ERZSÉBET MERÉNYI SCIENTIFIC PUBLICATIONS & PRESENTATIONS

Revised: December, 2020

URL of publications: http://www.ece.rice.edu/~erzsebet/publications-EMerenyi.pdf

Invited Book Chapters

1. Farrand, W., Merényi, E., & Parente, M. (2019). Hyper- and Multispectral Visible and Near-Infrared Imaging Analysis. In J. Bishop, J. Bell III, & J. Moersch (Eds.), in *Remote Compositional Analysis: Techniques for Understanding Spectroscopy, Mineralogy, and Geochemistry of Planetary Surfaces* (Cambridge Planetary Science, pp. 307-323). Cambridge University Press. doi:10.1017/9781316888872.016. Available here.
2. Erzsébet Merényi, Kadim Taşdemir, Lili Zhang (2009) Learning highly structured manifolds: harnessing the power of SOMs. In *"Similarity based clustering", Lecture Notes in Computer Science* (Eds. M. Biehl, B. Hammer, M. Verleysen, T. Villmann), Springer-Verlag. LNAI 5400, pp. 138 – 168.
3. T. Villmann and E. Merényi (2001) Extensions and Modifications of the Kohonen-SOM and Applications in Remote Sensing Image Analysis. In *"Self-Organizing Maps: Recent Advances and Applications"* (U.Seiffert and L.C. Jain Eds.), Springer-Verlag, pp 121-145.
4. Merényi, E. (1996) Processing of Near-Nucleus Vega Images, In *"Images of the Nucleus of Comet Halley"*, Eds. R.Reinhard and B.Battrick, ESA SP-1127, pp 53-60 and 85-230.

Books Edited

5. *Advances in Self-Organizing Maps and Learning Vector Quantization: Proc. 11th International Workshop WSOM 2016, Houston, Texas, USA,* January 6-8, 2016 (Eds. E. Merényi, M. Mendenhall, P. O'Driscoll), Springer, January 2016.

   21,000 downloads as of November 2019. Citations above "discipline average" Springer metric. DOI: 10.1007/978-3-319-28518-4

   URL: http://link.springer.com/book/10.1007%2F978-3-319-28518-4

Special Journal Issues Edited

6. Focus Issue on "Machine Intelligence in Astronomy and Astrophysics", *Publications of the Astronomical Society of the Pacific,* 2019, IOP science (impact factor 4.7). Eds. G. Longo, E. Merényi. P. Tiňo. On-line at https://iopscience.iop.org/journal/1538-3873/page/machine-intelligence-in-astronomy-and-astrophysics

7. Special Issue on "Learning for Remote Sensing Data Processing", *IEEE Journal of Selected Topics in Applied Earth Observations and Remote* Sensing (JSTARS), 2014, IEEE (impact factor 3.9) Eds. D. Tuia, E. Merényi, X. Jia, M. Graña-Romay. https://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=6803891&punumber=4609443

8. Special Issue on "Neural Networks for Interpretation of Remotely Sensed Data", in *EURASIP Journal on Advances in Signal Processing*, 2014, Springer (impact factor 1.96) ISSN: 1687-6180 (online) Eds. J. Plaza, E. Merényi, F. del Frate. https://link.springer.com/journal/13634/topicalCollection/AC_21da1faaa9dcabb2c79f42f22e2d9090/page/1

9. Special Issue on "Advances in Computational Intelligence and Learning: 14th European Symposium on Artificial Neural Networks 2006", *Neurocomputing, 2007,* Elsevier (impact

factor 4.4) Eds. M. Biehl, E. Merényi, F. Rossi.
https://www.sciencedirect.com/journal/neurocomputing/vol/70/issue/7

Communications

10. Erzsébet Merényi (2008) Biologically inspired computation for intelligent autonomous exploration, *SPIE Newsroom,* April 2008. Invited press briefing. http://spie.org/x24069.xml?highlight=x2418&ArticleID=x24069 or http://www.ece.rice.edu/~erzsebet/papers/Merenyi-SPIE-1114-2008-04-18.pdf

Preprints

11. Taşdemir, K., and Merényi, E. (2012) SOM-based topology visualization for interactive analysis of high-dimensional large datasets *Machine Learning Reports* (Eds. T. Villmann and F.-M. Schleif) 05/2012, ISSN:1865-3960 http://www.techfak.uni-bielefeld.de/fschleif/mlr/mlr_05_2012.pdf

12. Erzsébet Merényi, William H. Farrand, James V. Taranik, and Timothy B. Minor (2011), Classification of Hyperspectral Imagery with Neural Networks: Comparison to Conventional Tools *Machine Learning Reports* (Eds. T. Villmann and F.-M. Schleif) 04/2011, ISSN:1865-3960 http://www.techfak.uni-bielefeld.de/fschleif/mlr/mlr_04_2011.pdf

Refereed Journal and Refereed Conference Papers

13. Taylor, J., Merényi, E., Hummel, M., Isella, A. (2020) Fast SOM-Enabled Automated Structure Discovery from ALMA Image Cubes. *Astronomical Data Science Workshop*, Texas A & M University, February17-18, 2020.

14. Taylor, J. and Merényi, E. (2020) DM-Pruning CADJ Graphs for SOM Clustering. *Neural Computing and Applications.* Accepted. In press.

15. Brooijmans, G., Buckley, A., Caron, S. and 87 others (2020) Les Houches 2019: Physics at TeV Colliders. New Physics Working Group Report. arXiv:2002.12220v1 [hep-ph] 27 Feb 2020. https://arxiv.org/pdf/2002.12220.pdf 227 pp.

16. Longo, G., Merényi, E., Tiňo, P. (2019) Foreword to the Focus Issue on Machine Intelligence in Astronomy and Astrophysics. 11pp. *Publications of the Astronomical Society of the Pacific*, 131:1004 100101 2019 November https://doi.org/10.1088/1538-3873/ab2743 Pre-print at https://arxiv.org/submit/2737411

17. Taylor, J., and Merényi, E. (2019) A Probabilistic Method for Pruning CADJ Graphs with Applications to SOM Clustering. *Proc. 13th International Workshop on Self-Organizing Maps, WSOM+ 2019, Barcelona, Spain, June 26-28, 2019.* In Advances in Intelligent Systems and Computing, Vol 976, pp 44-54. Springer. On-line: https://link.springer.com/book/10.1007/978-3-030-19642-4

18. Merényi, E., and Taylor, J. (2019) Empowering Graph Segmentation Methods with SOMs and CONN Similarity for Clustering Large and Complex Data. *Neural Computing and Applications htt* https://rdcu.be/bHrUF*ps://doi.org/10.1007/s00521-019-04198-6 12pp, 2019.*

    For on-line reading only:, or

    https://link.springer.com/epdf/10.1007/s00521-019-04198-6?author_access_token=mi92HHN_ohm4An_MEXPY1fe4RwlQNchNByi7wbcMAY7YTa_MHAdAtvdtQ6x3N3SdMdLlNErBZqx97AGlogTN0owkrfsuBZuRqNblt83j-HGBhK-CXRb2NHGcnLGD8bO3npTUrC_7-gXsyg9q5AQMHQ%3D%3D

19. Merényi, E., Isella, A., Taylor, J. (2018) Discovery from Hyperspectral ALMA Imagery with NeuroScope. *URSI National Radio Science Meeting (USNC-URSI NRSM), Boulder, CO 4-7 Jan 2018.* IEEE Xplore, http://ieeexplore.ieee.org/abstract/document/8299680/

20. Merényi, E., Taylor, J. (2017) SOM-empowered Graph Segmentation for Fast Automatic Clustering of Large and Complex Data. *Proc. 12th International Workshop on Self-Organizing Maps, WSOM+ 2017, Nancy, France, June 27-29, 2017. 9pp.* On-line: http://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=8019995

21. O'Driscoll, P., Merényi, and Grossman, R. (2017) Using Spatial Characteristics to Aid Automation of SOM Segmentation of Functional Image Data. *Proc. 12th International Workshop on Self-Organizing Maps and Learning Vector Quantization, Clustering and Visualization, WSOM+ 2017, Nancy, France, June 27-29, 2017. pp 54-61.* On-line: http://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=8019995

22. Merényi, E., Taylor, J. and Isella, A. (2017), Deep data: discovery and visualization. Application to hyperspectral ALMA imagery. *Proc. International Astronomical Union, 12*(S325), pp 281-290. https://doi.org/10.1017/S1743921317000175 https://www.cambridge.org/core/journals/proceedings-of-the-international-astronomical-union/issue/E992FC19B0DD8B57AA4FC2F6B58E3FA6

23. Merényi, E., Taylor, J. and Isella, A. (2016), Mining Complex Hyperspectral ALMA Cubes for Structure with Neural Machine Learning. *Proc. IEEE Symposium Series of Computational Intelligence, SSCI 2016*, *IEEE Symposium on Computational Intelligence and Data Mining,* Athens, Greece, Dec 6-9, 2016. 11pp. On-line: http://ieeexplore.ieee.org/document/7849952/ DOI**:** 10.1109/SSCI.2016.7849952

24. O'Driscoll, P., Merényi, E., Karmonik, C., and Grossman, R. (2016), The Effect of SOM Size and Similarity Measure on Identification of Functional and Anatomical Regions in fMRI Data. In *Advances in Self-Organizing Maps and Learning Vector Quantization: Proc. 11th International Workshop on Self-Organizing Maps, WSOM 2016, Houston, Texas, USA,* January 6-8, 2016 (Eds. E. Merényi, M. Mendenhall, P. O'Driscoll), Springer, pp 251 – 263. http://link.springer.com/book/10.1007%2F978-3-319-28518-4

25. Merényi, E. (2014), The Sky Is Not the Limit. In Advances in Self-Organizing Maps and Learning Vector Quantization, Proc. *10th Workshop on Self-Organizing Maps*, 2-4 July, 2014, Mittweida, Germany. (Eds. T. Villmann, F-M Schleif, M. Kaden, M. Lange). Springer, pp 181-186.

