

High-Performance Atrial Fibrillation Events Detection in Long-Term Beat-to-Beat Interval Recordings

About Us

Based on years of thorough research, The Artificial Intelligence in Medicine Laboratory (AIMLab.), headed by Dr. Joachim Behar, Technion Academic Excellence Prize winner, has developed a novel deep learning algorithm.

PROBLEM

Atrial Fibrillation (AF) is the most prevalent heart arrhythmia. It is associated with a 5-fold increase in stroke incidence and a 3.5-fold mortality risk increase. Today, a variety of AI tools are used for AF detection in long-term recording. However, the industry is in continuous pursuit of a tool that is highly accurate, applicable to a range of patients' ethnic backgrounds, and can perform the estimation of the atrial fibrillation burden (AFB).

Solution

ArNet2 algorithm performs robust atrial fibrillation events detection and is generalizable across age, sex, and ethnicity. It has obtained high performance and was validated on population samples from the USA, Israel, China, and Japan. The algorithm has demonstrated superior results compared to the literature and world-leading technologies (Figure 1).

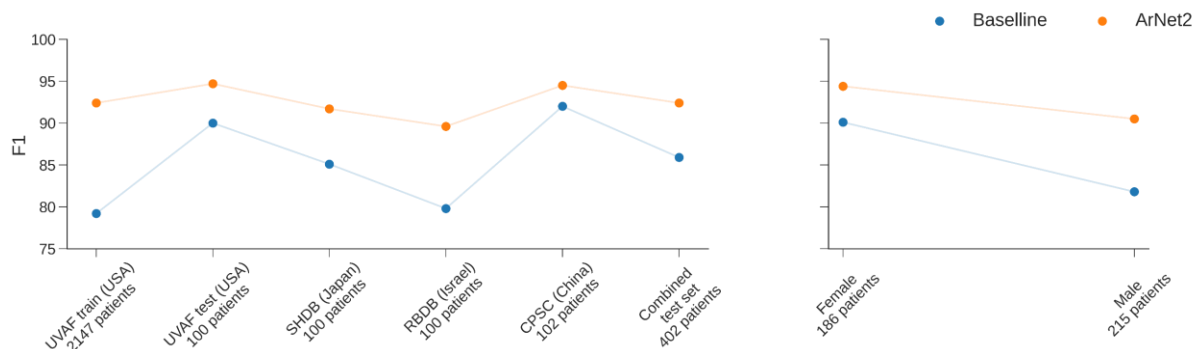


Figure 1: Performance of ArNet2 versus benchmark on the market.

Market

According to the Global Burden of Diseases, Injuries, and Risk factors (GBD); as of 2010, 33.5 million people were affected by AF, Prevalence rates per 100,000 population were 596.2 in men and 373.1 in women.

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Related scientific publications

- 1.Chocron Armand, ... and Behar Joachim. Remote atrial fibrillation burden estimation using deep recurrent neural network. IEEE Transactions on Bio-medical Engineering 68(8), (2020): 2447-2455.
- 2.Biton Shany, ... and Behar Joachim. Generalizable and robust deep learning algorithm for atrial fibrillation diagnosis across geography, ages and sexes. NPJ Digital Medicine 6.1 (2023): 44.