

Curriculum Vitae

Milos Hauskrecht

Computer Science Department
5329 Sennott Square
University of Pittsburgh
Pittsburgh, PA 15260, USA
Phone (412) 624-8845, Fax: (412) 624-8854
E-mail: *milos@cs.pitt.edu*

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Education

PhD in Computer Science, **Massachusetts Institute of Technology**
August 1997, Cambridge, MA

MSc in Electrical Engineering (with distinction), **Slovak Technical University**
May 1988, Bratislava, Czechoslovakia

Professional appointments

2007 - present: Associate Professor

Computer and Science Department, University of Pittsburgh, PA

2001 - 2007: Assistant Professor

Computer and Science Department, University of Pittsburgh, PA

2000 - 2001: Assistant Professor

Computer and Information Sciences Department, Temple University, Philadelphia, PA

1997 - 2000: Postdoctoral research associate

Computer Science Department, Brown University, Providence, RI

1991 - 1997: Research assistant

MIT Laboratory for Computer Science, MIT, Cambridge, MA

1990 - 1991: Research associate

Medical Bionics Research Institute, Bratislava, Slovakia

1988 - 1990: Research assistant

Medical Bionics Research Institute, Bratislava, Slovakia.

Other Current Affiliations

2001 - Present: Assistant Professor

Intelligent Systems Program, University of Pittsburgh, PA

2003 - Present: member

University of Pittsburgh Cancer Institute, Pittsburgh, PA

2005 - Present: affiliated member

Department of Computational Biology, University of Pittsburgh School of Medicine, Pittsburgh, PA

2006 - Present: core faculty

Biomedical Informatics Training Program, University of Pittsburgh School of Medicine, Pittsburgh, PA

Research interests

Artificial intelligence (AI):

- Planning, learning and optimization in the presence of uncertainty,
- Machine learning and data mining,
- Applications of AI in medicine, bioinformatics and engineering

Current research projects

- **Biomedical informatics:** Anomaly detection in clinical databases. Feature selection and multivariate analysis of high-throughput genomic and proteomic data.
- **Machine Learning.** Bayesian belief networks. Models of high-dimensional probabilistic distributions. Noisy-or component analysis.
- **Decision making in the presence of uncertainty:** Markov Decision Processes (MDPs). Factored MDPs with continuous and discrete state and action variables. Optimization of traffic networks and vehicle routing.

Research funding

Funded research:

- **NSF.** Secure CITI: A Secure Information Technology Infrastructure for Disaster Management. PI: Daniel Mosse, **role:** co-investigator, September 2003- August 2007. My budget: \$197,000.
The Secure and robust Critical Information Technology Infrastructure project aims to provide infrastructure and computational support to Emergency Managers (EMs) who are responsible for decision-making and management of resources before, during, and after emergencies or disasters. The system relies on a network of sensors that gather

data from the field, the algorithms that monitor, detect and predict emergency/disaster situations, and adaptive information-routing schemes that disseminate the data among the appropriate emergency agencies and units.

- **CDRF.** University of Pittsburgh. Latent variable models of stochastic networks. role: **PI**. June 2003-July 2004. My budget: \$9,900.

The project aims to investigate and develop: (1) A class of stochastic latent variable models capable of representing complex stochastic behavior of large network systems and their dependency structure. (2) Algorithms for learning of these models from observational data. (3) Algorithms for probabilistic inferences upon such models that can be queried by external reliability analysis modules. A scale-up potential of the methods is demonstrated on synthetic networks with hundreds of stochastic components.

- **NSF.** SGER. Modeling Fragility of Sociotechnical Systems: A Transportation Study. **role:** co-PI (with L. Comfort, and J.S. Lin). February 2004-June 2005. My budget: \$20,000.

The goal of this research is to develop: (1) models of complex socio-technical systems that are vulnerable to failure and (2) tools for the computational analysis of such systems. These models and tools will be used to develop decision support for practicing emergency managers, and will enable them to increase the efficiency and effectiveness of emergency operations under conditions of uncertainty and rapid change.