26. Tuia, D., Merényi, E., Jia, X., and Graña-Romay, M. (2014), Foreword to the Special Issue on Machine Learning for Remote Sensing Data Processing. *IEEE J Selected Topics in Applied Earth Observations and Remote Sensing*, 7:4, pp 1007-1011. https://ieeexplore.ieee.org/document/6804709

27. Erzsébet Merényi, William H. Farrand, James V. Taranik, and Timothy B. Minor (2014), Classification of Hyperspectral Imagery with Neural Networks: Comparison to Conventional Tools. *EURASIP Journal on Advances in Signal Processing* **2014**:71 doi:10.1186/1687-6180-2014-71. on-line: http://dx.doi.org/10.1186/1687-6180-2014-71

28. O'Driscoll, P., Merényi, E., Karmonik, C., and Grossman, R. (2014), SOM and MCODE Methods of Defining Functional Clusters in MRI of the Brain. *Proc. 36th Annual Intl Conf. of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC)*, August 26-30, 2014, Chicago, IL, pp 734-737. DOI: 10.1109/EMBC.2014.6943695

29. Bue, B., Merényi, E., Killian, J. (2013) Classification and Diagnosis of Myopathy from EMG Signals, Proc. 2nd Workshop on Data Mining for Medicine and Healthcare (DMMH), at 13th SIAM Int'l Conference on Data Mining (SDM 2013), May 2-4, 2013, Austin, Texas, USA.

30. Lachmair, J., Merényi, E., Porrmann, M., Rückert, U. (2013) A Reconfigurable Neuroprocessor for Self-Organizing Feature Maps. *Neurocomputing* 112, pp 189-199.

31. Villmann, T., Merényi, E., and Farrand, W.H. (2012) Unmixing Hyperspectral Images with Fuzzy Supervised Self-Organizing Maps. *Proc. 20th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN'2012*, Bruges, Belgium, 25-27 April, 2012, pp 185-190.

32. Rückert, U. and Merényi, E. (2012) Parallel neural hardware: the time is right. (Tutorial for special session "Parallel hardware architectures for acceleration of neural network computation".) *Proc. 20th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN'2012*, Bruges, Belgium, 25-27 April, 2012, pp 597-602.

33. Lachmair, J., Merényi, E., Porrmann, M., Rückert, U. (2012) gNBXe - a Reconfigurable Neuroprocessor For Various Types of Self-Organizing Maps. *Proc. 20th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN'2012*, Bruges, Belgium, 25-27 April, 2012, pp 645-650.

34. Bue, B.D., and Merényi, E., An Adaptive Similarity Measure for Classification of Hyperspectral Signatures. (2012) *Geosci, and Remote Sens. Letters* 10(2), pp 381-385.

35. Bue, B., Merényi, E. and Csathó, B. (2011) An Evaluation of Class Knowledge Transfer From Synthetic To Real Hyperspectral Imagery. In Proc. *Third Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS 2011)*, 6 - 9 June, 2011, Lisbon, Portugal.

36. Taşdemir, K., and Merényi, E. (2011) A Validity Index for Prototype Based Clustering of Data Sets with Complex Structures. *IEEE Trans. Systems, Man and Cybernetics, Part B.* 02/2011; Vol. 41, No. 4, pp 1039 - 1053. DOI: 10.1109/TSMCB.2010.2104319

37. Zhang, L., Merényi, E. (2010) Learning Multiple Latent Variables with Self-Organizing Maps. In Proc. *The 2010 IEEE Conference on Granular Computing (GrC 2010)*, Silicon Valley, August 14-16, 2010.

38. Bue, B. and Merényi, E. (2010) Using Spatial Correspondence for Hyperspectral Knowledge Transfer: Evaluation on Synthetic Data. In Proc. *Second Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS 2010)*, 14 – 16 June, 2010, Reykjavik, Iceland.

39. Zhang, L., Merényi, E., Grundy, W. M., Young, E. Y. (2010) Inference of Surface Parameters from Near-Infrared Spectra of Crystalline H_2O Ice with Neural Learning, *Publications of the Astronomical Society of the Pacific*. Vol. 122, No. 893: pp. 839-852. DOI: 10.1086/655115

40. Bue, B., Merényi, E., and Csathó, B. (2010) Automated Labeling of Materials in Hyperspectral Imagery, *IEEE Trans. Geoscience and Remote Sensing.* 48(11), Nov, 2010, pp 4059 – 4070.

41. Bue, B., Merényi, E., and Csathó, B. (2009) Automated Labeling of Segmented Hyperspectral Imagery via Spectral Matching. In Proc. *First Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS 2009)*, 26 – 28 August, 2009, Grenoble, France. ISBN 978-1-4244-4687-2.

42. Mendenhall, M. J. and Merényi, E. (2009) On the Evaluation of Synthetic Hyperspectral Imagery. In Proc. *First Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS 2009)*, 26 – 28 August, 2009, Grenoble, France. ISBN 978-1-4244-4687-2.

43. Xie, B., Bose, T., and Merényi, E. (2009) A Novel Scheme for the Compression and Classification of Hyperspectral Images. In Proc. *First Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS 2009)*, 26 – 28 August, 2009, Grenoble, France. ISBN 978-1-4244-4687-2.

44. González, J.A., Mendenhall, M. J., and Merényi, E. (2009) Minimum Surface Bhattacharyya Feature Selection. In Proc. *First Workshop on Hyperspectral Image and*

Signal Processing: Evolution in Remote Sensing (WHISPERS 2009), 26 – 28 August, 2009, Grenoble, France. ISBN 978-1-4244-4687-2.

45. Zhang, L., Merényi, E., Grundy, W. M., and Young, E. Y. (2009) An SOM-Hybrid Supervised Model for the Prediction of Underlying Physical Parameters from Near-Infrared Planetary Spectra. *Proc. 7th Int'l Workshop on Self-Organizing Maps (WSOM 2009), June 8-10, St. Augustine, FL, USA. In "Advances in Self-Organizing Maps", Lecture Notes in Computer Science*, LNCS 5629, Springer-Verlag. pp 362-371

46. Taşdemir, K, and Merényi, E. (2009) Exploiting the Data Topology in Visualizing and Clustering of Self-Organizing Maps. *IEEE* Trans. *Neural Networks* 20(4) pp 549 – 562.

47. Bea Csathó, Justin Rich, Erzsébet Merényi, Lynn Everett, Brian Bue, John Kimble and Chien-Lu Ping (2008) Characterizing polar landscapes from hyperspectral imagery. *Proc. Ninth Int'l Conference On Permafrost (NICOP 2008*), (Eds. D. L. Kane and L. M. Hinkel), Fairbanks, AL, June 27 – July 1, 2008.

48. Farrand, W. H., Merényi. E.., Johnson, J., Bell, J. III (2008) Comprehensive mapping of spectral classes in the imager for Mars Pathfinder Super Pan, *The International Journal of Mars Science and Exploration* http://www.marsjournal.org/ , Mars 4, 33-55, 2008; doi:10.1555/mars.2008.0004, July 11, 2008.

49. Taşdemir, K, and Merényi, E. (2008) Cluster analysis in remote sensing spectral imagery through graph representation and advanced SOM visualization. *Proc. 11th Int'l Conf. on Discovery Science, DS- 2008, Budapest, Hungary, 13 – 16 October, 2008.* Lecture Notes in Computer Science, Volume 5255/2008, pp 272-283, Springer. ISBN 978-3-540-88410-1, ISSN 0302-9743 (Print) 1611-3349 (Online).
URL: http://www.springerlink.com/content/978-3-540-88410-1/?sortorder=asc&p_o=20

50. Villmann, T., Merényi, E., and U. Seiffert (2008) Machine Learning Approaches and Pattern Recognition for Spectral Data, *Proc. 16th European Symposium on Artificial Neural Networks, ESANN'2008*, Bruges, Belgium, 23-25 April, 2008. pp 433-444. (Tutorial paper for special session.)

51. Merényi, E., K. Taşdemir, and W.H. Farrand (2008) Intelligent Information Extraction to Aid Science Decision Making in Autonomous Space Exploration, *Proceedings of DSS08 SPIE Defense and Security Symposium, Space Exploration Technologies (Ed. W. Fink),* Vol. **6960**, 69600M, March 17 – 18, 2008, Orlando, FL. (Invited) http://scitation.aip.org/dbt/dbt.jsp?KEY=PSISDG&Volume=6960&Issue=1

52. Mendenhall, M.J., and Merényi, E. (2008) Relevance-based Feature Extraction for Hyperspectral Images, *IEEE Trans. Neural Networks.* 19(4), April 2008, pp 658-672.

53. B. Xie, Tamal Bose and E. Merényi, (2008) Novel algorithms for optimal compression using classification metrics, *IEEE Aerospace Conference*, Big Sky, MT, March 1 – 8, 2008. pp 1 – 10.

54. B. Xie, Tamal Bose, and E. Merényi, (2007) "New Algorithms for the Classification and Compression of Hyperspectral Images," *Proc. of NASA Science and Technology Conference,* College Park, Maryland, June 19 - 21, 2007, ISBN 0-9785223-2-X.

55. T. Villmann, F.-M. Schleif, E. Merényi and B. Hammer (2007) Fuzzy Labeled Self-Organizing Map for Classification of Spectra. *In Computational and Ambient Intelligence (Lecture Notes in Computer Science)* Vol 4507/2007 Springer-Verlag, pp 556-563. ISBN 978-3-540-73006-4, 0302-9743 (Print) 1611-3349 (Online)

56. T. Villmann, F.-M. Schleif, E. Merényi, M. Strickert and B. Hammer (2007) Class imaging of hyperspectral satellite remote sensing data using FLSOM, *Proceedings of 6th International Workshop on Self-Organizing Maps ({WSOM}*,Bielefeld, Germany, 3 – 6 September, 2007.

57. Taşdemir, K. and Merényi, E. (2007) A new cluster validity index for prototype based clustering algorithms based on inter- and intra-cluster density. *Proc. Int'l Joint Conf. on Neural Networks (IJCNN 2007),* Orlando, FL, August 12 – 17, 2007. pp 2205-2211. IEEE Catalog number 07CH37922C. DOI: 10.1109/IJCNN.2007.4371300

58. Merényi, E., Farrand, W. H., Brown, R. H., Villmann, Th,. Fyfe, C. (2007) Information extraction and knowledge discovery from high-dimensional and high-volume complex data sets through precision manifold learning, *Proc. NASA Science Technology Conference (NSTC2007)*, College Park, Maryland, June 19 - 21, 2007, 11pp. ISBN 0-9785223-2-X

59. Michael Biehl, Erzsébet Merényi and Fabrice Rossi (2007) Advances in computational intelligence and learning, *Neurocomputing 70(7-9)*, editorial. pp 1117-1119. https://reader.elsevier.com/reader/sd/pii/S0925231206004978?token=0F491104F322FF49F391BD56B4C285E90214011F2F8E79BC306A16635DCE5E28365101BA7560EB8805E0954EB956AC38

60. Merényi, E., L. Zhang, and K. Taşdemir (2007) Min(d)ing the small details: discovery of critical knowledge through precision manifold learning and application to on-board decision support. *Proc. IEEE Int'l Conference on Systems of Systems Engineering (IEEE SoSE 2007)*, San Antonio, TX, April 16 – 18, 2007. 8 pp.

