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Autore	Andrea Soltoggio
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Sommario/riassunto	Models of adaptation and neural plasticity are often demonstrated in robotic scenarios with heavily pre-processed and regulated information streams to provide learning algorithms with appropriate, well timed, and meaningful data to match the assumptions of learning rules. On the contrary, natural scenarios are often rich of raw, asynchronous, overlapping and uncertain inputs and outputs whose relationships and meaning are progressively acquired, disambiguated, and used for further learning. Therefore, recent research efforts focus on neural embodied systems that rely less on well timed and pre-processed inputs, but rather extract autonomously relationships and features in time and space. In particular, realistic and more complete models of plasticity must account for delayed rewards, noisy and ambiguous data, emerging and novel input features during online learning. Such approaches model the progressive acquisition of knowledge into neural systems through experience in environments that may be affected by ambiguities, uncertain signals, delays, or novel features.