

Homework 1 feedback

ECE590 – Neural Engineering

General remarks:

In 95% of the homework assignments turned in, there were no references to any external sources (papers, work from university, research institutes, etc). That is disappointing. Particularly for A5 I expected ideas on how to win the Nobel prize to refer back to some current technology, idea, major breakthrough (e.g. start with people who won the Nobel prize due to their ideas – who are they, what did they do, how did they do it?).

Question 1 – summary of the paper from Nature.

Common mistakes:

- “*The researchers, showed that ...*”
 - ‘the researchers showed that’ (no comma between subject and verb)
- “*The following things were discussed ...*”
 - ‘they discussed’ or
 - ‘the following was discussed’ (refrain from using “thing”)
- “*The technology effects the body...*”
 - ‘technology affects the body’
 - the effects of the technology on this and that ...
- “*...if we get patients to get implanted...*”
 - ‘if we implant patients’
- “*more faster then...*”
 - ‘faster than’
 - ‘the fastest’
 - ‘more difficult than’
 - ‘the most difficult’
 - (review your comparatives and superlatives)
- “*First they implanted the sensor, than they measured...*”
 - ‘First they implanted the sensor, then they measured...’
 - ‘After implanting the sensor, they measured...’
- “*the device has many problems such as failure of signals and others.*”
 - ‘an example of reported problems with the device is the failure of signals’
 - ‘the implanted device presented several shortcomings: recorded signal failure due to increased impedance of electrodes, coarse control of the cursor on the screen, and wired connection to a bulky instrumentation.’

- Extremely long sentences (more than two lines) are hard to understand.

Question 2 – three terms you did not understand.

- *unobtrusive* ... was not supposed to be selected.
- *efficacy* ... was not supposed to be selected.

Question 3 – technical problems.

- Don't paste directly from the paper onto your answer: I expected you to analyze the system they are proposing in the paper and come up with your own problems.
- Once you came up with it/them, I expected you to refer to another paper (of your own research, or that you found by looking through their references). Nobody suggested a reference to a problem they discussed for this question.

Question 4 and 5 – You have \$100k.

- Mostly good answers, but still lack of background research.
- Some people suggested experiments which have been done (I don't expect you to know that, ... I expected the suggested experiment to relate to some other paper you read which describes a great new idea, related to the one you are suggesting). This not only helps prove your point, but demonstrates you researched the field.

Question 6 – 10 year plan: main issues/concerns

- Some misunderstandings, maybe due to instructor's lack of clarity. Question asked to address issues and concerns. That meant basically a bulleted list of bottlenecks for the next ten years (for a long term implant!), you did not need to worry about money, no worries about your job: those were safe. Valid answers would have been: (1) extend (in number) short term trials (to have statistical significance); (2) address portability (make system usable in the field, at home, outside); (3) demonstrate success to be subject-independent (and over time, the system should adapt – that basically means develop better filters, or change strategy for control).
- Some answers were too generic:
 - *present a report;*
 - *test the implant for enough time;*
 - *other electrical modifications are required;*