61. Merényi, E., B. Csathó, and Taşdemir, K. (2007) Knowledge discovery in urban environments from fused multi-dimensional imagery *Proc. 4th IEEE GRSS/ISPRS Joint Workshop on Remote Sensing and Data Fusion over Urban Areas (URBAN 2007)*, Paris, France, April 11-13, 2007. (invited paper). pp 1-13. DOI: 10.1109/URS.2007.371860 , IEEE Catalog number 07EX1577.

62. Merényi, E., Jain, A., Villmann, Th. (2007) Explicit Magnification Control of Self-Organizing Maps for "Forbidden Data". *IEEE Trans. Neural Networks 18(3)* May, 2007, pp 786-797.

63. Mendenhall, M.J., and Merényi, E. (2006) Relevance-based Feature Extraction from Hyperspectral Images in the Complex Wavelet Domain In *Proc. IEEE Mountain Workshop on Adaptive and Learning Systems (SMCals/06)*, Logan, Utah, July 24 - 26, 2006, pp 24 - 29.

64. Mendenhall, M.J., and Merényi, E. (2006) Generalized Relevance Learning Vector Quantization for Classification Driven Feature Extraction from Hyperspectral Data, *Proc. ASPRS 2006 Annual Conference and Technology Exhibition*, *Reno, NV* May 1-5 2006. 8 pp.

65. Taşdemir, K. and Merényi, E. (2006) Data topology visualization for the Self-Organizing Map. *Proc. 14th European Symposium on Artificial Neural Networks, ESANN'2006*, Bruges, Belgium, 26-28 April, 2006. pp. 125-130.

66. Zhang, L. and Merényi, E. (2006) Weighted Differential Topographic Function: A Refinement of the Topographic Function. *Proc. 14th European Symposium on Artificial Neural Networks, ESANN'2006*, Bruges, Belgium, 26-28 April, 2006. pp. 13-18.

67. Wright, S. P, Farrand, W. H., Rogers, A. D., Merényi, E. (2005) The Nature of the Mars Pathfinder "Black Rock" Lithology: Comparisons with SNC Meteorites and OMEGA Spectral Images of Chryse Planitia. *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract P21B-0145. San Francisco, CA, December, 2005.

68. Rudd, L. and Merényi, E. (2005) Assessing Debris-Flow Potential by Using AVIRIS Imagery to Map Surface Materials and Stratigraphy in Cataract Canyon, Utah. In *Proceedings of the Fourteenth Airborne Earth Science Workshop*, Pasadena, CA, May 24-27, 2005 (Ed. R.O.Green).

69. Taşdemir, K. and Merényi, E. (2005) Considering Topology in the Clustering of Self-Organizing Maps. *Proc. 5th Workshop On Self-Organizing Maps (WSOM 2005)*, 5 – 8 September, 2005, Paris, France, pp 439-446.

70. Merényi, E., (2005) Intelligent Understanding of Hyperspectral Images through Self-Organizing Neural Maps. *Proc. 2nd Int'l Conf. Cybernetics and Information Technologies, Systems and Applications (CITSA 2005)*, July 14 – 17, 2005, Orlando, FL, USA. pp 30-35.

71. Farrand, W.H., Merényi, E., Murchie, S., Barnouin-Jha, O.S. (2005) Spectral Class Distinctions Observed in the MPF IMP SuperPan Using a Self-Organizing Map. *Proc. Lunar and Planetary Sci. Conf. XXXV*, March, 2005, Houston, TX.

72. Merényi, E., (2004) Neural Maps for Precision Data Mining: Application to Planetary Spectral Images. *Proc. Jordan Int'l Conference in Computer Science and Engineering*, Al-Balqa University, Salt / Amman, Jordan, Oct 4 -7, 2004.

73. Merényi, E., Jain, A., Farrand, W.H. (2004) Applications of SOM magnification to data mining. *WSEAS Trans. on Systems* 3(5), July, 2004, pp 2122 - 2128.

74. Jain, A., Merényi, E.(2004) Forbidden Magnification? I. *Proc. 12th European Symposium on Artificial Neural Networks, ESANN'2004*, Bruges, Belgium, 28-30 April, 2004, pp 51 - 56.

75. Merényi, E., Jain, A., (2004) Forbidden Magnification? II. *Proc. 12th European Symposium on Artificial Neural Networks, ESANN'2004*, Bruges, Belgium, 28-30 April, 2004, pp 57 - 62.

76. Farrand, W.H., Merényi, E., Murchie, S., Barnouin-Jha, O.S., Johnson, J. (2004) Mapping Rock and Soil Units in the MPF IMP SuperPan Using a Kohonen Self-Organizing Map. *Proc. Lunar and Planetary Sci. Conf. XXXIV*, March, 2004, Houston, TX.

77. Merényi, E., Farrand, W.H., Tracadas, P. (2004) Mapping Surface Materials on Mars From Mars Pathfinder Spectral Images With HYPEREYE. *Proc. International Conference on Information Technology (ITCC 2004)*, April 5-7, 2004, Las Vegas, NV, USA. vol II, pp 607 – 614

78. Villmann, T., Merényi, E. Hammer. B. (2003) Neural Maps in Remote Sensing Image Analysis. *Neural Networks, Special Issue on Self-Organizing Maps for Analysis of Complex Scientific Data.* 16:(3-4) pp. 389 - 403.

79. Rudd, L., Merényi, E. (2003) The Use of AVIRIS Imagery To Assess Clay Mineralogy and Debris-Flow Potential In Cataract Canyon, Utah: a Preliminary Report. In *Summaries of the Twelve Annual JPL Airborne Earth Science Workshop*, Pasadena, CA, February, 2003 (Ed. R.O.Green), JPL-PUB-04-6.pdf URI: http://hdl.handle.net/2014/37426 pp 235-244.

80. McDonald, D., Corchado, E., Fyfe, C., Merényi, E. (2002) Maximum and Minimum Likelihood Hebbian Learning for Exploratory Projection Pursuit. *Proc. Int'l Conf. on Artificial Neural Networks*, Madrid, Spain, August 27 - 30, 2002.

81. Merényi, T. Villmann (2002) Self-Organizing Neural Net Approaches For Hyperspectral Images. *Proc. International Conference on Intelligent Computing and Information Systems*, Cairo, Egypt, June 24 - 26, 2002. (Eds. M. Tolba and A-B. Salem) pp 33 - 41.

82. Farison, J. B., Vanjara, U.,Merényi, E. (2000) AVIRIS Image Compression With Orthogonal Projection and KL Transforms. *Proc. IASTED Int'l Conference, SIGNAL AND IMAGE PROCESSING*, Las Vegas, Nevada, Nov 19 - 23, 2000, Ed. M. H. Hamza, IASTED/ACTA Press, ISBN 0-8898 6-308-3 pp 52 – 57.

83. Merényi, E., Farrand, W.H., Stevens, L.E., Melis, T.S., and Chhibber, K. (2000) Mapping Colorado River Ecosystem Resources In Glen Canyon: Analysis of Hyperspectral Low-Altitude AVIRIS Imagery. *Proc. ERIM, 14th Int'l Conference on Applied Geologic Remote Sensing*, 4-6 November, 2000, Las Vegas, Nevada, pp 44 - 51.

84. Merényi, E. (2000) ``Precision Mining'' of High-Dimensional Patterns with Self-Organizing Maps: Interpretation of Hyperspectral Images. In *"Quo Vadis Computational Intelligence:*

New Trends and Approaches in Computational Intelligence. Studies in Fuzziness and Soft Computing", Vol. 54, Peter Sincak, Jan Vascak, Eds., Physica-Verlag.

85. Merényi, E., Farrand, W.H., Stevens, L.E., Melis, T.S., and Chhibber, K. (2000) Studying the Potential For Monitoring Colorado River Ecosystem Resources Below Glen Canyon DamUsing Low-Altitude AVIRIS Data. In *Summaries of the Tenth Annual JPL Airborne Earth Science Workshop*, Pasadena, CA, February 23-25, 2000. Vol. 1: AVIRIS Workshop (Ed. R. O. Green).
86. Farison, J.B., Vanjara, U., Merényi, E. (2000) Feature extraction using the OP filter, *Proc. Int'l Conf. on Imaging Science, Systems, and Technology (CISST'2000)*, Las Vegas, Nevada, June 26 - 29, 2000, I:223 –229.
87. Villmann, T., Merényi, E. (2000) Extensions and Modifications of SOM and its Application in Satellite Remote Sensoring Processing, *Proc. 2nd Int'l Computer Science Conventions Symposium on Neural Computation, NC'2000*, May 23 -26, 2000, Berlin, Germany.
88. Merényi, E. (1999) The Challenges in Spectral Image Analysis: an Introduction,and Review of ANN Approaches, *Proc. European Symposium on Artificial Neural Networks, ESANN99,*,Bruges, Belgium, 21-23 April, 1999, pp 93-98.
89. Bruske, J., Merényi, E. (1999), *ESANN99*, Bruges, Belgium, 21-23 April, 1999, pp 105 - 110. Estimating the Intrinsic Dimensionality of Hyperspectral Images *Proc. European Symposium on Artificial Neural Networks*
90. Merényi, E., Sumin-Finn, V., Penn, B.S. (1999) Mineral Exploration by Using Hyperspectral Image Classification and ``Doming" Delineation, *Proc. ERIM, 13th Int'l Conference and Workshops on Applied Geologic Remote Sensing*, 1-3 March, 1999, Vancouver, British Columbia, Canada, I. pp. 308 -315.
91. Merényi, E., Starks, S., Villaverde, K. (1998) Hyperspectral satellite images: interval methods may be helpful, *Reliable Computing*, 4:4, pp 39 -397.
92. Merényi, E. (1998) Self-Organizing ANNs for Planetary Surface Composition Research, *Proc. European Symposium on Artificial Neural Networks, ESANN98*, Bruges, Belgium, 22-24 April, 1998, pp 197 - 202.
93. Merényi, E. (1998) Hyperspectral Images: Why They Deserve a Different Treatment, *Proc. GIS, Airborne Remote Sensing and Geospatial Clearinghouse Workshop*, Hungarian Geological Institute, Budapest,Feb 19-20, 1998, pp 11-12. Summary of invited talk.
94. Merényi, E. (1998) Case Studies from Spectral Images and Geophysical Data, *Proc. GIS, Airborne Remote Sensing and Geospatial Clearinghouse Workshop*, Hungarian Geological Institute, Budapest, Feb 19-20, 1998, pp 23-24. Summary of invited talk.
95. Merényi, E., E.S. Howell, L.A. Lebofsky, A.S. Rivkin (1997) Prediction of Water In Asteroids from Spectral Data Shortward of 3 Microns, *ICARUS* 129, pp 421- 439.
96. Moon, T., and Merényi, E. (1997) Wavelet transforms as a preprocessing step for classifying AVIRIS scenes. *Proc.11th SPIE Annual Int'l Symposium on Aerospace/Defense Sensing, Simulation, and Controls*, 20-25 April 1997, Orlando, FL, vol. 3071, pp 238-246.
97. Merényi, E.,McEwen, A. S., Robinson, M.S., Craddock, R.A. (1997) Spectral Mapping of Mare Moscoviense, Lunar Farside, from Clementine UVVIS Data. Proc. *Lunar & Planetary Science Conference XXVIII*, March, 1997, Houston, TX.
98. Merényi, E., Singer, R.B., Miller, J.S. (1996) Mapping of Spectral Variations on the Surface of Mars From High Spectral Resolution Telescopic Images, *ICARUS* 124, 280-295.
99. Merényi, E., Edgett, K.S., and Singer, R.B. (1996) Deucalionis Regio, Mars: Evidence For a New Type of Immobile Weathered Soil Unit, *ICARUS* 124, pp 296-307.

