COPD? There's an app for that

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A smart phone and a connection to the "internet of things" could allow people with chronic lung disease to avoid risky areas where environmental conditions, pollution and weather might exacerbate their symptoms. Details of a framework that would hook into networks of sensors and provide patients with timely alerts are reported this month in the International Journal of Computational Intelligence Studies.

Ioannis Kouris and Dimitris Koutsouris of the National Technical University of Athens, explain that patients with chronic obstructive pulmonary disease (COPD) face many challenges. The disease is usually defined as the co-existence of two untreatable conditions - emphysema and chronic bronchitis. While many sufferers develop COPD after a lifetime of tobacco smoking, others suffer the condition because of exposure to noxious substances through their occupation or environment. Regardless, managing the disease effectively is often reliant on avoiding triggers, such as dust or pollutants such as sulfur oxides, nitrogen oxides, carbon monoxide from vehicles, factories and power stations.

Smart phones provide users with a lot of computational power in a small, portable package and given that many applications are run "in the cloud", there is even more power available at the tap of a screen. The team explains that wearable sensors or environmental sensors connected to the internet can all provide invaluable and timely information. Their system architecture, tested on campus with a range of sensors, brings together data from the internet of things, weather forecasts, the smart phone itself and any sensors the user might carry with them. It might also be connected to the user's medical history. The inputs would then be

processed into an advisory for anyone with COPD to help them plan another route for instance or simply avoid areas where their particular triggers are at high levels at any given time. Of course, the same approach might used to provide alerts for asthma sufferers or might be used in public health management and employee safety systems.

The team is now working on the software that would allow a particular user to be availed of only data from relevant sensors and perhaps data and reports from other users when they enter or plan to enter a particular area so that processing overheads and battery consumption would be minimized as well as only pertinent advisories given to that user.

More information: "Identifying risky environments for COPD patients using smartphones and internet of things objects." Ioannis Kouris; Dimitris Koutsouris. *Int. J. of Computational Intelligence Studies*, 2014 Vol.3, No.1, pp.1 - 17 DOI: 10.1504/IJCISTUDIES.2014.058642

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