

For Immediate Release



## **New AUB research study hopes to improve lives of epilepsy sufferers**

Beirut, Lebanon- 04/06/2014 -If Zaher Dawy, AUB associate professor of electrical and computer engineering, and his team have it their way, epilepsy sufferers will soon be able to predict seizures in advance, allowing them to stay away from high-risk activities.

Currently, those afflicted with epilepsy know that it's dangerous for them to drive cars, operate machinery, handle sharp utensils or caustic products, or even cross streets.

Even taking a shower could carry risks for someone who has unpredictable epileptic fits.

And here lies the importance of the research study that Dawy and his team, in collaboration with NeuroPro, a Swiss medical research company, are conducting: They are working with specially patented algorithms that will be used to develop computer software for a device that can predict an upcoming seizure in patients.

The device, which will be worn on the head of the epileptic sufferer, detects seizure activities in the brain through electroencephalogram signals (EEG). But since the wearer is usually present in a noisy, everyday environment, the ambient noise could interfere with the readings. Hence, the need for extra-sensitive algorithms that can separate the wheat from the chaff, so to speak, filtering the noise from the EEG signals.

While basic algorithms currently exist, Dawy and his team will be working on enhancing the sensitivity of the algorithms that will help medical companies, such as NeuroPro, develop more effective detection devices. Algorithms are essentially step-by-step instructions that are used to process and analyze data.

NeuroPro has already developed a headset that can be discreetly embedded in an item of clothing. This wireless headset sends information about brain activity in the epileptic sufferer to a mobile application on a smartphone or computer tablet. This information is then processed and analyzed at a remote server, which then sends feedback to the mobile application, which alerts a patient of any danger.

The algorithms will help neurologists and technicians working on EEG recordings, for diagnosis or research, to provide a more accurate and sensitive analysis of the brain's electrical activities in addition to helping patients in real-time by alerting them on a mobile device before a seizure strikes.

“This research will help us understand better the brain’s rhythmic function. Once validated, this can be applied amongst other things in developing seizure prediction devices operating in real-time”, explained Dawy.

“What’s exciting is that if this collaboration succeeds in achieving its targets, the opportunities are endless in helping millions lead better lives,” he added.

Funded by an initial \$125,000 grant from NeuroPro via the W Science Fund, this two-year research project is one of a growing number of collaborations between industry and academia at AUB.

“This project comes at an opportune time as we are currently developing interdisciplinary graduate programs in biomedical engineering,” noted Faculty of Engineering and Architecture Dean Makram Suidan.

The founder and Chairman of the W Science Fund, Dr. Walid Juffali commented, “I am delighted with this partnership and look forward to expanding joint research in other areas of science with AUB. If we can create an environment whereby medics, scientists and engineers openly collaborate to integrate new technologies we will affect the lives of millions of people around the world. W Science’s aim to make healthcare affordable through developing low cost personalized healthcare solutions.”

“There is a need to bridge the disciplines of medical and computational sciences in order to develop new age medical solutions. We are delighted to work with this iconic academic research institution on this project and on hopefully other future projects,” commented Dr. Jamil El Imad, Chief Scientific Officer of the W Science Fund and Chief Scientist at NeuroPro.

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PHOTO CAPTIONS: All photos courtesy of NeuroPro.

**The brain photo:**

A 3D real-time visualization of brain activity on mobile devices.

**The second photo:**

Virtual mobile laboratory for EEG runs on tablet device, enables remote diagnosis and research of EEG data sets stored remotely.

**Photo three**

The headset by NeuroPro, which helps epileptic sufferers monitor brain activity and predict upcoming seizures.

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## Note to Editors

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