

Pure tone and speech audiometry on smartphones — an approach to hearing screening and monitoring in mobile age

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Abstract

Hearing loss is a disorder widely encountered among the world population. It is estimated that it affects 5.3% of the population, which totals in 360 million patients suffering from hearing loss around the world. Monitoring and diagnosis of hearing are especially important in preventing and treatment of hearing loss.

Sound systems of modern home electronic equipment, such as a personal computer (PC), tablet, or smartphone, offer opportunities to conduct hearing examinations at low cost and on a large scale. The examination may not only be applied in screening tests but can also be useful for self-monitoring in the following hearing disorders: fluctuating hearing loss, Menier's disease, tinnitus, sudden sensorineural hearing loss, age-related hearing loss, or during ototoxic therapy.

The lecture presents the research that led to the implementation and deployment of a mobile app capable of conducting two major audiology tests: pure tone audiometry and speech audiometry in the form of digit triplet test. The lecture introduces the above tests and their application in medicine, gives the rationale for the tests, presents the physical basis and also the problems and their solution for implementation on mobile devices.

About the presenter

Marcin Masalski is an ENT specialist and works at the Clinical Hospital in Wrocław. He is also a computer scientist conducting research in the field of audiology diagnostics at Wrocław universities. He is the author of the Hearing Test mobile application, which has been downloaded from the Google Play store more than two million times worldwide. On a daily basis, Dr Masalski is involved in the surgical treatment of ear, nose, and throat diseases.