<table>
<thead>
<tr>
<th>Title</th>
<th>Brain activity study on olfactory stimulation via electroencephalography</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s)</td>
<td>Ho, Melvin Weiyuan</td>
</tr>
<tr>
<td>Citation</td>
<td>Ho, M. W. Y. (2012, March). Brain activity study on olfactory stimulation via electroencephalography. Presented at Discover URECA @ NTU poster exhibition and competition, Nanyang Technological University, Singapore.</td>
</tr>
<tr>
<td>Date</td>
<td>2012</td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://hdl.handle.net/10220/9002">http://hdl.handle.net/10220/9002</a></td>
</tr>
<tr>
<td>Rights</td>
<td>© 2012 The Author(s).</td>
</tr>
</tbody>
</table>
Introduction

• Electroencephalography (EEG) is the recording of electrical signals generated by the brain.
• EEG had been used for past diagnostic application in neurology.
• EEG proves to be a important instrument in research, especially when higher temporal resolution is needed.

Objective

• To investigate the steady state behavior of the brain to arousing and calming odours at different intensities by using EEG
• To identify and analyze different odours using EEG

Algorithms

- Scent (Different Intensities)
  - Peppermint (Arousing)
  - Eucalyptus (Arousing)
  - Lavender (Calming)
  - Ylang Ylang (Calming)

- Fast Fourier Transform
- Peak Detection
- Feature Extraction (Entropy)
- Classification (Support Vector Machine)
- Template of Different Scent

- Scent Y
- Fast Fourier Transform
- Peak Detection
- Feature Extraction (Entropy)
- Classification (Support Vector Machine)

Preliminary Results

• Experiment were conducted for 2 scents, lavender and ylang ylang at two intensities.
• Red signals represent the higher scent intensity while yellow signals represent the lower scent intensity.
• Channel used were Ground: FPz; POz, Reference Cz, Channel 1: C3, Channel 2: Oz, Channel 3: C4, Channel 4: Fz, Channel 5: P3, Channel 7: F3
• The 2 graphs below show that higher scent intensities have greater impact on brain signals.

Potential Applications

• To invigorate workers using arousing or calming scent at appropriate intensity
• To identify and classify scent into different types by using EEG