ABSPIE Vision and Mission 2014-20

Vision

The ABSPIE Lab is going to become the reference point for all citizens, clinicians, scientists and manufacturers which are willing to cooperate beyond any barrier to design, develop and promote only sustainable and feasible eHealth solutions to solve health and wellbeing problems meeting real user needs

Mission

The mission of the ABSPIE Lab is to develop, validate and test the most innovative methods and tools for biomedical signal processing, machine learning, eHealth and healthcare technologies that can maximize lay and lead user needs' satisfaction. Moreover, the lab is committed to maximize the impact of the most promising innovations in this field will arriving to their main stakeholders in a sustainable manner.

The ABSPIE lab aims to realise its mission and vision basing on 6 enabling values and knowledge areas:

1. **Applied biomedical signal processing**: capability to develop, validate and test new methods of biomedical signal processing that can be used in real applications
2. **Multiscale modelling**: enable the integration of models working on different spatial or temporal scales in order to model reliably complex processes
3. **Health Technology Assessment (HTA)**: structured multi-disciple methods to estimate the cost-effectiveness of new medical devices.
4. **International cooperation**: support knowledge exchanges cooperating with the best partners worldwide
5. **Sustainable and LMIC (Low-Middle Income Countries) friendly design**: focus on the development of sustainable devices that can be used also in LMIC, considering properly local needs, knowledge, cultures and infrastructures
6. **User need elicitation**: capability to identify, classify and priorities used needs using scientific methods and use this information to increase the impact of new medical devices

Moreover, the ABSPIE cooperates with other Warwick Schools/Labs and UK Institutions, with the all the relevant scientific societies, although maintaining a privileged dialogue with the IFMBE and the EAMBES, with the WHO and with the European Parliament and Commission organizing training events and scientific sessions on those enabling values. Basing on those values, the lab is working in 3 main areas:

1. Develop new models to better understand hidden association between behaviors and physiological changes that can be used to predict, and

therefore maximize, individual response to treatment, behavioral interventions or physical training

2. Develop new methods to detect health or behavioral changes that, if not recognized and managed, will result in health deteriorations and therefore mode costly and complex interventions
3. Develop new methods and tools to apply reverse engineering to health economy, to inform the design of new medical devices and therefore maximize their impact

This ABSPIE lab is focusing in particular in developing, validating and testing new methods ad tools aiming to:

1. interpret health changes into the context, integrating physiological and behavioural monitoring
2. predict health changes individuals' response to training and therapy
3. support diseases self-management
4. provide timely feedback to patients and their carers to reduce unnecessary (and costly) interventions
5. predict medical devices cost-effectiveness and maximise their impact using early stage HTA methods and tools

Strategic goals

Internal goals

The Lab was founded in 2014. During its first year of life, our main priority has been to furbish the lab with the best available equipment to perform our researches and to cooperate with other existing University Labs.

In 2015/16, our main goal has been to increase our staff members investing mainly in PhD studentships. This will continue in the next 2 years with the goal of doubling the number of PhD students from the actual 4 to 8. We very much value the exchange of expertise with international colleagues and students. The international collaboration is one of the founding value our lab. Therefore, we have also been very keen to host academics, masters and PhD students in the past two years and we will reinforce this in future.

The pilot studies run isince 2014 have resulted in very innovative findings, which will be investigated in further details in the next years. At this purpose, our goal for 2017/18 will be to secure sufficient funding to expand the lab team with outstanding postdocs and independent research fellowships.

International goals

The Lab aims to become within 5 years an international excellence for its researches and post-grad training on:

1. HTA training and researches, in the BME community
2. applied biomedical signal processing and intelligent eHealth

Moreover, the lab is committed in serving the international community cooperating with scientific societies and political institutions for designing the future of biomedical engineering regrading:

1. The definition of independent research streams dedicated to BME
2. The recognition of BME and clinical engineering as profession
3. The recognition of BME community as fundamental stakeholder for the definition of legislations and regulations regarding medical devices.