100. Murchie, S., Merényi, E., Singer, R.B., and Kirkland, L. (1996) Visible-NIR Spectroscopic Evidence for the Composition of Low-Albedo Altered Soils on Mars. *Lunar & Planetary Science Conference XXVII*, pp. 919-920.

101. Merényi, E., Taranik, J.V., Minor, T.B., and Farrand, W.H. (1996) Quantitative Comparison of Neural Network and Conventional Classifiers For Hyperspectral Imagery, In *Summaries of the Sixth Annual JPL Airborne Earth Science Workshop*, Pasadena, CA, March 4-8, 1996, Vol.1: AVIRIS Workshop. (Ed. R.O.Green).

102. Moon, T. and Merényi, E. (1995) Classification of hyperspectral images using wavelet transforms and neural networks. *Proc. of the Annual SPIE Conference*, vol. 2569, pp 725-735, July 9-14, San Diego, CA.

103. Howell, E. S., Merényi, E., L. A. Lebofsky (1994) Using Neural Networks to Classify Asteroid Spectra. *J. Geophys. Res.* 99 No. E5, pp. 10,847-10,865.

104. Farrand, W. H., Singer, R. B., and Merényi, E. (1994) Calibration of AVIRIS Data to Reflectance: A Comparison of Empirical Line, Radiative Transfer and Spectral Mixture Methods. *Remote Sens. Environ.* 47, pp. 311-321.

105. Merényi, E., Csathó, B., Bodrogi, M., Gulyás, Á. (1994) Utilization of Landsat Images For Mapping Natural Resources and For Environmental Protection In Hungary. *Proc. Tenth Thematic Conference on Geologic Remote Sensing*, San Antonio, TX, 9 - 12 May 1994. II. pp 491 - 502. Paper won ``Best of session" award.

106. Merényi, E., Calvin, W. M., Edgett, K. S., Singer, R. B. (1994) Genetic Links Between Equatorial and South Polar Regions on Mars? *Lunar and Planetary Science Conf. XXV*, pp 895-896.

107. Jokipii, J. R., Kóta, J. and Merényi, E. (1993) The Gradient of Galactic Cosmic Rays at the Solar-Wind Termination Shock. *Astrophysical Journal* 405:782-786.

108. Merényi, E., K. S. Edgett, R. B. Singer (1993) Deucalionis Regio: Evidence for a Unique Mineralogic Endmember and a Crusted Surface. *Lunar and Planetary Science Conf. XXIV*, pp 979-980.

109. Merényi, E., Singer, R.B. and Farrand, W.H. (1993) Classification of the LCVF AVIRIS Test Site With a Kohonen Artificial Neural Network. *Proc. Fourth Airborne Geoscience Workshop,* Washington, D.C., Oct. 25-29, pp 117-120.

110. Merényi, E., J. S. Miller, R. B. Singer (1992) Compositional Variations on the Surface of Mars: Mixing Model Analysis From a Telescopic Spectral Image. *Lunar and Planetary Science Conf. XXIII*, pp 897-898.

111. Merényi, E., J. S. Miller and R. B. Singer (1991) Exploring Compositional Variations on Mars: Applying Mixing Modelling to a Telescopic Spectral Image. *Proc. Mars Surface and Atmosphere Through Time*, pp 107-108.

112. Farrand, W. H., Singer, R. B., and Merényi, E. (1990) Mapping Volcanic Pyroclasts in the Lunar Crater Volcanic Field, Nevada, Through Spectral Mixture Modeling. *EOS Trans. Am. Geophys. Union* 71:1721

113. Kóta, J., Jokipii, J. R,. Merényi, E., (1990) Possible Modulation Effects at and Beyond the Termination Shock of Solar Wind, *Proceedings of the 21st International Cosmic Ray Conference. Volume 6 (SH Sessions),* p.159

114. Merényi, E., Földy, L., K. Szegő, I. Tóth, A. Kondor (1990) The Landscape of Comet Halley. *ICARUS* 86:9-20.

115. Sagdeev, R. Z., K. Szegő, B. A. Smith, S. Larson, Merényi, E., A. Kondor, I. Tóth (1989) The Rotation of P/Halley. *Astronomical Journal* 97(2) pp 546-551. *(Also, Preprint KFKI-1987-75/C)*

116. Szegő, K. Merényi, E., A. Kondor, B. A. Smith, I. Tóth (1989) Surface and Dust Features Seen on the Nucleus of Comet Halley. *Adv. Space Res.* 9, No. 3, pp 85-88. (Also, Preprint KFKI-1988-32/C)

117. Szegő, K., I. Tóth, Z. Szatmáry, B. A. Smith, A. Kondor, Merényi, E. (1989) Dust Photometry in the Near Nucleus Region of Comet Halley. *Adv. Space Res.* 9(3), pp 89-92. *(Also, Preprint KFKI-1988-33/C)*

118. Szegő K., A. Kondor, S. Larson, Merényi, E., R. Z. Sagdeev, B. A. Smith, I. Tóth (1989) Analysis of the Rotation of Comet Halley. *Adv. Space Res.* 9(3), pp (3)73-(3)76.

119. Smith, B. A., K. Szegő, S. Larson, Merényi, E., I. Tóth, R. Z. Sagdeev, G. A. Avanesov, V. A. Krasikov, V. A. Shamis, V. I. Tarnapolski (1987) The Spatial Distribution of Dust Jets Seen at VEGA-2 Fly-by. *Astronomy and Astrophysics* 187, pp 835-838.

120. Smith, B. A., K. Szegő, S. Larson, Merényi, E., I. Tóth, R. Z. Sagdeev, G. A. Avanesov, V. A. Krasikov, V. A. Shamis, V. I. Tarnapolski (1986) The Spatial Distribution of Dust Jets Seen at VEGA-2 Fly-by. In *Exploration of Halley's comet* (Eds. B. Battrick, E. J. Rolfe and R. Reinhard). ESA-SP-250, 2:327.

121. Sagdeev, R. Z., G. A. Avanesov, I. V. Barinov, A. I. Debabov, V. A. Krasikov, V. I. Morozov, V. A. Shamis, V. I. Tarnapolski, D. A. Usikov, Ya. L. Ziman, B. S. Zhukov, F. Szabó, K. Szegő, B. A. Smith, A. Kondor, S. M. Larson, Merényi, E., L. Szabó, I. Tóth, L. Várhalmi, P. Cruvellier, A. Abergel, J. L. Bertaux, J. Blamont, M. Danz, D. Möhlman, H. Stiller, H. P. Zapfe (1986) Comet Halley: Nucleus and Jets (Results of the VEGA Mission). *Adv. Space Res.* 5(12), p 95. Special issue ``Comets Halley and Giacobini-Zinner" Ed. E. Grün. *(Also, Preprint KFKI-1986-34/C)*

122. Sagdeev, R. Z., V. A. Krasikov, V. A. Shamis, V. I. Tarnapolski, K. Szegő, I. Tóth, B. A. Smith, S. Larson, E. Merényi, E., (1986) Rotation Period and Spin Axis of Comet Halley. In *Exploration of Halley's comet* (Eds. B. Battrick, E. J. Rolfe and R. Reinhard). ESA-SP-250, 2:335.

123. Sagdeev, R. Z., G. A. Avanesov, V. A. Shamis, Ya. L. Ziman, V. A. Krasikov, V. A. Tarnapolski, K. Szegő, E. Merényi, E., B. A. Smith (1986) TV experiment in VEGA mission: image processing technique and some results. In *Exploration of Halley's comet* (Eds. B. Battrick, E. J. Rolfe and R. Reinhard). ESA-SP-250, 2:295.

124. Kóta, J., Merényi, E., Erdős, G. (1985) Polarity-Dependent Heliolatitudinal Gradient of Galactic Cosmic Rays. *Astrophysical Journal* 299, p 505.

125. Erdős, G., J. Kóta, and Merényi, E., (1985) 22-Year Cycle of the Upper Limiting Rigidity of Daily Waves. *Proc. 9th Int'l Cosmic Ray Conference*, San Diego, 4, p 178.

126. Kóta, J., Merényi, E., G. Erdős (1984) Heliolatitudinal Gradient of High Energy Cosmic Rays. *Proc. Int'l Symp. 'Cosmic Rays in the Heliosphere'*, Morioka, Japan, 1984.

