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BRAINTREE
Brain Age Prediction – Diagnostic method or reconceptualizing age

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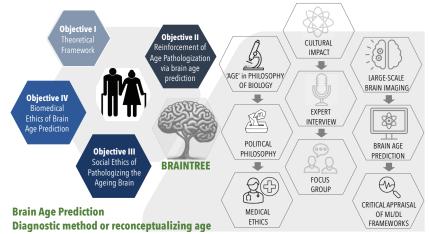Yin-Yueh Lo, Shih Hsin University, Taipei, Taiwan

This project investigates the social and ethical aspects of machine-learning based estimation of individual's age using brain magnetic resonance images of a normative population, coined "brain age". Brain age prediction is a novel and powerful tool for neurology, psychiatry and beyond. Novel neuroscientific results and technologies affect established psychological and anthropological concepts. Similarly, brain age prediction is likely to affect the concept of age. The project will generate an empirically informed and comprehensive analysis of the social and ethical dimension of brain age prediction. It will comprise of three parts:

1) An investigation whether and how brain age prediction can differentiate normative ageing from ageing-associated disorders; how it can accommodate lifetime factors trajectories in "healthy" and "pathological" ageing; including a critical appraisal of existing machine- and deep-learning frameworks.

2) An Analysis of the communication and understanding of brain age prediction. A combination of quantitative and qualitative measures will shed light on the potential impact on society and individuals and generate insights into how people make sense of new technology more generally.

3) An ethical analysis of the medical ethics of using brain age prediction in the clinic, and of the social impact, which might arise, if brain age prediction really contributed to a pathologization and consequent stigmatization of age and the ageing.

The promises and perils of brain age prediction generalize well to several novel AI-based markers in the neurosciences and beyond. This investigation thus generates a solid foundation for the ethical analysis of future brain-based predictive markers.