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The EEG As A Measurement Of Brain Activity: Towards Prediction of Epileptic Seizures

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Submitted in total fulfilment of
the requirements of the degree of

Doctor of Philosophy

Produced on archival quality paper

October, 2009

Abstract

Abstract

The title page must be followed by:

* An Abstract of 300-500 words in English. (In the case of creative arts the Abstract must include a description of the form and presentation of the creative work).

Declaration

This is to certify that

1. The thesis comprises only my original work towards the PhD,
2. due acknowledgement has been made in the text to all other material used,
3. the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

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Acknowledgements

Contents

Abstract	2
Declaration	3
Acknowledgements	4
Contents	i
List of Figures	ii
List of Tables	iii
Introduction	iv
1 Neurophysiology Background	1
1.1 Structure of the Brain	1
1.2 Epilepsy	1
1.3 Electroencephalography	2
1.3.1 Interpretation of the EEG	2
2 Literary Review	3
3 Name of Chapter 3	4
Bibliography	5

List of Figures

1.1	Surface view of the brain, illustrating the main lobes of the cerebral cortex and their basic functions, taken in part from [1]	2
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List of Tables

Introduction

Introduction section text...

Chapter 1

Neurophysiology Background

1.1 Structure of the Brain

The brain together with the spinal cord make up the central nervous system, the body's sensory analysis and decision making system. [2, 3, 4] provide the following information regarding the anatomy of the brain. The brain can be subdivided into two main regions, the brainstem and cerebrum. The cerebrum is structurally divided into two main regions each called a cerebral hemisphere. The outer layer of the hemispheres is known as the cerebral cortex. The cortex is a much folded structure which is estimated to contain in the order of 10^{10} nerve cells or *neurons* [4, Ch. 1]. The cortex contains both "grey matter" and "white matter". Grey matter is a layer containing a high density of neuron cell bodies while, the white matter, located underneath the grey matter, is largely composed of nerve fibers or *axons*. The cortex is further divided into four main lobes, each with its own function specification, see Figure 1.1. The brain stem connects the spinal cord to the cerebral cortex, via the thalamus, a deep brain structure which gates the information flow from the brainstem to the cortex, see Figure ??.

1.2 Epilepsy

The International League Against Epilepsy (ILAE) defines an epileptic event as "a transient occurrence of signs and symptoms due to abnormally excessive or synchronous neuronal activity in the brain" [5]. Epilepsy is defined as "a disorder of the brain characterised

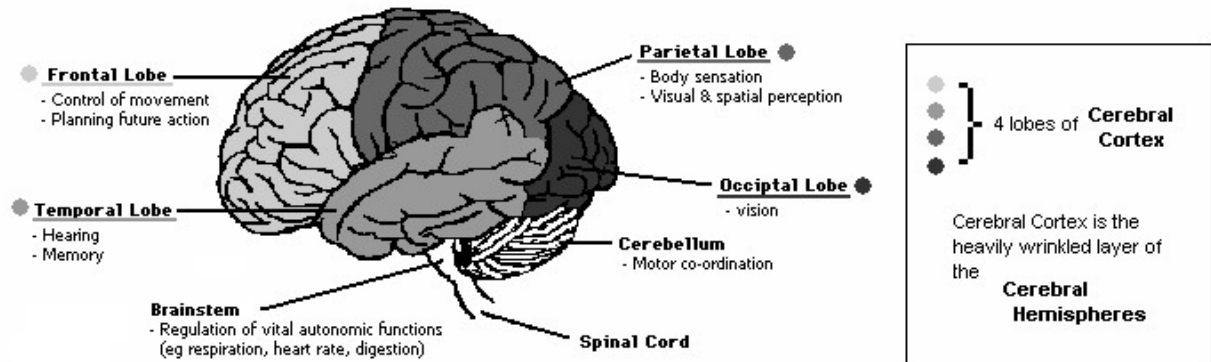


Figure 1.1: Surface view of the brain, illustrating the main lobes of the cerebral cortex and their basic functions, taken in part from [1]

by an enduring predisposition to generate epileptic seizures”[5], and is usually not diagnosed until more than one epileptic event has occurred.

1.3 Electroencephalography

Electroencephalography (EEG) is a record of the temporal fluctuations of electrical potentials recorded from electrodes on the human brain.

1.3.1 Interpretation of the EEG

subsection text.....

Chapter 2

Literary Review

chapter 2 text

Chapter 3

Name of Chapter 3

text of chapter 3 ...

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