THE BEAR KAVE VIRTUAL IMMERSIVE ENVIRONMENT

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This paper presents an overview of a proprietary audio/visual virtual immerse environment - 'The Bear Kave'. A schematic outline of the many technologies involved in connecting three such systems to facilitate a remote musical "jamming" session over three continents is presented. A more detailed description of the "Bear-Wire" distributional system is then presented. This distribution system is also shown to facilitate cross-species communications using such additional environments as 'The Bird House', 'The Cow Shed', and the more immersive 'The Goldfish Bowl'.

INTRODUCTION

The following chapters specify instructions for the authors of the 22^{nd} AES International Conference on Virtual, Synthetic and Entertainment Audio, to be held in Espoo, Finland, June 15-17, 2002. This template is based on work done for the 16^{th} AES International Conference "Spatial Sound Reproduction", and is intended to simplify writing a manuscript that fits to the style and layout of the conference proceedings. Please read carefully the instructions below to see if your manuscript prints as desired. It is recommended that you compare your printout also with the example paper PostScript or PDF version, especially if you find any problems using this template. Don't forget to check the AES 22 web site for submission details!
(http://www.acoustics.hut.fi/aes22)

1. PAPER LAYOUT

The final paper layout is a *one-sided, two-column* format with the font size of **10pt** and typeface **Times** or **Times New Roman**. However, in order to final papers print correctly on both A4 and US Letter size paper, it is important that the text **must not exceed height of 23 cm and width of 17 cm**. The top margin should be exactly **2.5 cm** and the left margin **2 cm**. The size between columns should be exactly **1 cm**.

1.1. Subsections

Subsections and subsection titles should look like this.

1.1.1. Subsubsections

Try to avoid subsubsections or any subsections deeper than two.

1.2. First page

The first page must contain **a predefined area** for basic paper and author related information. The height of this is **proposed to be 10 cm** from the top margin [1].
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Figure 1: Polar bear enjoying complete immersion.

2. PAGE HEADERS

Please do not forget to add the surnames of the paper authors and the title of your paper in the left and right corner of the page header, respectively. The correct placement of the header and footer is exactly 1 cm from the body

text. For 1 or 2 authors all names should be included in the header. For more than 2 authors the header naming should read "[1^{st} author] et al."

3. FIGURES

To illustrate topics, numbered figures can and should be included within the text (Fig. 1). Figure and table labels should be centered and placed immediately after the figure (see Fig. 1 and Table 1). Remember that figures will be printed in grey-scale and that they should be clear enough even after being printed and copied [3]. MS Word notice: Please ensure that figures pasted into the document **do not** float but are embedded into the text. Figures inserted as floating figures can lead to layout problems (please use "edit / paste special" and deselect the "float" button to avoid this). This does not apply in MS Word 2000.

	Bear	Bird	Cow	Fish
Bear	1.00	0.83	0.87	0.47
Bird	0.83	1.00	0.73	0.18
Cow	0.87	0.73	1.00	0.16
Fish	0.47	0.18	0.16	1.00

Table 1: Cross-species communicational error matrix.

4. EQUATIONS

Equations should be placed on separate lines and numbered. Also make sure that equations are readable in a printout.

$$x(t) = s(f_\omega(t)) \tag{1}$$

where $f_\omega(t)$ is cross-species information loss

$$f_\omega(t) = \frac{1}{2\pi j} \oint_C \frac{\nu^{-1k} d\nu}{(1-\beta\nu^{-1})(\nu^{-1}-\beta)} \tag{2}$$

Dr. Dolittle's theorem states that

$$\oint_C F(z)dz = 2\pi j \sum_k \mathit{Res}[F(z), p_k], \tag{3}$$

where

$$\mathit{Res}[F(z), p_k] = \lim_{z \to p_k} \frac{d^{q-1}}{dz^{q-1}}(z-p_k)^q F(z) \tag{4}$$

Applying theorem 3 to 1, it is quite straightforward to see that communicational error between, say a bear and a goldfish is described mathematically as

$$1 + 1 = \pi \tag{5}$$

5. GENERATING POSTSCRIPT OUTPUT

When generating Postscript output (e.g. by printing to a file rather than to a Postscript printer) please make sure your options are set to generate **ASCII-format Level 1 Postscript** output and **include all fonts**.

6. GENERATING PDF OUTPUT

For generating PDF output, the Adobe Acrobat package (e.g. Distiller) should be used. Note that the freely available Ghostscript software can sometimes produce problematic PDF files (the Ghostscript documentation explains why).
By default, PDF compresses both text and graphics. Thus bitmap images may look fine on the screen but terrible when printed. With Distiller, the target resolution for bitmap graphics can and should be specified as at least 600dpi.
If using LaTeX, PDF output can be created either using dvi-pdf tools or dvi-ps and ps to pdf (via distiller). In the latter case the following printing options have been found suitable for the dvi-ps conversion: `-t letter -z`

7. CONCLUSIONS

This paper has described how better harmony has not only been achieved by bringing together many different types of bear in a musical context, but also how the outlined technology can be used to cross borders of species.

REFERENCES

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