127. Benkó, G., Kecskeméty, K., Kóta, J., Merényi, E., Somogyi, A., Varga, A. (1983), Solar and sidereal daily waves around maximum solar activity, *Proc. 18th International Cosmic Ray Conference, Vol. 10, p. 213*

128. Kóta, J., Merényi, E., J. R. Jokipii, D. A. Kopriva, T. I. Gombosi, A. J. Owens (1982) A Numerical Study of Pitch-Angle Scattering of Cosmic Rays. *Astrophysical Journal* 254, p. 398

129. Gombosi, T., Kecskeméty, K., Merényi, E., Tátrallyay, M., Kurt, V. G., Logachev, Yu. I., Stolpovskii, V. G., Trebukhovskaya, G. A. (1979) Propagation of energetic particles during the November 22, 1977 event. *Proc. 16th Int'l Cosmic Ray Conf.*, Kyoto, Japan, 1979. *(Also Preprint, KFKI-1979)*

Other Refereed Works

130. Merényi. E., (1980) A HYDRA rendszer implementálása PDP 11/40 számitógépen és alkalmazása kozmikus sugárzási adatok kirtékelésére. (Implementation of the HYDRA system on PDP 11/40 and its application for the analysis of cosmic ray data.) *Ph.D. dissertation*, Szeged (József Attila) University, and Central Research Institute for Pysics, Hungarian Acad. Sci., 1980.

131. Merényi, E. (1978) Avtomaticheskaya obrabotka dannukh IszZ PROGNOZ sistemoj HYDRA na malenkoj EVM PDP 11/40 (Automated processing of PROGNOZ satellite data with the HYDRA system, on small PDP 11/40 computer). *Trudy soveschanii 8-oj sekcii INTERKOSMOSa,* Moscow, 1978.

132. Hajdu, K., Merényi, E. (1976) Iszplozovaniya modul'noj systemy HYDRA v obrabotke dannukh kosmicheskikh isledovanii (Application of the modular system HYDRA in the analysis of space research data). *Trudy soveschanii 8-oj sekcii INTERKOSMOSa*, Warsaw, 1976.

133. Merényi. E., Noviczky, B. (1977) Odna metasystema jazykov Programirovaniya. (A metasystem of programming languages) *Preprint, KFKI-1977-69*.

Electronic Archives

134. International Halley Watch Archive (1989): 76 images of the nucleus of Comet Halley from the 1986 VEGA-1 and VEGA-2 spacecraft fly-by, in progressive stages of image restoration, as described in the book “Images of the Nucleus of Comet Halley” (Eds. R. Reinhard and B. Battrick, ESA) pp 53 - 60 and 85 - 230

135. National Aeronautics and Space Administration (NASA) Planetary Data System, Small Bodies Node (1992): 76 images of the nucleus of Comet Halley from the 1986 VEGA-1 and VEGA-2 spacecraft fly-by, in progressive stages of image restoration, as described in the book “Images of the Nucleus of Comet Halley” (Eds. R. Reinhard and B. Battrick, ESA) pp 53 - 60 and 85 - 230

Miscellaneous

Press releases (in Hungarian press, and radio and TV) about signing of a Memorandum of Understanding (Feb 28, 2011) between Rice and Károly Róbert College, Gyöngyös, Hungary, to pursue collaborations on hyprspectral data analyses for assessment and monitoring of environmental conditions.

Processed satellite spectral image of a Hungarian site showing environmental contaminants, in ``Geomatika" (Hungarian GIS journal), April 1998 issue.

Restored image of the nucleus of Comet Halley, in ``The Comet Hale-Bopp Book" by Thomas Hockey, ATL Press, 1996.

Restored image of the nucleus of Comet Halley, in the February 1986 issue of National Geographic.

Invited Talks

1. Merényi, E. (2020) Discovery from Hyperspectral Radio Astronomy Data Cubes with Neural Map-based Learning. *Astronomical Data Science Workshop*, Texas A & M University, February 17-18, 2020. https://drive.google.com/drive/folders/1Nhc00jtvnxkKC7BuYCv2-rCuqjDPaIk1
2. Magnifying (unknown) rare clusters to increase the chance of detection, using unsupervised learning. *Advanced Workshop on Accelerating the Search for Dark Matter with Machine Learning",* The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy, April 8-12, 2019. http://indico.ictp.it/event/8674/speakers
3. *Introduction to Unsupervised Learning. Lorentz Center workshop "Accelerating the Search for Dark Matter with Machine Learning", Leiden, Netherlands, January 15-19, 2018. https://indico.cern.ch/event/664842/*
4. Discovery from Hyperspectral ALMA Imagery with NeuroScope. ALMA 2030 special session, *USNC-URSI National Radio Science Meeting, Boulder, CO.* January 5, 2018
5. Neural Machine Learning for Discovery and Interpretation in Complex ALMA Data, *National Radio Astronomy Observatory, Charlottsville, VA,* November 17, 2017
6. Deep Data: Discovery and Visualization, *IAU 325 Symposium "Astroinformatics 2016", Sorrento, Italy*, October 20-24, 2016. (With J. Taylor and A. Isella) Slides archived at http://dame.dsf.unina.it/astroinformatics2016/lectures/Deep-data_Merenyi.pdf
7. Title TBD, *Dagstuhl Seminar "Integration of Expert Knowledge for Interpretable Models in Biomedical Data Analysis" (16261). Int'l Conference and Research Center for Computer Science (Leibniz Center), Schloss Dagstuhl, Wadern, Germany, June 26 – July 1, 2016.*
8. Learning complex cluster structure with neural maps and CONN measure. *Seminar series, Dept. of Computer Science, Washington University at St. Louis*, April 17, 2015.
9. Knowledge Discovery from the Hyperspectral Sky. *Workshop on "Tools for Astronomical Big Data", NOAO, Tucson, AZ* March 9, 2015. Slides archived at http://www.noao.edu/meetings/bigdata/schedule.php
10. Challenges and Opportunities in Leading-Edge Radioastronomy: The Complexity of ALMA Data. *Dept. of Mathematics, University of Groningen, The Netherlands,* September 18, 2014.
11. Looking for structure in ALMA data with machine learning. *4th Astroinformatics Workshop, Viña del Mar, Chile*, August 25 – 29, 2014.
12. The Sky Is Not the Limit. *10th International Workshop on Self-Organizing Maps*, *Mittweida, Germany*, July 4, 2014.
13. Hyperspectral image analysis in planetary science and astronomy. Special session "Building the Astronomical Information Sciences: From NASA's AISR Program to the New AAS Working Group on Astroinformatics and Astrostatistics", *223rd AAS Meeting, Washington, DC, 5-9 January, 2014.*
14. Discovery and target classification from remote sensing hyperspectral imagery with non-linear machine learning techniques. NATO Science for Peace Workshop "Multidisciplinary Endeavour in Nanobiology, Nanoscience and Environment", *Interdisciplinary Center for Advanced Science and Technology at the University of Split*, Croatia, April 16-20, 2012.
15. How many winners does it take to win? Minisymposium on computational intelligence, *Dept. of Mathematics, University of Groningen, The Netherlands*, December 15, 2011.

16. Finding structure in high-dimensional spectral data with neural machine intelligence. Examples from planetary astronomy. *University of Chile, Dept. of Electrical and Computer Engineering*, Santiago de Chile, October 20, 2011.
17. Verification of Cluster Structure: Escalation of Need and Difficulty for Real, High-Dimensional Data, and Recent Developments. *Dagstuhl Seminar on Learning in the Context of Very High-Dimensional Data*. (By invitation only.) Schloss Dagstuhl, Leibniz-Center for Informatics, Wadern, Germany August 22-26, 2011. (With Kadim Taşdemir.)
18. Manifold Learning for Simultaneous Inference of Multiple Latent Variables. *Housdorff Institute of Mathematics, University of Bonn*, Germany, June 24, 2011. ("By invitation only" workshop.)
19. Information Extraction from Hyperspectral Imagery. *University of Applied Sciences, Mittweida, Department of Mathematics*, Germany, May 8, 2011.
20. Komplex adathalmazok klaszterezése neurális önszervező hálozatokkal (Clustering of Complex Data Sets Through Self-Organizing Neural Maps). *University of Szeged, Institute of Informatics,* Hungary, March 8, 2011
21. Self-Organizing Maps and Applications to High-Dimensional, Complex Data. *Univrsity of Bielefeld, Bielefeld, Germany,* December 7, 2010.
22. Computational Intelligence for Autonomous Decision Support. *DARPA workshop, Rice University, Houston, Texas,* March 10, 2010.
23. Knowledge discovery from complex data with biologically inspired machine intelligence: selected applications in medicine and environmental monitoring. *Symposium on Transformational Information Engineering, Nanyang Technological University, Singapore*, January 28-29, 2010.
24. Hyperpsectral Eyeing of Heavenly Bodies – a Machine Learning Approach. *Chester F. Carlson Center for Imaging Science Seminar Series, Rochester Institute of Technology, Rochester, NY*, November 4, 2009.
25. Clustering of complex data sets through neural machine learning. *Colloquium Series, Department os Statistics, Rice University, Houston, TX*, October 5, 2009.
26. Information Extraction from Complex Data Spaces. *Computational science seminar, ExxonMobil Upstream Research, Houston, TX.* June 5, 2009.
27. Discovering and exploiting structure for better learning and inference. *Dagstuhl Seminar on Similarity Based Learning on Structures*. Supported in part by the German Informatics Society. (By invitation only.) Schloss Dagstuhl, Leibniz-Center for Informatics, Wadern, Germany February 15-21, 2009.
28. Toward autonomous on-board science: self-organized neural learning of highly structured manifolds. *University of Paderborn, Heinz Nixdorf Institute*, April 29, 2008.
29. Intelligent Information Extraction to Aid Science Decision Making in Autonomous Space Exploration, *DSS08 SPIE Defense and Security Symposium, Space Exploration Technologies, Orlando, FL, March 18, 2008.* (With Kadim Taşdemir and William H. Farrand)
30. Information extraction and knowledge discovery from high-dimensional and high-volume complex data sets through precision manifold learning, *NASA Science Technology Conference (NSTC2007)*, College Park, Maryland, June 19 - 21, 2007 (Merényi, E., Farrand, W. H., Brown, R. H., Villmann, Th,. Fyfe, C.)
31. Knowledge discovery in urban environments from fused multi-dimensional imagery, *4th IEEE GRSS/ISPRS Joint Workshop on Remote Sensing and Data Fusion over Urban Areas (URBAN 2007)*, Paris, France, April 11-13, 2007. (With B. Csathó and K. Taşdemir)
32. SOM and GRLVQ in Remote Sensing Image Analysis, Dagstuhl Seminar on Similarity Based Clustering and its Applications in Medicine and Biology. Supported in part by the German

Informatics Society. (By invitation only.) Schloss Dagstuhl, Leibniz-Center for Informatics, Wadern, Germany, March 25-29, 2007.