- **DoD.** Telemedicine and Advanced Technology Research Center (TATRC). Proteomics and Bioinformatics Core Facilities. Years 1 – 3. **PI:** M. Becich. **role:** co-investigator, July 2005 - February 2008. My budget: \$233,512

The objective of the project is to foster new understanding of cancer and other diseases through proteomics the study of the shape, function and expression of proteins. The primary focus of the project is on new high-throughput technologies that are used to analyze protein expression in patient samples at a high rate of speed and standardized operating procedures to achieve this. Dr. Hauskrecht participates in the development of new computational algorithms for preprocessing, biomarker analysis and disease detection for high-throughput MS and other proteomic datasources and their optimization.

- **NCI.** SPORC in Lung Cancer. **PI:** Jill Siegfried. **role:** co-investigator July 2006–April 2011. My budget: \$62,000.

The University of Pittsburgh Cancer Institute (UPCI) Specialized Program of Research Excellence (SPORC) in Lung Cancer funded by NCI includes three lung cancer projects and four cores. Dr Hauskrecht works primarily in the "Serum Proteomic Biomarkers for Lung Cancer Detection and Prognosis" project. The work will focus on the analysis of MALDI-TOF MS proteomic profiles and design of computational methods for discovery of potential lung cancer markers in one-shot and longitudinal studies.

- **NIH.** R21 Evidence-based anomaly detection in clinical databases. role: **PI**, April 2007-April 2009, \$358,846.

We propose to develop and evaluate a new data-driven approach for detecting unusual clinical patterns (anomalies) that is complementary to knowledge-based approaches. The new approach is based on comparing clinical actions, such as medications given and labs ordered, taken for the current patient to those actions taken for similar patients in the recent past, as recorded in a clinical database. The approach builds upon recent advances in machine learning and Bayesian network modeling to identify unusual patterns. The advantages of the new computational technique are that it works with minimal prior knowledge, and it may detect anomalies for which no rules have yet been

written. We evaluate the approach in a laboratory setting using retrospective data for the cohort of surgical cardiac patients.

- **DoD.** Telemedicine and Advanced Technology Research Center (TATRC). Proteomics and Bioinformatics Core Facilities. Year 4. PI: M. Becich. **role:** co-investigator, February 2008-August 2008, My budget: \$20,000.

Teaching experience

CS Department, University of Pittsburgh

Pittsburgh, PA

- CS 441 Discrete Mathematics for Computer Science (Fall 2004, Spring 2005, Spring 2006)
- CS 1571 Introduction to Artificial Intelligence (Fall 2003, Fall 2002, Fall 2001)
- CS 2710 Foundations of Artificial Intelligence (Fall 2004, Fall 2005),
- CS 2750, Machine Learning (Spring 2004, Spring 2003, Spring 2002);
- CS 3710 Probabilistic Graphical Models. Offered as Advanced Topics in Artificial Intelligence (Fall 2005)
- CS 3750 Advanced Topics in Machine Learning (Fall 2003);

CIS Department, Temple University

Philadelphia, PA

- CIS 673, Design and analysis of algorithms, Fall 2000.
- CIS 595, Machine Learning, Spring 2001.

CS Department, Brown University

Providence, RI

- Guest lecturer, CS243, Topics in Machine Learning (Spring 1999, Spring 1998).

Department of EECS, MIT

Cambridge, MA

- Graduate teaching assistant, 6.824, Artificial Intelligence, (Fall 1993, Fall 1994).

Student advising

PhD students who graduated:

- Branislav Kveton. Approximate Linear Programming for Factored Hybrid MDPs. Dissertation defended on September 7, 2006, currently at Intel Research, Santa Clara, CA.

Current PhD students

- Tomas Singliar. Project: Models of high dimensional probabilistic distributions and their application to traffic modeling (6th year PhD student, post-prelim, post-proposal, expected graduation: Summer 2008)
- Richard Pelikan. Project: Algorithms for preliminary peak identification using knowledge of protein structure and its abundance in the sample. (3rd year, ISP student in the biomedical track, expected graduation: Spring 2009)
- Michal Valko. Project: Dimensionality reduction for high-throughput MS proteomics. (3rd year student, post-prelim, expected graduation: Spring 2009)
- Shuquang Wang. Project: biomarker information-extraction from literature and publicly available datasources. (2nd year student).

