CORNN Suite functions used as regression fitting tasks

1	Ackley	$f(x_1,x_2) = -20\exp\big(-0.2\sqrt{0.5(x_1^2+x_2^2)}\big) - \exp(0.5(\cos 2\pi x_1 + \cos 2\pi x_2)) + 20 + \exp(1), \quad x_1,x_2 \in [-32,32]$
2	Ackley N.2	$f(x_1,x_2) = -200\exp\big(-0.2\sqrt{x_1^2+x_2^2}\big), \quad x_1,x_2 \in [-32,32]$
3	Ackley N.3	$f(x_1,x_2) = -200\exp\big(-0.2\sqrt{x_1^2+x_2^2}\big) + 5\exp(\cos 3x_1 + \sin 3x_2), \quad x_1,x_2 \in [-32,32]$
4	Ackley N.4	$f(x_1,x_2) = \exp(-0.2)\sqrt{x_1^2+x_2^2} + 3(\cos 2x_1 + \sin 2x_2), \quad x_1,x_2 \in [-35,35]$
5	Adjiman	$f(x_1,x_2) = \cos x_1 \sin x_2 - x_1/(x_2^2+1), \quad x_1 \in [-1,2], \quad x_2 \in [-1,1]$
6	Alpine N.1	$f(x_1,x_2) = \lvert x_1 \sin x_1 + 0.1x_1\rvert + \lvert x_2 \sin x_2 + 0.1x_2\rvert, \quad x_1,x_2 \in [0,10]$
7	Alpine N.2	$f(x_1,x_2) = \sqrt{x_1}\sin x_1 \sqrt{x_2}\sin x_2, \quad x_1,x_2 \in [0,10]$
8	Bartels-Conn	$f(x_1,x_2) = \lvert x_1^2 + x_2^2 + x_1x_2\rvert + \lvert\sin x_1\rvert + \lvert\cos x_2\rvert, \quad x_1,x_2 \in [-500,500]$
9	Beale	$f(x_1,x_2) = (1.5 - x_1 + x_1x_2)^2 + (2.25 - x_1 + x_1x_2^2)^2 + (2.625 - x_1 + x_1x_2^3)^2, \quad x_1,x_2 \in [-4.5,4.5]$
10	Bird	$f(x_1,x_2) = (\sin x_1)\exp((1-\cos x_2)^2) + (\cos x_2)\exp((1-\sin x_1)^2) + (x_1-x_2)^2, \quad x_1,x_2 \in [-2\pi,2\pi]$
11	Bohachevsky N.1	$f(x_1,x_2) = x_1^2 + 2x_2^2 - 0.3\cos 3\pi x_1 - 0.4\cos 4\pi x_2 + 0.7, \quad x_1,x_2 \in [-100,100]$
12	Bohachevsky N.2	$f(x_1,x_2) = x_1^2 + 2x_2^2 - 0.3\cos 3\pi x_1 \cos 4\pi x_2 + 0.3, \quad x_1,x_2 \in [-100,100]$
13	Booth	$f(x_1,x_2) = (x_1 + 2x_2 - 7)^2 + (2x_1 + x_2 - 5)^2, \quad x_1,x_2 \in [-10,10]$
14	Brent	$f(x_1,x_2) = (x_1+10)^2 + (x_2+10)^2 + \exp(-x_1^2 - x_2^2), \quad x_1,x_2 \in [-20,0]$
15	Brown	$f(x_1,x_2) = (x_1^2)^{(x_2^2+1)} + (x_2^2)^{(x_1^2+1)}, \quad x_1,x_2 \in [-1,4]$
16	Bukin N.6	$f(x_1,x_2) = 100\sqrt{\lvert x_2 - 0.01x_1^2\rvert} + 0.01\lvert x_1 + 10\rvert, \quad x \in [-15,-5], \quad x_2 \in [-3,3]$
17	Cross-in-Tray	$f(x_1,x_2) = -0.0001(\lvert(\sin x_1)\ (sin x_2)\exp(\lvert 100 - (\sqrt{x_1^2+x_2^2}/\pi)\rvert) + 1)^{0.1}, \quad x_1,x_2 \in [-10,10]$