33. Adaptive Embedded Systems (Systems Engineering Activities at Rice U), *Initial Meeting of National Consortium on System of Systems, San Antonio, Texas*, November 3, 2006. (Erzsébet Merényi, Devika Subramanian, John Clark, and Andrew Meade)

34. Min(d)ing the spectral aspect: finding patterns in complex, multi-dimensional data with self-organized learning. *M. D. Anderson Cancer Center of the University of Texas*, Nov 22, 2004.

35. Information Extraction from Complex Data with Self-Organizing Maps. Philadelphia Seminar on Information Technology, *Philadelphia University, Amman, Jordan*, Oct 10, 2004

36. Neural Maps for Precision Data Mining: Application to Planetary Spectral Images. Jordan Int'l Conference in Computer Science and Engineering, *Al-Balqa University, Salt / Amman, Jordan*, Oct 7, 2004.

37. Hyperspectral Eyes on the Solar System: Knowledge Mining the Planets with Computational Intelligence. Tutorial lecture, Jordan Int'l Conference in Computer Science and Engineering, *Al-Balqa University, Salt / Amman, Jordan*, Oct 4, 2004.

38. Neural Maps in Remote Sensing Image Analysis. *University of Paderborn, Heinz Nixdorf Institute*, May 5, 2004.

39. A Neural Map View of Hyperspectral Images. *Seventeenth Annual Conference on Neural Information Processing Systems (NIPS 2003), Workshop on Hyperspectral Remote Sensing and Machine Learning*, December 12, 2003, Whistler, B.C., Canada

40. Computational Intelligence in the Service of Planetary Science. *Lunar and Planetary Institute, Houston*, TX, November 21, 2003

41. Self-Organizing Neural Network Approaches For Hyperspectral Images. Keynote talk at *First Int'l Conference on Intelligent Computing and Information Systems, June 25, 2002, Cairo, Egypt* (With T. Villmann)

42. Neural Networks and Other Things at Rice University. *Faculty of Computer & Information Sciences, Ain Shams University, Cairo, Egypt*, June 27, 2002

43. Analysis of High-Dimensional Patterns With Self-Organizing Neural Networks. Applications to Remote Sensing Hyperspectral Images. *Rice University, Statistics Department*, Nov 19, 2001

44. Mapping Colorado River Ecosystem Resources In Glen Canyon: Analysis of Hyperspectral Low-Altitude AVIRIS Imagery. Plenary session talk at *ERIM, 14th Int'l Conference on Applied Geologic Remote Sensing* , Las Vegas, Nevada, 4-6 November, 2000. (With Farrand, W.H., Stevens, L.E., Melis, T.S., and Chhibber, K.)

45. ``Precision Mining" of High-Dimensional Patterns with Self-Organizing Maps: Interpretation of Hyperspectral Images. Highlight talk at *International Symposium on Computational Intelligence (ISCI 2000), Košice, Slovakia*, August 30 - September 1, 2000

46. Pattern Recognition and Classification of High-Dimensional Signatures with Artificial Neural Networks: Self-Organizing Maps for Hyperspectral Image Exploitation. *Electrical and Computer Engineering Department, Rice University*, March 15, 2000

47. Self-Organizing Maps for Rapid Identification of Planetary Resources: Neural Net tools for fast and effective information extraction from large (hyper)spectral images. *NASA Headquarters, Washington, D.C.*, February 4, 2000

48. The Challenges in Spectral Image Analysis: an Introduction, and Review of ANN Approaches. Introductory talk to special invited session, *European Symposium on Artificial Neural Networks, Bruges, Belgium*, 21 - 23 April, 1999

49. Utilization of Remote Sensing Hyperpsectral Imagery to Support Long Term Monitoring of the Colorado River Ecosystem. *Grand Canyon Monitoring and Research Center, Flagstaff, Arizona*, August 31, 1999

50. Discovering Compositional Variations on Planetary Surfaces with Artificial Neural Nets. *NASA Ames Research Center*, May 11, 1998

51. Hyperspectral Images: Why They Deserve a Different Treatment. Highlight talk, *GIS, Airborne Remote Sensing and Geospatial Clearinghouse Workshop, Hungarian Geological Institute, Budapest*, Feb 19, 1998

52. Case Studies from Spectral Images and Geophysical Data. Highlight talk, *GIS, Airborne Remote Sensing and Geospatial Clearinghouse Workshop, Hungarian Geological Institute, Budapest*, Feb 20, 1998

53. Surface cover composition from remote sensing hyperspectral imagery: Earth, Mars, asteroids, and beyond ... Guest lecture, *U of Arizona, G330 remote sensing course*, July 9, 1997

54. Advanced Techniques for Classification of Hyperspectral Images and Fused Disparate Data.. *Pan American Center for Earth & Environmental Studies, University of Texas at El Paso*, February 25, 1997

55. Integration of Disparate (Spectral and Geophysical) Data for Mapping Soil Composition in Temperate Climate Environment (Neural Network Applications for Planetary Surface Composition Research). *Los Alamos National Laboratories*, April 9, 1996 (With Csathó, B., Bodrogi, M., Gulyás, Á.)

56. Integration of Landsat Images, Geophysical and Radar Data For Mapping Soil Composition In Temperate Climate Environment. Plenary session talk at the *Eleventh Thematic Conference on Geological Remote Sensing of ERIM*, Las Vegas, NE, 27-29 February 1996 (With Csathó, B., Bodrogi, M., Gulyás, Á.)

57. Fast, Parallel Classification Technique for Hyperspectral Images: A Case Study for the LCVF AVIRIS Site. Plenary session talk at the *10th Thematic Conference on Geological Remote Sensing of ERIM, San Antonio, TX*, May 12, 1994. (With Laing, T.W.)

58. Artificial Neural Network Applications at the Lunar and Planetary Laboratory, U of Arizona. *Desert Research Institute, Reno, NV*, March 2, 1994

Contributed Conference and Workshop Presentations

1. Fast SOM-Enabled Automated Structure Discovery from ALMA Image Cubes. *Astronomical Data Science Workshop*, Texas A & M University, February17-18, 2020. (Taylor, J., Merényi, E., Hummel, M., Isella, A.)
2. Dense Cores in the Chaotic Carina Nebula. Next Generation Very Large Array (ngVLA) Workshop, July 2019. (Hummel, M., Taylor, J., Isella, A., Merényi, E., Hartigan, P.)
3. A Probabilistic Method for Pruning CADJ Graphs with Applications to SOM Clustering. *Proc. 13th International Workshop on Self-Organizing Maps, WSOM+ 2019, Barcelona, Spain, June 26-28, 2019.* (Taylor, J., Merényi, E.)
4. SOM-empowered Graph Segmentation for Fast Automatic Clustering of Large and Complex Data. *Proc. 12th International Workshop on Self-Organizing Maps, WSOM+ 2017, Nancy, France,* June 27-29, 2017. (Merényi, E., Taylor, J.)
5. Using Spatial Characteristics to Aid Automation of SOM Segmentation of Functional Image Data. *Proc. 12th International Workshop on Self-Organizing Maps and Learning Vector Quantization, Clustering and Visualization, WSOM+ 2017,* Nancy, France, June 27-29, 2017. (O'Driscoll, P., Merényi, and Grossman, R.)
6. Mining Complex Hyperspectral ALMA Cubes for Structure with Neural Machine Learning. *IEEE Symposium Series of Computational Intelligence, SSCI 2016*, *IEEE Symposium on Computational Intelligence and Data Mining,* Athens, Greece, Dec 6-9, 2016. (Merényi, E., Taylor, J. and Isella, A.)
7. The Effect of SOM Size and Similarity Measure on Identification of Functional and Anatomical Regions in fMRI Data. International *Workshop WSOM 2016, Houston, Texas, USA,* January 6-8, 2016. (O'Driscoll, P., Merényi, E., Karmonik, C., and Grossman, R.)
8. SOM and MCODE Methods of Defining Functional Clusters in MRI of the Brain. *36th Annual Intl Conf. of the IEEE Engineering in Medicine and Biology Society (IEEE EMBS)*, August 26-30, 2014, Chicago, IL. (O'Driscoll, P., Merényi, E., Karmonik, C., and Grossman, R.)
9. Classification and Diagnosis of Myopathy from EMG Signals, 2nd Workshop on Data Mining for Medicine and Healthcare (DMMH), at 13th SIAM Int'l Conference on Data Mining (SDM 2013), May 2-4, 2013, Austin, Texas, USA. (Bue, B., Merényi, E., Killian, J.)
10. Unmixing Hyperspectral Images with Fuzzy Supervised Self-Organizing Maps. *20th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN'2012*, Bruges, Belgium, 25-27 April, 2012. (Villmann, T., Merényi, E., and Farrand, W.H.)
11. Parallel neural hardware: the time is right. (Tutorial for special session "Parallel hardware architectures for acceleration of neural network computation".) *20th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN'2012*, Bruges, Belgium, 25-27 April, 2012. (Rückert, U. and Merényi, E.)
12. gNBXe - a Reconfigurable Neuroprocessor For Various Types of Self-Organizing Maps. *Proc. 20th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN'2012*, Bruges, Belgium, 25-27 April, 2012. (Lachmair, J., Merényi, E., Porrmann, M., Rückert, U.)
13. Learning Multiple Latent Variables with Self-Organizing Maps. *The 2010 IEEE Conference on Granular Computing (GrC 2010)*, Silicon Valley, August 14-16, 2010. (Zhang, L., Merényi, E.)
14. Using Spatial Correspondence for Hyperspectral Knowledge Transfer: Evaluation on Synthetic Data. *Second Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS 2010),* 14 – 16 June, 2010, Reykjavik, Iceland. (Bue, B., Merényi, E.)