MSc students who graduated:

- Elizabeth Clause, May 2005, MS project: Using a dynamic programming time-warping algorithm to align proteomic sequences.
- Aaron Cois, May 2006, MS thesis: Shells and Spheres: A Novel Framework for Variable Scale Statistical Image Analysis.
- Gregory Nilsen, December 2004, MS project: Analysis of Link Structures on the World Wide Web through SVM Classification.
- Richard Pelikan, May 2005, MS project: Development of feature selection techniques for high throughput proteomic profiling.
- Jose Nunez-Varela, May 2006, MS project: Development of a High Level Language Based on Rules for the RoboCup Soccer Simulator.
- Adi Nemlekar, MS Project: Identifying unique elements in musical composition, August 2007.

Dissertation committee memberships:

- Denver Dash, Intelligent Systems Program (ISP), 2003
- Tsai Ching Lu, ISP, 2004
- Yasir Khalifa, CS, 2004
- Will Bridewell, CS, 2004 (co-advisor with Dr. Buchanan)
- Vahan Grigorian, Math, 2004.
- Changhe Yuan, ISP, May 2006
- Andrew Post, Department of Biomedical Informatics (DBMI), October 2006
- Mark Fenner, CS, September 2007
- Shyam Visweswaram, ISP, December 2007
- Ali Alanjawi, CS, post-proposal
- Xia Jiang, DBMI, post-proposal
- Yanna Shen, ISP, pre-proposal

Honors, Awards

National Library of Medicine (NLM) fellowship, 1995-1997

Slovak Technical University Chancellor's Prize Award, 1988

Faculty Dean's Award for an excellent MS diploma thesis, 1988

Professional activities

Chair:

- Workshop Program Chair, National Conference on Artificial Intelligence (AAAI) 2004.

Editorial Boards:

- Cancer Informatics Journal.

NIH study sections:

- NLM study section, October 2006.

Conference program committees:

- National Conference on Artificial Intelligence (AAAI): 1999, 2000, 2002, 2004, 2005, 2007.
- International Conference on Uncertainty in Artificial Intelligence: 2000, 2001, 2002, 2003, 2004, 2005, 2006

Organizer:

- Reinforcement Learning Workshop (RLW-97), Brown University, Fall 1997

Referee for conferences:

- National Conference on Artificial Intelligence (AAAI): 1999, 2000, 2002, 2004, 2005, 2007
- International Joint Conference on Artificial Intelligence (IJCAI): 1999, 2001, 2003, 2005
- International Conference on Uncertainty in Artificial Intelligence (UAI), 2000, 2001, 2002, 2003, 2004, 2005, 2006
- Artificial Intelligence and Statistics (AISTAT), 2007
- Neural and Information Processing Systems (NIPS): 1998, 2000
- International Conference on Machine Learning (ICML), 1998
- European Conference on Artificial Intelligence (ECAI), 1998
- Workshop on Qualitative Reasoning (QR-97), 1998

Referee for journals:

- Artificial Intelligence journal
- Journal of Artificial Intelligence Research

- Machine Learning Journal,
- Journal of Machine Learning Research
- IEEE Trans. on Man, Systems and Cybernetics
- Applied Bioinformatics
- Cancer Informatics
- IEEE Transactions on Information Technology in Biomedicine

University and departmental service

University:

- poster judge for Science 2006, University of Pittsburgh.
- CDRF grant reviewer in 2004 and 2007, University of Pittsburgh.

Computer Science Department:

- Undergraduate advising committee (2001, 2002)
- Undergraduate program committee (2003, 2004)
- Teaching evaluations committee (2004, 2005)
- Graduate admissions committee (2006)

Intelligent Systems Program (ISP):

- Graduate admissions committee (2002-2006)

Publications

New journal articles under review

T. Singliar and M. Hauskrecht. Learning to detect incidents from noisily labeled data. *Machine Learning Journal*.

R. Pelikan and M. Hauskrecht. In-silico peptide identification methods for whole-sample proteomics. *IEEE Transactions on Computational Biology and Bioinformatics*.