18	Deckkers-Aarts	$f(x_1,x_2) = 10^5x_1^2 + x_2^2 - (x_1^2+x_2^2)^2 + 10^{-5}(x_1^2+x_2^2)^4, \quad x_1,x_2 \in [-20,20]$
19	Drop-Wave	$f(x_1,x_2) = -\big(1 + \cos\big(12\sqrt{x_1^2+x_2^2}\big)\big)/\big(0.5(x_1^2+x_2^2)+2\big), \quad x_1,x_2 \in [-5.2,5.2]$
20	Easom	$f(x_1,x_2) = -(\cos x_1)(\cos x_2)\exp(-(x_1-\pi)^2 - (x_2-\pi)^2), \quad x_1,x_2 \in [-100,100]$
21	Egg Crate	$f(x_1,x_2) = x_1^2 + x_2^2 + 25(\sin^2 x_1 + \sin^2 x_2), \quad x_1,x_2 \in [-5,5]$
22	Egg Holder	$f(x_1,x_2) = -(x_2+47)\sin\big(\sqrt{\lvert x_2 + x_1/2 + 47\rvert}\big) - x_1\sin\big(\sqrt{\lvert x_1 - x_2 - 47\rvert}\big), \quad x_1,x_2 \in [-512,512]$
23	Exponential	$f(x_1,x_2) = -\exp(-0.5(x_1^2+x_2^2)), \quad x_1,x_2 \in [-1,1]$
24	Goldstein-Price	$f(x_1,x_2) = [1 + (x_1+x_2+1)^2(19 - 14x_1 + 3x_1^2 - 14x_2 + 6x_1x_2 + 3x_2^2)][30 + (2x_1 - 3x_2)^2(18 - 32x_1 + 12x_1^2 + 4x_2 - 36x_1x_2 + 27x_2^2)], \quad x_1,x_2 \in [-2,2]$
25	Griewank	$f(x_1,x_2) = 1 + x_1^2/4000 + x_2^2/4000 - (\cos x_1)\cos(x_2/\sqrt{2}), \quad x_1,x_2 \in [-600,600]$
26	Himmelblau	$f(x_1,x_2) = (x_1^2 + x_2 - 11)^2 + (x_1 + x_2^2 - 7)^2, \quad x_1,x_2 \in [-6,6]$
27	Holder-Table	$f(x_1,x_2) = -\lvert(\sin x_1)\ (cos x_2)\exp(\lvert 1 - (\sqrt{x_1^2+x_2^2}/\pi)\rvert), \quad x_1,x_2 \in [-10,10]$
28	Keane	$f(x_1,x_2) = -(\sin^2(x_1-x_2)\sin^2(x_1+x_2))/(\sqrt{x_1^2+x_2^2}), \quad x_1,x_2 \in [0,10]$
29	Leon	$f(x_1,x_2) = 100(x_2 - x_1^3)^2 + (1-x_1)^2, \quad x_1,x_2 \in [-0,10]$
30	Levi N.13	$f(x_1,x_2) = \sin^2 3\pi x_1 + (x_1-1)^2(1 + \sin^2 3\pi x_2) + (x_2-1)^2(1 + \sin^2 2\pi x_2), \quad x_1,x_2 \in [-10,10]$
31	Matyas	$f(x_1,x_2) = 0.26(x_1^2+x_2^2) - 0.48\,x_1x_2, \quad x_1,x_2 \in [-10,10]$
32	McCormick	$f(x_1,x_2) = \sin(x_1+x_2) + (x_1-x_2)^2 - 1.5x_1 + 2.5x_2 + 1, \quad x_1 \in [-1.5,4], \quad x_2 \in [-3,3]$
33	Michalewicz	$f(x_1,x_2) = -(\sin x_1[\sin(x_1^2/\pi)]^{20} + \sin x_2[\sin(2x_2^2/\pi)]^{20}), \quad x_1,x_2 \in [0,\pi]$
34	Periodic	$f(x_1,x_2) = 1 + \sin^2 x_1 + \sin^2 x_2 - 0.1\exp(-x_1^2 - x_2^2), \quad x_1,x_2 \in [-10,10]$
35	Qing	$f(x_1,x_2) = (x_1^2-1)^2 + (x_2^2-2)^2, \quad x_1,x_2 \in [-500,500]$
