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Application Details
Short Term Scientific Missions
Cost287 - ConGAS
Input Devices and Music Interaction Lab, Mc Gill University, Montreal, Canada
14.05.2006 - 31.05.2006

Work Plan

My work as a PhD student focuses on the control of physical models of musical instruments applied to the synthesis of violin sound. The sound produced by such numerical models is controlled in a natural and straightforward way from parameters that are the same as the one the player uses when he performs (bow speed, bow pressure and position on the string). The realism of such sounds can then be greatly improved by a better knowledge of the way the player acts on the instruments to obtain such or such sound. From the analysis of violinist's gestures on a real instrument, we obtain data, gesture characteristics, patterns and models that can be used to control physical models in a more realistic way.

For that purpose, I developed a sensor that is used to measure the bow pressure on the string. But this measurement has to be completed with other parameters of interest such as bow speed, for example. First experiments have been led by Nicolas Rasamimanana on September 2006. They have shown that McGill's equipment for motion recording permit to obtain a very fine measurement of these parameters. Using the equipment of this laboratory, we will be able to get a complete description of violinist's gesture, including bow speed and position on the string. During my stay, I will work together with Erwin Schoonderwaldt who will be developing a complete setup dedicated to violinist's gesture acquisition.

A first step will consist in integrating the bow-pressure sensor to the setup in an appropriate way. It should be carried out in two or three days. After a quick period for the validation and the evaluation of the complete setup, I will be especially interested in acquiring data with professional violinists. I will focus on the way they achieve several bow strokes (*détaché*, *marcato*, *tremolo*...), and the gesture strategies that they use to get different dynamics (from *pianissimo* to *fortissimo*). Another step will be the validation of the sounds that are produced when the model is controlled by these data. The players will be asked to hear and reproduce real sound examples (recorded during acquisitions) and synthesised ones. The comparison between original data and data recorded as the player is trying to reproduce what he hears will give very useful information on the different strategies that are used to achieve the same bow stroke (or the same musical sentence) and on the validity of the model.

Curriculum Vitae :

Since October 2004, I am working as a PhD student mainly at IRCAM with a strong collaboration with the Speech, Music and Hearing laboratory (TMH) at KTH (Stockholm). This work is supervised by René Caussé (IRCAM, Paris), Anders Askenfelt (TMH, Stockholm) and Benoît Fabre (LAM, Paris); it deals with the acquisition of typical violinist's gestures and the control of physical models of bowed strings.

After high-school diploma (1998), I studied mathematics and informatics, then fundamental physics at university Pierre and Marie Curie (Paris 6). At the same time, I worked as a music teacher in music academies and played as a violinist in different orchestras. After getting a master in signal processing, acoustics and informatics applied to music at Ircam (DEA ATIAM, university Paris 6, 2004), I began my PhD work at IRCAM's instrumental acoustics team.

1980	Born in Paris, France
1998	French Scientific A-levels (<i>Baccalauréat</i>) with highest mention (<i>mention très bien</i>)
1998 – 2000	Studied Mathematics and Informatics at university Pierre and Marie Curie (Paris 6)
2000 - 2003	Studied Fundamental Physics (University Paris 6) (Licence, Master)
2004	Acoustics, Signal Processing and Informatics applied to Music (University Paris 6) Master Thesis at IRCAM (Instrumental Acoustics team)
2004 – present	PhD student at IRCAM and TMH

Estimation of the funding requested :

Travel (plane between Paris and Montreal):	700 €
Accommodation (40 € x 17 nights):	680 €
Subsistence (20 € x 18 days):	360 €
Total:	1740 €

Contribution from other sources: none

Previous CEC financial support or current requests to the CEC: none