M. Hauskrecht, T. Singliar, and L. Comfort. Fixed and adaptive route planning methods for emergency response in stochastic traffic networks. *Journal of Computational and Mathematical Organizational Theory*.

W.W. Chapman, J.N. Dowling, G.F. Copper, M. Hauskrecht, M. Valko. Identifying Acute Lower Respiratory Syndrome from Emergency Department Texts. *Journal of American Medical Informatics Association*.

Journal articles

R. Pelikan, W. L. Bigbee, D. Malehorn, and M. Hauskrecht*. Intersession Reproducibility of Mass Spectrometry Proteomic Profiles and its Effect on the Accuracy of Multivariate Classification models. *Bioinformatics*, doi: 10.1093/bioinformatics/btm415 , 2007

* senior author

T. Singliar and M. Hauskrecht. Noisy-or Component Analysis and its Application to Link Analysis. *Journal of Machine Learning Research*, vol. 7, pp. 2189-2213, 2006.

B. Kveton, M. Hauskrecht, C. Guestrin. Solving Factored MDPs with Hybrid State and Action Variables. *Journal of Artificial Intelligence Research*, vol. 27, pp. 153-201, 2006.

T. Jahnukainen, D. Malehorn, M. Sun, J. Lyons-Weiler, W. Bigbee, G. Gupta, R. Shapiro, P. Randhawa, R. Pelikan, M. Hauskrecht, A. Vats. Proteomic Analysis of Urine in Kidney Transplant Patients with BK Virus Nephropathy. *Journal of American Society of Nephrology (JASN)*, vol 17, pp. 3248-3256, 2006.

M. Hauskrecht, R. Pelikan, W.L. Bigbee, D. Malehorn, M.T. Lotze, H.J. Zeh, D.C. Whitcomb, and J. Lyons-Weiler, Feature Selection for Classification of SELDI-TOF-MS Proteomic Profiles, *Applied Bioinformatics*, 4:4, pp. 227-246, 2005.

J. Lyons-Weiler, R. Pelikan, H.J. Zeh III, D.C. Whitcomb, D.E. Malehorn, W.L. Bigbee and M. Hauskrecht*, Assessing the Statistical Significance of the Achieved Classification Error of Classifiers Constructed Using Serum Peptide Profiles and a Prescription for Random Resampling Repeated Studies for Massive High-Throughput Genomic and Proteomic Studies, *Cancer Informatics*, 1:1, pp. 53-77, 2005.

* senior author

M. Hauskrecht, L. Ortiz, I. Tsochantaridis, and E. Upfal. Efficient methods for computing trading strategies for multi-market commodity trading. *Applied Artificial Intelligence*, vol. 15, pp. 429-452, 2001.

M. Hauskrecht. Value-function approximations for partially observable Markov decision processes. *Journal of Artificial Intelligence Research*, vol. 13, pp. 33-94, 2000.

M. Hauskrecht, H. Fraser. Planning treatment of ischemic heart disease with partially observable Markov decision processes. *Artificial Intelligence in Medicine*, vol. 18, pp. 221-244, 2000.

Book chapters

M. Hauskrecht, R. Pelikan, M. Valko, J. Lyons-Weiler. Feature selection and dimensionality reduction in genomics and proteomics. In Berrar, Dubitzky, Granzow, eds. *Fundamentals of Data Mining in Genomics and Proteomics*, Springer, pages 149-172, Fall 2006.

R. Pelikan, M. Lotze, J. Lyons-Weiler, D. Malehorn, and M. Hauskrecht*. Serum Proteomic Profiling and Analysis. In Lotze MT, Thomson AW, eds. *Measuring Immunity: Basic Biology and Clinical Applications*, Elsevier, London, pages 648-659, 2004.

* senior author

Refereed conference papers

(if known, acceptance rates are included)

M. Valko, R. Pelikan and M. Hauskrecht. Learning predictive models for multiple heterogeneous proteomic data sources. In *Proceedings of the Summit on Translational Bioinformatics*, San Francisco, CA, March 2008.

