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mGEV: Extension of the GEV Activation to Multiclass Classification

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mGEV Activation

Based on the GEV distribution

$$GEV(x|\mu, \sigma, \xi) = \begin{cases} \exp\left\{-\exp\left(-\frac{x-\mu}{\sigma}\right)\right\} & \text{if } \xi = 0, \\ \exp\left\{-\left[-1 + \xi\left(\frac{x-\mu}{\sigma}\right)^{-1/\xi}\right]\right\}, & \text{if } \xi \neq 0. \end{cases}$$

$$mGEV(GEV) = \frac{GEV}{\sum_i GEV}$$

Results



		Normal	Pneumonia	COVID-19	Macro Average
Softmax	Recall	0.54	1.00	0.77	0.77
	Precision	0.99	0.75	1.00	0.91
	F1-Score	0.70	0.86	0.87	0.81
mGEV	Recall	0.68	0.99	0.82	0.83
	Precision	0.97	0.80	1.00	0.92
	F1-Score	0.80	0.89	0.90	0.86