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Mathematics of Control, Signals, and Systems

Correction
Approximation by Superpositions of a Sigmoidal Function

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In the paper "Approximation by Superpositions of a Sigmoidal Function" [C], the proof given for Lemma 1 is incorrect since it relies on the erroneous statement that simple functions are dense in $L^\infty(\mathbb{R})$. The author has pointed out that the proof in [C] can be corrected by changing, at the bottom of page 307 and the top of page 308, the occurrences of $L^\infty(\mathbb{R})$ to $L^\infty(J)$ for a compact interval, J, containing $\{y^T x \mid x \in I_n\}$, where y is fixed. It should also be noted that the reduction of multidimensional density to one-dimensional density as in the proof of Lemma 1 had previously been obtained by Dahmen and Micchelli, using the same techniques, in work on ridge regression (see Lemma 3.2 of [DM]).

We thank Raymond T. Melton, who pointed out the error in the proof of Lemma 1 in [C] and supplied a proof, showing that the Fourier transform of the measure μ must be zero because the μ-measure of every half-plane is zero [M].

References

[C] G. Cybenko, Approximation by superpositions of a sigmoidal function, *Math. Control Signals Systems*, **2** (1989), 303–314.

[DM] W. Dahmen and C. A. Micchelli, Some remarks on ridge functions, *Approx. Theory Appl.*, **3** (1987), 139–142.

[M] R. T. Melton, Comments on "Approximation by Superpositions of a Sigmoidal Function," personal communication, March 26, 1992.