M. Hauskrecht, R. Pelikan. Inter-session reproducibility measures for high-throughput data sources. In *Proceedings of the Summit on Translational Bioinformatics*, San Francisco, CA, March 2008.

- T. Singliar, M. Hauskrecht. Approximation strategies for routing in stochastic dynamic networks. In *Proceedings of the Tenth International Symposium on Artificial Intelligence and Mathematics*, Ft. Lauderdale, FL, January 2008.
- M. Hauskrecht, M. Valko, B. Kveton, S. Visweswaram, G. Cooper. Evidence-based anomaly detection in clinical domains. In *Proceedings of the Annual American Medical Informatics Association (AMIA) Conference*, 2007. [nominated for the best paper award].
- M. Hauskrecht, R. Pelikan. Enhancing the analysis of MS proteomic profiles using prior knowledge and past data repositories. In *Proceedings of the 39th Symposium on the Interface of Computing Science and Statistics: Systems Biology*, 2007.
- T. Singliar and M. Hauskrecht. Learning to detect traffic incidents from imperfectly labeled data. In *Proceedings of the Eleventh International Conference on Principles of Knowledge Discovery in Databases*, 2007.
acceptance rate: $54 / 592 = 9.1\%$.
- T. Singliar and M. Hauskrecht. Modeling Highway Traffic Volumes. In *Proceedings of the Eighteen European Conference on Machine Learning (ECML)*, 2007.
acceptance rate: $118/592= 20\%$.
- B. Kveton and M. Hauskrecht. Learning Basis Functions in Hybrid Domains. In *Proceedings of 21st National Conference on AI (AAAI-06)*, pages 1161-1166, Boston, MA, July 2006.
acceptance rate: $236 / 774 = 30\%$.
- B. Kveton and M. Hauskrecht. Solving Factored MDPs with Exponential-Family Transition Models. In *Proceedings of the 16th International Conference on Planning and Scheduling (ICAPS)*, pages 114–120, UK, June 2006.
acceptance rate: $33 / 99 = 33\%$
- M. Hauskrecht and B. Kveton. Approximate Linear Programming for Solving Hybrid Factored MDPs. In *Proceedings of the 9th International Symposium on Artificial Intelligence and Mathematics*, <http://anytime.cs.umass.edu/aimath06/>, 7 pages, Fort Lauderdale, Florida, January 2006.
- B. Kveton and M. Hauskrecht. An MCMC Approach to Solving Hybrid Factored MDPs. In *Proceedings of the 19th International Joint Conference on Artificial Intelligence*, Edinburgh, Scotland, pages 1346-1351, August 2005.
acceptance rate: $240 / 1329 = 18\%$
- T. Singliar and M. Hauskrecht. Variational Learning for the Noisy-OR Component Analysis. In *Proceedings of the SIAM International Data Mining conference*, pages 370–379, 2005.
acceptance rate: $40 / 218 = 19\%$
- L.K. Comfort, M. Hauskrecht, J.S. Lin. Dynamic Networks: Modeling Change in Environments Exposed to Risk. *Annual Research Conference of the Association of Public Policy and Management*, Atlanta, Georgia, October 2004.
- C. Guestrin, M. Hauskrecht, B. Kveton. Solving Factored MDPs with Continuous and Discrete Variables. In *Proceedings of the 20th Conference on Uncertainty in Artificial Intelligence*, pages 235-242, 2004.
acceptance rate: $75 / 253 = 30\%$
- V. Grigorian, D. Chiarulli, M. Hauskrecht. Subject Filtering for Passive Biometric Monitor-

ing. In the *Proceedings of the International Federation of Classification Societies Conference (IFCS04)*, pages 485–494, June 2004.

