant than that. These are some of the issues that served as a basis for the implementation of technologies developed at FhP-AICOS and that aim to streamline, simplify and facilitate health services. We talk about decentralised health, one of our five innovation themes, and the importance of technology to achieve it.

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At Fraunhofer Portugal AICOS we envision healthcare as a continuum process, where predictive, preventive, personalized, and participatory medicine play a key role. By harnessing technology, we contribute to seamlessly effective, efficient and thoughtful points of care from hospital to home and at every point in between. Healthcare is approached as an ecosystem where technology can facilitate human intervention, connection, and collaboration. Our major goals are to improve patient access to early treatment, support clinicians' decisions, enable the participation of patients and informal caregivers in their care, empower non-experts to acquire medical data, and decrease the burden of screening actions on healthcare systems.

As a multidisciplinary team, we combined the vision of our Human-Centred Design, Connected Things and Intelligent Systems groups in a video where you will be able to follow the path of our technology, from the involvement of people, to the fulfillment of rules and regulations, without forgetting the development of algorithms and the integration of artificial intelligence.

Play video

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Itech Minute_

Elsa Oliveira, Researcher

Design researcher at FhP-AICOS since 2016, Elsa Oliveira has a degree in Communication Design. She has been participating in several projects related to serious games and, recently, joined the TAMI project in which the challenge is to understand the thinking logic of the user and integrate it in the design of the system and explanations.

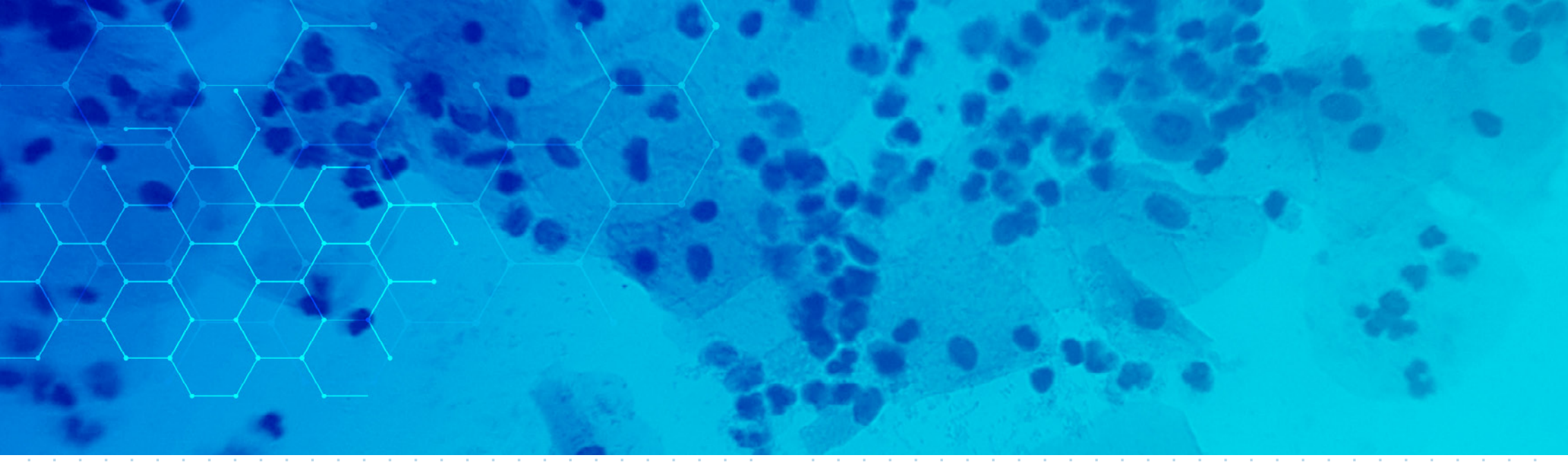
Meet Elsa Oliveira and the work she develops at AICOS.

Trends_

Healthcare just hasn't caught up yet. And needs to, fast.

Keeping up with digital transformation may be overwhelming. It means giving up on established business processes and trusting that disruption will translate into significant value.

Liliana Ferreira
Director



Keeping up with digital transformation may be overwhelming. It means giving up on established business processes and trusting that disruption will translate into significant value. For many years, healthcare has been one of the leading industries in digital transformation. But if we look at the vast healthcare ecosystem and where digital technologies fit in, we may wonder what digital transformation in healthcare even means?

In the latest years, healthcare innovation has focused on supporting decentralization by providing seamless, patient-centred care towards healthy living, prevention, precision diagnosis, and personalized treatment and care at home. Suites of systems, smart devices, software, and services are used to help patients take more care of their health and provide solutions to customers and health systems.

The progress is evident, but known obstacles prevent the broader adoption of these solutions: regulation, liability, biases, and reimbursement restrictions have been slowing down or even limiting the implementation of successful business models.

In a matter of months, however, digital healthcare evolved in a way that could have, under normal circumstances, taken years. The need for remote consultations laid the ground for the general acceptance and adoption of digital technologies, namely the ones based on Artificial Intelligence (AI): telemedicine has boomed; chatbots are now used for symptom checking and triaging; pre-clinical drug discovery processes accelerated the development of COVID-19 therapeutics.

The regulation also adapted. Several countries accepted the fast-track approval of medical devices during the outbreak. European governments and health insurances have removed reimbursement restrictions on video consultations. In the United States, Medicare has expanded its coverage to include telemedicine, and FDA did not enforce requirements for “certain lower-risk device software functions” as symptom checkers.

While COVID-19 may have accelerated the adoption of digital solutions in healthcare, there is still much to do to drive change in the health industry. Like any other industry, health care is being disrupted and transformed by an exponential growth of data. But the need for robust integration of digital and AI technologies still require significant standardization and interoperability efforts. Data sharing, privacy, biases, human experiences, training, and integration are technological issues not exclusive to healthcare. But unlike others, liability and adaptable solutions – like the ones based on AI and machine learning – often have an inverse relationship in this industry. While in big technology companies, like Amazon, Apple or Google, and in other industries or application areas - as retail – a new algorithm that can recommend or predict the outcome of an individual action is welcomed, in healthcare, the direct impact on patient lives, limits its immediate integration into existing workflows. It is, therefore, natural to argue that integrating AI in healthcare settings presents unique challenges. But, once again, AI liability is an open topic not exclusive to healthcare: Who should take responsibility for the decisions made by AI systems? How do we ensure the data used for AI is sufficiently high quality? How open and transparent do AI systems need to be? Answering these impactful questions will require extensive, collaborative, and transparent efforts, crossing multiple settings, actors, and geographies. However, as the current health crisis so well demonstrated, efficiency is no longer a nice to have characteristic of the healthcare systems. Human and material resources are limited. Therefore, a strategic European effort is needed based on an open, transparent conversation about the best possible way to mitigate potential harms is essential. But “admiring the problem” is no longer enough. Healthcare just hasn’t caught up yet. And needs to, fast.

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