36	Rastrigin	$f(x_1,x_2) = x_1^2 - 10\cos 2\pi x_1 + x_2^2 - 10\cos 2\pi x_2 + 20, \quad x_1,x_2 \in [-5.12,5.12]$
37	Ridge	$f(x_1,x_2) = x_1 + (x_2^2)^{0.5}, \quad x_1,x_2 \in [-5,5]$
38	Rosenbrock	$f(x_1,x_2) = 100(x_2 - x_1^2)^2 + (1-x_1)^2, \quad x_1,x_2 \in [-5,10]$
39	Salomon	$f(x_1,x_2) = 1 - \cos 2\pi\sqrt{x_1^2+x_2^2} + 0.1\sqrt{x_1^2+x_2^2}, \quad x_1,x_2 \in [-100,100]$
40	Schaffer N.2	$f(x_1,x_2) = 0.5 + (\sin^2(x_1^2 - x_2^2) - 0.5)/((1 + 0.001(x_1^2+x_2^2))^2), \quad x_1,x_2 \in [-100,100]$
41	Schaffer N.3	$f(x_1,x_2) = 0.5 + (\sin^2(\cos(\lvert x_1^2 - x_2^2\rvert)) - 0.5)/((1 + 0.001(x_1^2+x_2^2))^2), \quad x_1,x_2 \in [-100,100]$
42	Schwefel 2.20	$f(x_1,x_2) = \lvert x_1\rvert + \lvert x_2\rvert, \quad x_1,x_2 \in [-100,100]$
43	Schwefel 2.22	$f(x_1,x_2) = \lvert x_1\rvert + \lvert x_2\rvert + \lvert x_1\rvert\lvert x_2\rvert, \quad x_1,x_2 \in [-100,100]$
44	Schwefel 2.23	$f(x_1,x_2) = x_1^{10} + x_2^{10}, \quad x_1,x_2 \in [-10,10]$
45	Shubert 3	$f(x_1,x_2) = \sum_{j=1}^{5} j\sin((j+1)x_1 + j) + \sum_{j=1}^{5} j\sin((j+1)x_2 + j), \quad x_1,x_2 \in [-10,10]$
46	Shubert	$f(x_1,x_2) = \sum_{j=1}^{5}\cos((j+1)x_1 + j) \times \sum_{j=1}^{5}\cos((j+1)x_2 + j), \quad x_1,x_2 \in [-10,10]$
47	Sphere	$f(x_1,x_2) = x_1^2 + x_2^2, \quad x_1 \in [-1.5,4], \quad x_2 \in [-5.12,5.12]$
48	Styblinski-Tang	$f(x_1,x_2) = 0.5((x_1^4 - 16x_1^2 + 5x_1) + (x_2^4 - 16x_2^2 + 5x_2)), \quad x_1,x_2 \in [-5,5]$
49	Sum-Squares	$f(x_1,x_2) = x_1^2 + 2x_2^2, \quad x_1,x_2 \in [-10,10]$
50	Three-Hump Camel	$f(x_1,x_2) = 2x_1^2 - 1.05x_1^4 + x_1^6/6 + x_1x_2 + x_2^2, \quad x_1,x_2 \in [-5,5]$
51	Xin-She Yang N.2	$f(x_1,x_2) = (\lvert x_1\rvert + \lvert x_2\rvert)\exp(-(\sin x_1^2 + \sin x_2^2)), \quad x_1,x_2 \in [-2\pi,2\pi]$
52	Xin-She Yang N.3	$f(x_1,x_2) = \exp(-((x_1/15)^{10} + (x_2/15)^{10}) - 2\exp(-(x_1^2+x_2^2))\cos^2 x_1\cos^2 x_2, \quad x_1,x_2 \in [-2\pi,2\pi]$
53	Xin-She Yang N.4	$f(x_1,x_2) = (\sin^2 x_1 + \sin^2 x_2 - \exp(-(x_1^2+x_2^2)))\exp(-(\sin^2\sqrt{\lvert x_1\rvert} + \sin^2\sqrt{\lvert x_2\rvert})), \quad x_1,x_2 \in [-10,10]$
54	Zakharov	$f(x_1,x_2) = x_1^2 + x_2^2 + (0.5x_1 + x_2)^2 + (0.5x_1 + x_2)^4, \quad x_1,x_2 \in [-5,10]$