

**Call for Papers**  
**IEEE Signal Processing Society**  
**IEEE Journal of Selected Topics in Signal Processing**

**Special Issue on Learning-Based Decision Making in Dynamic Systems under Uncertainty**

The design of dynamic systems for many emerging applications faces increasing uncertainty: in cognitive radio systems for dynamic spectrum access, secondary users need to detect and exploit temporally and spatially varying spectrum white space under incomplete, inaccurate, and even unknown models of spectrum occupancy, noise, and fading; in large-scale wireless sensor networks with random deployment, low-cost battery-powered sensors need to function collectively without assuming *a priori* knowledge of the network topology or the communication environment; in cyber systems, intrusion detection algorithms need to counter increasingly sophisticated attacks that may not follow a well behaved stochastic model and may react in real time to the detection scheme. In designing such dynamic systems, learning becomes a crucial part of decision making; actions cannot be predetermined but rather must adapt to past observations obtained through interactions with the environment.

This special issue covers both theories and applications of learning-based stochastic optimization and decision making. It focuses on learning and decision-making techniques that emphasize the temporal dynamic nature of the underlying system and adapt and improve over time through active interactions with the system. Original unpublished contributions are solicited in the following non-exhaustive list of topics.

- Stochastic optimization and control under incomplete, inaccurate, or unknown models.
- Sequential decision making, adaptive control, Markov decision processes under uncertainty.
- Reinforcement learning, Q-learning in dynamic systems.
- Stochastic online learning, multi-armed bandit problems.
- Sample-path-based learning, event-based sequential optimization.
- Distributed learning, control, and decision making.
- Learning and optimization under resource and computational constraints.
- Applications in various dynamic systems.

Prospective authors should visit <http://www.signalprocessingsociety.org/publications/periodicals/jstsp/> for information on paper submission. Manuscripts should be submitted using the Manuscript Central system at <http://mc.manuscriptcentral.com/jstsp-ieee>. Manuscripts will be peer reviewed according to the standard IEEE process.

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