

Facultatea de Matematică și Informatică
Departamentul de Informatică
Asistent de cercetare, poziția 93

Tematica probelor de concurs

1. Învățare automată în prelucrarea imaginilor
 - a. Rețele neuronale adânci. Arhitectură. Algoritmi de antrenare. Funcții de pierdere și regularizare
 - b. Rețele neuronale convoluționale. Arhitecturi. Filtre. Pooling. Aplicații în procesarea imaginilor
 - c. Arhitecturi adânci pentru segmentare semantică. DeepLabV3. UNet. ResNet. ConvLSTM. ConvStar
 - d. Asamblări pentru rețele neuronale adânci
2. Date de test și instrumente pentru observarea pământului (Earth Observation EO)
 - a. Formate de date și standarde pentru EO
 - b. Procesarea datelor temporale
 - c. Date de test pentru clasificarea acoperirii terenului
3. Scheduling Algorithms.
 - a. Scheduling problems. Characteristics and types (job shop scheduling, flexible job shop scheduling, assembly scheduling)
 - b. Heuristic methods for scheduling. Just in time scheduling and lot sizing. LETSA algorithm.
 - c. Metaheuristic methods for scheduling. Tabu Search. Evolutionary Algorithms.

Bibliografia probelor de concurs

1. Ian Goodfellow, Yoshua Bengio, and Aaron Courville, Deep Learning, MIT Press, 2016
2. Olaf Ronneberger, Philipp Fischer, Thomas Brox, U-Net: Convolutional Networks for Biomedical Image Segmentation, Medical Image Computing and Computer-Assisted Intervention (MICCAI), Springer, LNCS, Vol. 9351: 234--241, 2015, available at arXiv:1505.04597 [cs. CV]
3. X. Shi, Z. Chen, H. Wang, D. -Y. Yeung, W. -K. Wong, and W. -C. Woo. Convolutional LSTM network: A machine learning approach for precipitation nowcasting. In NIPS, pages 802-810, 2015.
4. Mehmet Ozgur Turkoglu, Stefano D'Arconco, Gregor Perich, Frank Liebisch, Constantin Streit, Konrad Schindler, Jan Dirk Wegner, Crop mapping from image time series: Deep learning with multi-scale label hierarchies, Remote Sensing of Environment, Volume 264, 2021, <https://doi.org/10.1016/j.rse.2021.112603>.
5. T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning. Data Mining, Inference and Prediction, Springer, 2008.

6. Praveen Iyer, Sriram A, Shyam Lal, Deep learning ensemble method for classification of satellite hyperspectral images, Remote Sensing Applications: Society and Environment, Volume 23, 2021, <https://doi.org/10.1016/j.rsase.2021.100580>.
7. Cristina Gómez, Joanne C. White, Michael A. Wulder, Optical remotely sensed time series data for land cover classification: A review, ISPRS Journal of Photogrammetry and Remote Sensing, Volume 116, 2016, Pages 55-72, <https://doi.org/10.1016/j.isprsjprs.2016.03.008>.
8. Ioannis Papoutsis, Nikolaos Ioannis Bountos, Angelos Zavras, Dimitrios Michail, Christos Tryfonopoulos, Benchmarking and scaling of deep learning models for land cover image classification, ISPRS Journal of Photogrammetry and Remote Sensing, Volume 195, 2023, Pages 250-268, <https://doi.org/10.1016/j.isprsjprs.2022.11.012>.
9. M. L. Pinedo, Scheduling: Theory, Algorithms, and Systems, Springer 2012
10. A. Agrawal, G. Harhalakis, I. Minis & R. Nagi, 'Just-In-Time' Production of Large Assemblies, Pages 653-667 | Received 01 Aug 1994, Accepted 01 Feb 1995, Published online: 13 Sep 2016
11. Sean Luke, Essentials of Metaheuristics, online version 2.3, 2016