15. Conjoined Twins: A Smart Neural Architecture for Adaptive Inference of Multiple Latent Parameters from Complex High-dimensional Data. *Applied Information Systems Research Program Annual PI Workshop, NASA Ames Research Center, and Conference on Intelligent Data Understanding, Mountain View, CA*, Oct 12 - 16, 2009. (Zhang, L., Merényi, E., Grundy, W. M., and Young, E. Y.)
16. Automated Labeling of Segmented Hyperspectral Imagery via Spectral Matching. *First Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS 2009)*, 26 – 28 August, 2009, Grenoble, France. Scheduled. (Bue, B., Merényi, E., and Csathó, B.)
17. On the Evaluation of Synthetic Hyperspectral Imagery. *First Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS 2009)*, 26 – 28 August, 2009, Grenoble, France. Scheduled. (Mendenhall, M. J. and Merényi, E.)
18. An SOM-Hybrid Supervised Model for the Prediction of Underlying Physical Parameters from Near-Infrared Planetary Spectra. *Proc. 7th Int'l Workshop on Self-Organizing Maps (WSOM 2009), June 8-10, St. Augustine, FL, USA.* (Zhang, L., Merényi, E., Grundy, W. M., and Young, E. Y.)
19. Machine Learning Approaches and Pattern Recognition for Spectral Data, *16th European Symposium on Artificial Neural Networks, ESANN'2008*, Bruges, Belgium, 23-25 April, 2008. (tutorial for special session, Villmann, T., Merényi, E., and U. Seiffert).
20. Characterizing polar landscapes from hyperspectral imagery. *Ninth Int'l Conference On Permafrost (NICOP 2008*), Fairbanks, AL, June 27 – July 1, 2008. (Bea Csathó, Justin Rich, Erzsébet Merényi, Lynn Everett, Brian Bue, John Kimble and Chien-Lu Ping)
21. Cluster analysis in remote sensing spectral imagery through graph representation and advanced SOM visualization. *11th Int'l Conf. on Discovery Science, DS- 2008, Budapest, Hungary, 13 – 16 October, 2008.* (Taşdemir, K, and Merényi, E.)
22. Novel algorithms for optimal compression using classification metrics, *IEEE Aerospace Conference***,** Big Sky, MT, March 1 – 8, 2008. (B. Xie, Tamal Bose and E. Merényi)
23. A new cluster validity index for prototype based clustering algorithms based on inter- and intra-cluster density. *Proc. Int'l Joint Conf. on Neural Networks (IJCNN 2007),* Orlando, FL, August 12 – 17, 2007. (Taşdemir, K. and Merényi, E.)
24. Min(d)ing the small details: discovery of critical knowledge through precision manifold learning and application to on-board decision support. *Proc. IEEE Int'l Conference on Systems of Systems Engineering (IEEE SoSE 2007)*, San Antonio, TX, April 16 – 18, 2007. 8 pp. (Merényi, E., L. Zhang, and K. Taşdemir)
25. A Neural Map View of Planetary Spectral Images for Precision Data Mining and Rapid Resource Identification, PI Workshop, NASA Applied Information Systems Research Program, University of Maryland, October 3-5, 2006. (Erzsébet Merényi, W.H. Farrand, R.H. Brown. Th. Villmann, C. Fyfe)
26. Relevance-based Feature Extraction from Hyperspectral Images in the Complex Wavelet Domain. *IEEE Mountain Workshop on Adaptive and Learning Systems (SMCals/06)*, Logan, Utah, July 24 - 26, 2006. (Mendenhall, M.J., and Merényi, E.)
27. Generalized Relevance Learning Vector Quantization for Classification Driven Feature Extraction from Hyperspectral Data, Am. Soc. Photogrammetry and Remote Sensing, 2006, Annual Conference and Technology Exhibition, Reno, NV May 1-5 2006. (Mendenhall, M.J., and Merényi, E.)
28. Data topology visualization for the Self-Organizing Map. *14th European Symposium on Artificial Neural Networks, ESANN'2006*, Bruges, Belgium, 26-28 April, 2006. (Taşdemir, K. and Merényi, E.)

29. Weighted Differential Topographic Function: A Refinement of the Topographic Function. *14th European Symposium on Artificial Neural Networks, ESANN'2006*, Bruges, Belgium, 26-28 April, 2006. (Zhang, L. and Merényi, E.)
30. The Nature of the Mars Pathfinder "Black Rock" Lithology: Comparisons with SNC Meteorites and Omega Spectral Images of Chryse Planitia. *Proc. Am. Geophys. Union fall conference*, San Francisco, CA, December, 2005. (Wright, S. P, Farrand, W. H., Rogers, A. D., Merényi, E. (2005)
31. Considering Topology in the Clustering of Self-Organizing Maps. *5th Workshop On Self-Organizing Maps (WSOM 2005)*, 5 – 8 September, 2005, Paris, France. (Taşdemir and Merényi)
32. Intelligent Understanding of Hyperspectral Images through Self-Organizing Neural Maps. 2nd Int'l Conf. On Cybernetics and Information Technologies, Systems and Applications (CITSA 2005), July 14 - 17, 2005, Orlando, FL, USA.
33. A Neural Map View of Planetary Spectral Images for Precision Data Mining and Rapid Resource Identification, PI Workshop, NASA Applied Information Systems Research Program, April 4-7, 2005, NASA Ames Research Center.
34. The Use of AVIRIS Imagery to Assess Clay Mineralogy and Debris-Flow Potential in Cataract Canyon, Utah. Conf. Of the Geological Society of America, Colorado Convention Center, Denver, Colorado, Nov 9, 2004 (Rudd, L. and Merényi, E.)
35. Applications of SOM magnification to data mining. 8th WSEAS Int'l Conf. on Systems, Circuits, Communications, Vouliagmeni, Athens, Greece, July 12 – 15, 2004 (Merényi, E., Jain, A. and Farrand, W.H.)
36. Forbidden Magnification? I. 12th European Symposium on Artificial Neural Networks, ESANN'2004, Bruges, Belgium, 28-30 April, 2004. (Jain, A., Merényi, E.)
37. Forbidden Magnification? II. 12th European Symposium on Artificial Neural Networks, ESANN'2004, Bruges, Belgium, 28-30 April, 2004. (Merényi, E., Jain, A.)
38. Mapping Surface Materials on Mars From Mars Pathfinder Spectral Images With HYPEREYE. International Conference on Information Technology (ITCC 2004), April 7,2004, Las Vegas, NV, USA, 2004. (Merényi, E., Farrand, W.H., Tracadas, P.)
39. HYPEREYE: looking at hyperspectral images through neural maps. NASA, OSSA, Applied Information Systems Research Program Annual PI Workshop, University of Pittsburgh, Pittsburgh, Oct 28 - 30, 2003
40. "Precision" Mining of Large Spectral Data Volumes For Rapid Identification of Planetary Resources. NASA, OSSA, Applied Information Systems Research Program Annual PI Workshop, NASA Ames Research Center, Mountain View, CA, Oct 4 - 6, 2002
41. "Precision" Mining of Large Spectral Data Volumes. NASA, OSSA, Applied Information Systems Research Program Annual PI Workshop, Applied Physics Laboratories of JHU, Laurel, MD, Oct 16-18, 2001
42. "Precision" Mining of Large Spectral Data Volumes. NASA, OSSA, Applied Information Systems Research Program Annual PI Workshop, LASP, Boulder, CO, Oct 18-20, 2000
43. Self-Organizing Maps for Rapid Identification of Planetary Surface Composition. NASA, OSSA, Applied Information Systems Research Program Annual PI Workshop, NASA Goddard Space Flight Center, Greenbelt, MD, Oct 1999
44. Estimating the Intrinsic Dimensionality of Hyperspectral Images. European Symposium on Artificial Neural Networks, Bruges, Belgium, 21 -23 April, 1999. (Bruske, J., Merényi, E.)
45. Mineral Exploration by Using Hyperspectral Image Classification and ``Doming" Delineation. ERIM, 13th Int'l Conference and Workshops on Applied Geologic Remote Sensing, 1 - 3 March, 1999, Vancouver, British Columbia, Canada. (Merényi, E., Sumin-Finn, V., and Penn, B.S.)

46. Self-Organizing ANNs for Planetary Surface Composition Research. European Symposium on Artificial Neural Networks, Bruges, Belgium, 22 - 24 April, 1998

47. Prediction of Water in Asteroids from Spectral Data Shortward of 3 Microns. Department of Planetary Sciences Meeting, Hawaii, Nov, 1995. (Merényi, E., E.S. Howell, L.A. Lebofsky, and A.S. Rivkin)

48. Artificial Neural Network Applications at the Lunar and Planetary Laboratory, U of Arizona. Presentation to representatives of Hughes, Santa Barbara Res. Center, at University of Arizona, Lunar and Planetary Laboratory, Feb 14, 1994.

49. A New Type of Weathered, Immobile Soil Unit On Mars. DPS (Department of Planetary Science) Conference, Washington, D.C., Dec, 1993. (Merényi. E., Edgett, K.S., Singer, R.B.)

50. Classification of the LCVF AVIRIS Test Site With a Kohonen Artificial Neural Network. Proc. Fourth Airborne Geoscience Workshop, Washington, D.C., Dec, 1993. (Merényi, E., Singer, R.B. and Farrand, W.H.)

51. Compositional Variations on the Surface of Mars: Mixing Model Analysis From a Telescopic Spectral Image. Lunar and Planetary Science Conf. XXIII, Houston, TX, March 1992. (Merényi, E., J. S. Miller, R. B. Singer)

52. A Neural Network Asteroid Classification Based on Water of Hydration. DPS (Department of Planetary Science) Conference, Munich, Germany, Oct, 1992. (Merényi. E., E. S. Howell, L. A. Lebofsky)

53. Spectral Analysis of the Surface of Mars: Neural Network Classification of High Spectral Resolution Images. DPS (Department of Planetary Science) Conference, Munich, Germany, Oct, 1992. (Merényi. E., R. B. Singer, J. S. Miller)

54. Exploring Compositional Variations on Mars: Mixture Modeling from a Telescopic Spectral Image. DPS (Department of Planetary Science) Conference, San Jose, CA, Oct, 1991. (Merényi. E., J. S. Miller, R. B. Singer)

[Earlier items not listed.]

Other Presentations

55. Development of a Target Recognition Capability with Low False Alarm Rate and with Reduced Training Labels through SOM Manifold Learning. Final project presentation, *DRS Technologies Headquarters* via Zoom, Cypress, CA, December 18, 2020

56. Neural Machine Learning: Discovery in Big / Complex Data with Neural Maps, The NeuroScope Approach. *Faculty research presentation in graduate course STAT 600*, Rice University, March 23, 2020.

