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<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> (21) International Application Number: PCT/US98/12088 (22) International Filing Date: 11 June 1998 (11.06.98) (30) Priority Data: 60/049,754 11 June 1997 (11.06.97) US (71) Applicant: UNIVERSITY OF SOUTHERN CALIFORNIA [US/US]; Suite 313, 3716 S. Hope Street, University Park, CA 90027 (US). (72) Inventors: LIAW, Jim-Shih; 2061 Carolwood Drive, Arcadia, CA 91006 (US). BERGER, Theodore, W.; Los Angeles, CA (US). (74) Agent: HARRIS, Scott, C.; Fish & Richardson P.C., Suite 1400, 4225 Executive Square, La Jolla, CA 92037 (US). </td> <td style="width: 50%; vertical-align: top;"> (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> </td> </tr> </table>			(21) International Application Number: PCT/US98/12088 (22) International Filing Date: 11 June 1998 (11.06.98) (30) Priority Data: 60/049,754 11 June 1997 (11.06.97) US (71) Applicant: UNIVERSITY OF SOUTHERN CALIFORNIA [US/US]; Suite 313, 3716 S. Hope Street, University Park, CA 90027 (US). (72) Inventors: LIAW, Jim-Shih; 2061 Carolwood Drive, Arcadia, CA 91006 (US). BERGER, Theodore, W.; Los Angeles, CA (US). (74) Agent: HARRIS, Scott, C.; Fish & Richardson P.C., Suite 1400, 4225 Executive Square, La Jolla, CA 92037 (US).	(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>																																																
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(57) Abstract An information processing system having signal processors that are interconnected by processing junctions that simulate and extend biological neural networks. As shown in the figure, each processing junction receives signals from one signal processor and generates a new signal to another signal processor. The response of each processing junction is determined by internal junction processes and is continuously changed with temporal variation in the received signal. Different processing junctions connected to receive a common signal from a signal processor respond differently to produce different signals to downstream signal processors. This transforms a temporal pattern of a signal train of spikes into a spatio-temporal pattern of junction events and provides an exponential computational power to signal processors. Each signal processing junction can receive a feedback signal from a downstream signal processor so that an internal junction process can be adjusted to learn certain characteristics embedded in received signals.																																																				