

**Date:** Thu, 17 Feb 94 12:52:33 -0800  
**From:** Julius O. Smith III <jos@ccrma.Stanford.EDU>  
**To:** staff  
**Subject:** Sonification research  
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Hello all,

Gregory Kramer who is well known in "sonification" research (the auditory display of scientific data), would like to submit a joint proposal with CCRMA to NASA and DARPA for the support of his research and our synthesis technology development work. Basically, he wants to use our tools as a back-end for his sonification transformations. The benefits for CCRMA include at least one RA position and a fast RISC computer running NeXTSTEP such as the Alpha or HP Gecko which will be the common system here and at Clarity (his company, apparently). I have been asked to write a "letter of collaboration" for the proposal, and I am inclined to do so if noone has any negative input on Kramer, Clarity, or sonification research in general. (I've never met him in person, but he sounds ok on the phone, and we have students needing funding next year.)

Julius

Here is the beginning of the first draft of the proposal:

**TECHNICAL PROPOSAL: 92-1 06.01-4071**  
Sonification for the Enhanced Display of Multivariate Data

Clarity intends to work with Stanford University's Center for Computer Research in Music and Acoustics (CCRMA) to make their extensive sound synthesis research software applicable to data sonification and to conduct research into the auditory perception issues underlying sonification. The synergy of Clarity's Sonification Toolkit and Stanford's sound research software promises to provide a qualitatively new level of functionality, adaptability and extensibility for sonification research. When combined with rigorous perceptual testing to guide and inform subsequent iterations of the design process, this research is expected to impact a wide variety of application areas that are heavily dependent upon data interpretation. Research areas that stand to benefit most from this sonification research are those which must work with high dimensional data or very large data sets.

In order to explore the underlying perception issues, tools must be built by researchers cognizant of current sonification research.. Once these interactive tools are sufficiently developed, perceptual testing must be conducted to determine their efficacy and the validity of any insights they seem to afford. This will then influence the next generation of sonification research. The resulting innovation will be a unique interactive auditory display technology that enhances data comprehension, and that will enable scientists to monitor and interpret the growing deluge of valuable abstract data, much of which is currently being disregarded due to inadequate perceptual processing mechanisms.