57. Enabling ATR with Reduced Number of Training Labels through SOM Manifold Learning. Final project presentation, *DRS Technologies Headquarters*, Cypress, CA, December 11, 2019

58. Neural Machine Learning: Discovery in Big / Complex Data with Neural Maps. *Faculty research presentation to Applied Physics graduate students*, Rice University, November 1, 2019.

59. Neural Machine Learning: Discovery in Big / Complex Data with Neural Maps. *Faculty research presentation in graduate course STAT 600*, Rice University, April 15, 2019.

60. Neural Machine Learning of Complex Data. *Faculty research presentation to Applied Physics graduate students*, Rice University, October 19, 2018.

61. Neural Machine Learning of Complex Data. *Faculty research presentation in graduate course STAT 600*, Rice University, April 2, 2018.

62. Learning Complex Data with Neural Maps. *Faculty research presentation in graduate course STAT 600*, Rice University, February 6, 2017.

63. NeuroScope: Adaptive Learning Classifier and Discovery Tools for Real-Time Operations. *Presentation to representatives of DRS Advanced Sensor Technology*, Rice University, May 31, 2016.
64. Neural Machine Learning of Complex Data. *Faculty research presentation in graduate course STAT 600*, Rice University, March 14, 2016.
65. Learning Complex Data with Neural Maps. *Faculty research presentation in graduate course STAT 600*, Rice University, February 9, 2015.
66. Learning About the Brain with and Artificial Brain. Research presentation to donors. (Lead PI Dr. Robert Grossman, Mind and Brain project.) *The Methodist Hospital*, March 5, 2014.
67. Machine Learning Design Document. *DARPA preliminary Design Review,PACE Machine Learning Group,* Rice University, July 8, 2010. (with L. Chakrapani and K. Palem)
68. Machine Learning Report. *PACE DARPA review, Machine Learning Group,* Rice University, March 23, 2010. (with L. Chakrapani and K. Palem)
69. Computational Intelligence for Autonomous Decision Support. *DARPA workshop,* Rice University, March 10, 2010.
70. Machine Learning, PACE. *AACE DARPA meeting, Machine Learning Group,* Rice University, January 6, 2010. (with L. Chakrapani and K. Palem)
71. Learning Complex Models from Complex Data. *PACE DARPA review, Machine Learning Group, Rice University*, September 30, 2009.
72. Information Extraction from Complex Data Spaces with Neural Machine Learning. *Platform Aware Compiler Environment (PACE) All Hands Meeting, Rice University*, August 19-20, 2009.
73. Information Extraction from Complex Data Spaces with Neural Machine Learning. *VISEN Center Retreat on Machine Learning for Compiler Optimization, Rice University*, June 22, 2009.
74. Generalized Relevance Learning Vector Quantization for Classification Driven Feature Extraction from Hyperspectral Data (M. Mendenhall and E. Merényi). ECE Affiliates Day, Rice University, September 21, 2005
75. The Power of Self-Organizing Maps (SOMs) in Data Mining (K.Taşdemir and E. Merényi). ECE Affiliates Day, Rice University, September 21, 2005
76. Information Extraction from Complex Data with Self-Organizing Maps. Presentation to first-year graduate students, ECE Dept., Rice University, Nov 10, 2004
77. Rice University. Recruitment presentation to prospective graduate students, Al Balqa University, Salt / Amman, Oct 6, 2004.
78. "Precision" Data Mining With Computational Intelligence. Presentation to undergraduate students at Rice University, IEEE research opportunities meeting, Jan 21, 2004
79. "Precision" Mining of High-Dimensional Patterns with Self-Organizing Neural Networks. Team meeting, M.D. Anderson Cancer Center, U Texas, Houston, Texas, Dec 2, 2003
80. Data Mining with Self-Organizing Maps. Presentation to first-year graduate students, ECE Dept., Rice University, Nov 12, 2003
81. Analysis of High-Dimensional Patterns with Self-Organizing Neural Networks. Presentation to first-year graduate students, ECE Dept., Rice University, Nov 16, 2002
82. Analysis of High-Dimensional Patterns with Self-Organizing Neural Networks. Presentation to first-year graduate students, ECE Dept., Rice University, Dec 3, 2001.
83. Exploitation of Hyperspectral Images With Self-Organizing Maps. Presentation to first-year graduate students, ECE Dept., Rice University, Oct 24, 2000.

84. Imaging Spectroscopy and Exploitation of Hyperspectral Images for Material Identification. ECE Affiliates Day, Rice University, Nov 2000

[Earlier items not listed.]

Abstracts

1. Erzsébet Merényi (2014) Hyperspectral image analysis in planetary science and astronomy. Special session "Building the Astronomical Information Sciences: From NASA's AISR Program to the New AAS Working Group on Astroinformatics and Astrostatistics", *223rd AAS Meeting, 5-9 January 2014 in Washington, DC.*
2. Bea Csathó, Erzsébet Merényi, Justin Rich, Lynn Everett, Brian Bue, John Kimble and Chien-Lu Ping (2008) Characterizing polar landscapes from hyperspectral imagery. Accepted to the Ninth Int'l Conference On Permafrost (NICOP 2008), Fairbanks, AL, June27 – July 1, 2008.
3. Intelligent Information Extraction to Aid Science Decision Making in Autonomous Space Exploration, *DSS08 SPIE Defense and Security Symposium, Space Exploration Technologies, Orlando, FL, March, 2008.* (With Kadim Taşdemir and William H. Farrand)
4. Wright, S. P, Farrand, W. H., Rogers, A. D., Merényi, E. (2005) The Nature of the Mars Pathfinder "Black Rock" Lithology: Comparisons with SNC Meteorites and OMEGA Spectral Images of Chryse Planitia. *Eos Trans. AGU, 86(52), Fall Meet. Suppl., Abstract P21B-0145.* San Francisco, CA, December, 2005.
5. Farrand, W. H., Merényi, E., Murchie, S., Barnouin-Jha, O. (2005) Spectral Class Distinctions Observed in the MPF IMP SuperPan Using a Self-Organizing Map. *Proc. 36th Lunar and Planetary Science Conference,* Houston, Texas, March, 2005. Extended abstract.
6. Rudd, L. and Merényi, E., The Use of AVIRIS Imagery to Assess Clay Mineralogy and Debris-Flow Potential in Cataract Canyon, Utah. *Abstracts of the Conf. of the Geological Society of America*, Denver, Colorado, Nov 9-11, 2004, Vol. 36, No. 5.
7. W. H. Farrand and E. Merényi , Mapping Rock and Soil Units in the MPF IMP Superpan Using a Kohonen Self Organizing Map. *Proc. 35th Lunar and Planetary Science Conference,* Houston, Texas, March 15 – 19, 2004. Extended abstract.
8. Merényi, E., McEwen, A.S., Robinson, M.S., and Craddock, R.A. (1997) Spectral Mapping of Mare Moscoviense, Lunar Farside, from Clementine UVVIS Data, *Proc. Lunar Planet. Sci. Conf. XXVIII.* Extended abstract.
9. Kardeván, P., Bartha, A., Horváth, R., Róth, L., Sikhegyi, F., Merényi. E. (1998) UNDP projekt a DAIS rendszer alkalmazására magyarországi hiperspektrális felmérésekben (UNDP project for the application of DAIS in Hungarian hyperspectral surveys) DAT'98, VIIth Conference and Exhibition of Hungarian Database Providers, Budapest, November 10-12, 1998.
10. Merényi. E. , McEwen, A.S., Robinson, M.S., and Craddock, R.A. (1997) Spectral Diversity and Compositional Layers in Mare Moscoviense, Lunar Far Side, from Clementine UVVIS Images. Bullet. Am. Astron. Soc. 29.
11. Merényi. E. , Howell, E.S., Rivkin, A.S., and Lebofsky, L.A. (1996) Prediction of Water in Asteroids from Short Wavelength < 3 Micron Spectral Data: a Neural Network Study II. Bullet. Am. Astron. Soc. 28:3, p 1100.
12. Merényi. E. , Howell, E.S., Rivkin, A.S., and Lebofsky, L.A. (1995) Asteroid Classification Based on Water of Hydration: a Neural Network Study. Bullet. Am. Astron. Soc. 27:3, p 2.
13. Batchily, A.K., Huete, A.R., Merényi. E., Homgtao, J., Accioly, L., and de Lira, G. (1994) Extraction of soil information from remotely sensed semi-arid areas with mixture models. Abstracts of the 86th Annual Meeting of the American Society of Agronomy, Soils Science

Society of America, and Crop Science Society of America, Seattle, WA, Nov 13-18, 1994, p. 344.

14. Merényi. E. , Calvin, W. M., Singer, R. B. (1994) Tracking Compositional and Physical Similarities from the Martian Equator to the South Polar Region. Bullet. Am. Astron. Soc. 26, No. 3.
15. Merényi. E., Edgett, K.S., Singer, R.B. (1993) A New Type of Weathered, Immobile Soil Unit On Mars. Bullet. Am. Astron. Soc. 25, No. 3.
16. Singer, R.B., Miller, J.S., Merényi. E. (1993) Evidence For a Global Compositional Dichotomy On Mars. Bullet. Am. Astron. Soc. 25, No. 3.
17. Merényi. E., E. S. Howell, L. A. Lebofsky (1992) A Neural Network Asteroid Classification Based on Water of Hydration Bullet. Am. Astron. Soc. 24, No. 3, p 939.
18. Merényi. E. , R. B. Singer, J. S. Miller (1992) Spectral Analysis of the Surface of Mars: Neural Network Classification of High Spectral Resolution Images. Bullet. Am. Astron. Soc. 24, No. 3 p. 979.
19. Jokipii, J.R., Kóta, J., and Merényi. E. (1992) The Gradient of Galactic Cosmic Rays at the Solar-Wind Termination Shock. AGU Spring Meeting, Baltimore, 1992.
20. Merényi. E. , J. S. Miller, R. B. Singer (1991) Exploring Compositional Variations on Mars: Mixture Modeling from a Telescopic Spectral Image. Bullet. Am. Astron. Soc. 23, No. 3, p 1177.
21. Howell, E.S., Merényi. E. , L. A. Lebofsky (1991) Using Neural Networks To Classify Asteroid Spectra. Bullet. Am. Astron. Soc. 23, No. 3, p 1140.

[Earlier items not listed.]