B. Kveton, M. Hauskrecht. Heuristic Refinements of Approximate Linear Programming for Factored Continuous-State Markov Decision Processes. In *Proceedings of the 14th International Conference on Planning and Scheduling (ICAPS-2004)*, pages 306-314, 2004.

acceptance rate: $37 / 119 = 31\%$

X. Lu, M. Hauskrecht, R.S. Day. Modeling cellular processes with variational Bayesian cooperative vector quantizer. In *Proceedings of the Pacific Symposium on Biocomputing (PSB)*, pages 533-544, 2004

M. Hauskrecht, B. Kveton. Linear program approximations for factored continuous-state Markov Decision Processes. In *Advances in Neural Information Processing Systems*, pages 895- 902, 2003.

acceptance rate: $198 / 717 = 28\%$

M. Hauskrecht, T. Singliar. Monte Carlo optimizations for resource allocation problems in stochastic network systems. In *Proceedings of the Nineteenth International Conference on Uncertainty in Artificial Intelligence*, pages 305-312, 2003.

acceptance rate: $76 / 230 = 33 \%$

M. Hauskrecht, E. Upfal. A clustering method to solving large stochastic matching problems. In *Proceedings of the 17-th International Conference on Uncertainty in Artificial Intelligence*, pages 219-226, 2001.

acceptance rate: $68 / 173 = 39 \%$

M. Hauskrecht, L. Ortiz, I. Tsochantaridis, E. Upfal. Computing global strategies for multi-market commodity trading. In *Proceedings of the Fifth International Conference on Artificial Intelligence Planning and Scheduling*, pages 159–166, 2000.

acceptance rate: 32%

M. Hauskrecht, G. Pandurangan, E. Upfal. Computing near-optimal strategies for stochastic investment planning problems. In *Proceedings of the 16th International Joint Conference on Artificial Intelligence (IJCAI)*, pages 1310-1315, 1999.

acceptance rate: $750 / 194 = 26 \%$

M. Hauskrecht, H. Fraser. Modeling treatment of ischemic heart disease with partially observable Markov decision processes. In *Proceedings of American Medical Informatics Association annual symposium on Computer Applications in Health Care*, pages 538-542, 1998.

M. Hauskrecht, N. Meuleau, C. Boutilier, L.P. Kaelbling, T. Dean. Hierarchical solution of Markov decision processes using macro-actions. In *Proceedings of the 14th Conference on Uncertainty in Artificial Intelligence*, Madison, WI, pages 220-229, 1998.

acceptance rate: $62 / 137 = 45\%$

N. Meuleau, M. Hauskrecht, K. Kim, L. Peshkin, L.P. Kaelbling, T. Dean, C. Boutilier. Solving very large weakly-coupled Markov decision processes. In *Proceedings of the 15th National Conference on Artificial Intelligence*, Madison, WI, pp. 165-172, 1998.

acceptance rate: $143 / 475 = 30 \%$

M. Hauskrecht. Incremental methods for computing bounds in partially observable Markov decision processes. In *Proceedings of the 14th National Conference on Artificial Intelligence*, Providence, RI, pp. 734-739, 1997.

M. Hauskrecht. Dynamic decision making in stochastic partially observable medical domains: Ischemic heart disease example. In *Proceedings of AI in Medicine Europe*, pp. 296-299, 1997. acceptance rate: 50%

M. Hauskrecht. Dynamic decision making in partially observable medical domains. In *Proceedings of AAAI Symposium on AI in Medicine*, Stanford University, pp. 69-72, 1996.

M. Hauskrecht. Tradeoffs in approaches to the ventilator controller design. In *Proceedings of AAAI Symposium on AI in Medicine*, Stanford University, pp. 72-75, 1994.

M. Popper, M. Hauskrecht. Declarative and operational in knowledge based systems. In *Proceedings of Medical Informatics Europe*, Vienna, Austria, pp. 299-303, 1991.

J. Stanek, M. Popper, M. Hauskrecht. The operational aspects of an object-oriented approach in a medical expert system design. In *Proceedings of Medical Informatics Europe*, Vienna, Austria, pp. 304-308, 1991.

M. Popper, M. Hauskrecht, J. Stanek. The role of operational knowledge in knowledge-based systems design. In *Proceedings of Applications of Artificial Intelligence*, Prague, Czechoslovakia, pp. 53-60, 1991.

