



Computational Intelligence Society

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IEEE CIS Newsletter, Issue 73, February 2019

Research Frontier

Global Bandits

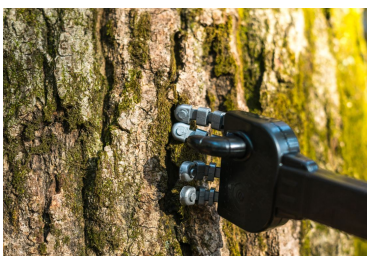
Multiarmed bandit problems are sequential decision-making problems where there are multiple "arms", and each arm has an unknown expected reward. Online learning algorithms can be used to sequentially choose arms, with the goal of maximizing the cumulative reward (or minimizing the regret). Most existing work assumes that the expected rewards of the arms are independent. However, in many real world problems, they are correlated. This paper proposes and analyses a class of such problems, referred to as "global bandits". The authors prove that the regret of the global bandits has three regimes, which were characterised for the regret bound, and showed that the parameter-dependent regret is bounded, i.e., it is asymptotically finite. The authors also proved a worst-case regret bound, which grows sublinearly over time, where the rate of growth depends on the informativeness of the arms.



IEEE Transactions on Neural Networks and Learning Systems, Dec. 2018

LDS-FCM: A Linear Dynamical System Based Fuzzy C-Means Method for Tactile Recognition

Tactile sensing is becoming an indispensable robotic ability for object recognition and grasping manipulation. This paper proposes an efficient feature extractor named linear dynamic systems based fuzzy C-means method (LDS) to encode tactile sequences, both spatially and temporally. To this end, every input sequence is decomposed into multiple subsequences, each of which is locally described by a finite-ordered observability matrix of the LDS model. A fuzzy c-means method is then applied to cluster the local LDS descriptors for learning a codebook. Conditioned on the resulting codebook, the global tactile representation is formulated by employing two different frameworks to integrate the subsequences within each tactile sequence, namely, the Vector of locally aggregated descriptor and Bag-of-Word approaches. The effectiveness of the proposed model is verified by a variety of experimental evaluations on five benchmark datasets. Results reveal that the proposed method achieves a higher classification accuracy than the state-of-the-art models with a large margin.



IEEE Transactions on Fuzzy Systems, January 2019

Important Message

★ Proposals to Organize CIS Conferences

- Proposals for IEEE SSCI 2021 must be submitted by **15 March 2019**
- Proposals for IEEE WCCI 2022 must be submitted by **15 April 2019**

Please inform [Gary Fogel](#) and [Gary Yen](#) of your intention to prepare a bid as soon as you decide to do so. Policies, procedures and budget worksheet for such proposals are [available](#).

★ Distinguished Lecturer Invitation

CIS local chapters are encouraged to invite DLP speakers. For more information about DLP speaker invitation, please refer to the [webpage](#).

CIS Conferences

★ Conference Calendar (2019-2021)

★ 2019 IEEE Congress on Evolutionary Computation (IEEE CEC 2019)

Wellington, New Zealand
10-13 June 2019

★ 2019 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2019)

Call for Papers (Journal)

- [IEEE TCDS Special Issue on Continual Unsupervised Sensorimotor Learning \(28 Feb\)](#)
- [IEEE TFS Special Issue on Fuzzy Rough Sets for Big Data \(1 Apr\)](#)
- [IEEE TFS Special Issue on Toward Humanoid Robots: Fuzzy Sets and Extensions \(1 May\)](#)

Call for Papers (Conference)

- [The 16th International Symposium on Neural Networks \(ISNN 2019\) \(15 Feb\)](#)
- [International Conference on Process Mining \(ICPM 2019\) \(15 Feb\)](#)
- [The 33rd International ECMS Conference on Modelling and Simulation, Track on Data Stream Analytics \(DSA\) \(26 Feb\)](#)
- [IEEE CEC Workshop on Understanding of Evolutionary Optimization Behavior \(15 Mar\)](#)
- [The 9th International Conference on Information Science and Technology \(ICIST 2019\) \(1 Apr\)](#)

New Orleans, USA
23-26 June 2019

★ 2019 International Joint Conference on Neural Networks (IJCNN 2019)
Budapest, Hungary
14-19 July 2019

★ 2019 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (IEEE CIBCB 2019)
Tuscany, Italy
9-11 July 2019
(Submission: 15 Feb)

★ 2019 Joint IEEE International Conference on Developmental Learning and Epigenetic Robotics (IEEE ICDL-EpiRob 2019)
Oslo, Norway
19-22 August 2019
(Submission: 22 Feb)

★ 2019 IEEE Conference on Games (IEEE CoG 2019)
London, UK
20-23 August 2019

★ 2019 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2019)
Xiamen, China
6-9 December 2019
(Submission: 10 July)

★ 2020 IEEE World Congress on Computational Intelligence (IEEE WCCI 2020)
Glasgow, UK
19-24 July 2020

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