Subject: Report about NENS stipend training stay

After my two months training stay in SISSA Laboratory for Cognitive neuroscience in Trieste, with Prof Raffaella Rumiati team, I would like to inform you about that.

I came to Trieste, Italy on August 30th, and have stayed there until October 27th, when I returned back to Belgrade, Serbia.

First of all I would like to express my gratitude about the NENS stipend that allowed me to visit one of the European Neuroscience laboratories and colleagues working there on very interesting scientific research in Cognitive Neuroscience.

Professor Rumiatis’ team welcomed me and I had the opportunity to work with them on their experiment employing Transcranial magnetic stimulation in studying processing of action verbs and the role of Motor cortex in that process.

Since I was working on my PhD thesis dealing with TMS I had some problems with understanding of analysis of signals (which is my scope of research, since I am basically Engineer of electronics with Master degree in Neuroscience) and an interpretation of results which we usually get when applying TMS. Luckily, I met several different persons who have helped me to broaden my understanding of that scientific process. I did not limit myself on communicating with the colleagues from that laboratory, but I have contacted other colleagues from different departments, since my research is always multidisciplinary. Dr Corrado Corradi Del’Acqua helped me to find appropriate literature about fMRI research, so I started learning that as well. Later, I was introduced to Dr Giosue Baggio who just came from Donders center, dealing with some qualitatively new methods of analysis, and helped me to find completely new approach to analyzing signals when we have problem with Multiple Comparison: Those conversations gave me possibility to grasp a new methods and understand much about nonparametric statistics, developed for fMRI data. Another colleague, Dr Antonio Vallesi, also offered me his help in learning some new software packages, which I would need in future, since here in Belgrade there are some plans to get the first fMRI setup in Serbia. I was amazed with the possibility to find all the papers and materials I needed because here our access to expensive databases with scientific materials is very restricted, due to slim financial possibilities of our scientific institutions to pay for access to sources needed. I think that I get something like an acceleration in my scientific career since several people helped me to find exactly what I was interested in, in two different fields: TMS applications in Cognitive neuroscience (together with analysis of signals inevitable in that kind of research) and applications of fMRI in cognitive neuroscience. It was funny that I did not know for some very important papers –publications essential for my work, and I found it there. For example, extraordinary study of equality of Fourier, Hilbert and wavelet analysis of data in frequent domain: I have thought they differed significantly, since we were calling them linear and nonlinear analyzing-some of the most elegant research I read in a few years have explained about their theoretical equality!

I also used the opportunity to visit Udine fMRI center where a new fMRI machine is starting its research period, and had some interesting conversation with Dr Marta Mayeron, who as a physicist explained to me important stages in learning the software and gave me some valuable advices for my future work. A group of Prof Alessandro
Treves also offered me insight in their research about theoretical models of Neural Networks. Since I had experience with models of Transcranial magnetic stimulation models, biophysics and problems of activation, I gave two lectures to a group, several days before my leaving: it seems that they were very interested and we exchanged some ideas about that topic. Also I was attending other colleagues’ lectures about fMRI, which intrigues me very much. Since one of the members of SISSA Prof Carlo Miniussi had very good equipped laboratory in Brescia he invited me to come and see how they are working on their research, which I did. I visited TMS laboratories in Brescia and discussed many topics concerning TMS research with Prof Miniussi, who invited me to go on with our scientific cooperation, since their team has a lack of engineering person, who would help them in understanding certain stages of analyzing the signals from their experiments. I was very happy about that opportunity as well.

Beside that fact that I have broaden my understanding of the methodologies in research, and the phenomena under research, I had a need to share what I have learnt with my colleagues here, in Belgrade. So, I applied for International Conference about Language and learning in Belgrade, to be on 13-14 November: they accepted two lectures of mine. One is about recent research in Cognitive neuroscience using TMS and another about some new methods using fMRI in the same field. My Mentor Prof Pavle Andjus also suggested that I should have another lecture on our University about what I have learned during my training stay in SISA Trieste, which I would do after the Language and Learning Conference, until the end of November.

To sum up, I think that it was the best use of two months in almost entire education process I had, which, certainly will define, at least in direction my future work.

Best regards,

Milena Čukić