Advanced Neural Science for Engineers
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Lecture Number - 49
Neurosurgery-based MEA Implantation – IV

Hi welcome to this last video; video number 4 for our same module on rat's brain surgery and in this video what we are looking we are going to see how the holes can be drilled instead of craniotomy the implant with electrodes. Now, here we are looking at the wire just a single wire tungsten wire we can place the tungsten through the hole, through the dura and into the brain, deep into the brain depending on the length of the wire.

If only the tip of the wire is conducting the tip is really tiny we can look at the action potential, if you are looking at the micro needle the micro needle has different electrodes and then you can see a LFP which is local field potentials then it goes inside the brain, but in case of micro needle or in case of a wire which is the electrode we do not had to really remove the part of the skull.

We can drill the holes the skull and place those electrodes so that is what we will be looking at in this particular video. We will also look at the specific cases of the behavioural studies whether there is a limb movement when you touch the whiskers what happens and how the stimulation to the mortar cortex is given. So, we have also seen as one of the videos in one of the lecture, but we will again see.

So, when you apply electrical stimulation if the wire is in the mortar cortex then when you apply electric stimulation there is a movement because that area of the mortar cortex is related to movement of this particular hen. In the case of rat is the rat paws. So, rat paw will move or will shake when you apply electrical stimulation that means that it is in the mortar region and we will be looking at the bio physic signals how we are applying or we can say the DC signals again depending on what kind of electrical stimulation you are looking at.

So, this is all about the video number 4 and once you see the video I think that is what we can give it to you through this online platform to understand what kind of procedures are there for rat surgery. So, what I will show you is I will now show you the video and once the video is

over you can ask me any question, you can ask us any questions using the NPTEL forum. So, till then I hope you have enjoyed the earlier videos or video number 1, 2 and 3.

And I am sure that you will enjoy this video as well. It is a pain to really record the video to this extent and put it online for everyone who wants to see. We have taken the best practices into account so as to make sure that whatever we are showing is like full of disturbance, but just as a advice just take this thing as the importance of how the implantable devices can be used for brain signal analysis just that is our focus nothing else.

We will not deviate when you learn. So, my request to all of you is that look from the perspective that how we can develop technology and how this technology can be used for acquiring the signals in rat's brain or applying stimulation in rat's brain. With that, we will stop here and I will see you in the next class till then you take care bye for now.