Peer-reviewed workshop papers

T. Singliar and M. Hauskrecht. Towards a learning traffic incident detection system. *ICML 2006 Workshop on Machine Learning Algorithms for Surveillance and Event Detection*, <http://web.engr.oregonstate.edu/~Ewong/workshops/icml2006/index.html>, 8 pages, Pittsburgh, June 2006.

C. Guestrin, M. Hauskrecht, B. Kveton. Solving Factored MDPs with Continuous and Discrete Variables. In *Proceedings of the AAAI Workshop on Learning and Planning in Markov Processes - Advances and Challenges*, pages 19-24, 2004.

M. Hauskrecht. Evaluation and optimization of management plans in stochastic domains with imperfect information. In *Proceedings of the 12th International Workshop on Principles of Diagnosis (DX-01)*, pp. 71-78, 2001.

M. Hauskrecht, H. Fraser. Planning medical therapy using partially observable Markov decision processes. In *Proceedings of the 9th International Workshop on Principles of Diagnosis (DX-98)*, Cape Cod, MA, pp. 182-189, 1998.

Presentations and posters accepted based on peer-reviewed abstracts

R. Pelikan, M. Hauskrecht. Peptide Identification in Whole-Sample Mass Spectrometry Proteomics. *Proceedings of the Annual American Medical Informatics Association (AMIA) Conference*, 2007.

J. Mezger, G. F. Cooper, M. Hauskrecht, G. Clermont, S. Visweswaran . Detecting Deviations from Usual Medical Care. *Proceedings of the Annual American Medical Informatics Association (AMIA) Conference*, 2007

W. W. Chapman, J. N. Dowling, G. F. Cooper, M. Hauskrecht, M. Valko. Comparison of Chief Complaints and Emergency Department Reports for Identifying Patients with Acute Lower Respiratory Syndrome. *Proceedings of the National Syndromic Surveillance Conference*, 2006.

Timo Jahnukainen, David Malehorn, Gaurav Gupta, Mai Sun, James Lyons-Weiler, William

Bigbee, Parmjeet Randhawa, Richard Pelikan, Milos Hauskrecht and Abhay Vats. Proteomic Analysis of urine in kidney transplant patients with BKV nephropathy. *World Transplant Congress*, 2006.

D. Mosse, L. Comfort, A. Labrinidis, A. Amer, J. Brustoloni, P. Chrysanthis, M. Hauskrecht, T. Znati, R. Melhem, and K. Pruhs, Secure-CITI Project Highlights. Featured in *the 7th Annual International Conference on Digital Government Research (dg.o 2006)*, San Diego, CA, May 2006.

William L. Bigbee, David E. Malehorn, Talal El-Hefnawy, Milos Hauskrecht, James Lyons-Weiler, Richard C. Pelikan, Mai Sun, Rodney J. Landreneau, James D. Luketich, Joel L. Weissfeld, Jill M. Siegfried, and Pierre P. Massion. Intersession Reproducibility and Independent Clinical Cohort Evaluation of Lung Cancer Serum Proteomic Profiling and Classification Using SELDI-TOF-MS. *Lung SPORE Midyear Meeting*, Los Angeles, CA, January 2006.

Bigbee WL, Malehorn DE, El-Hefnawy T, Hauskrecht M, Lyons-Weiler J, Pelikan RC, Landreneau RJ, Luketich JD, Weissfeld JL, Siegfried JM. Serum SELDI-TOF-MS protein expression profiling for lung cancer detection and classification. *Proceedings of the 96th American Association for Cancer Research Annual Meeting 2005*, Anaheim, CA, 2005.

William Bigbee, David Malehorn, Anna Lokshin, Talal El-Hefnawy, Milos Hauskrecht, Doug Landsittel, James Lyons-Weiler, Richard Pelikan, Hiran Fernando, Rodney Landreneau, James Luketich, Joel Weissfeld, Jill Siegfried. Serum SELDI-TOF-MS protein expression and Luminex xMAP marker panel profiling for lung cancer detection and classification. *American Association for Cancer Research: Advances in Proteomics in Cancer Research*, Key Biscayne, FL, October 6-10, 2004.

William L. Bigbee, David E. Malehorn, Anna E. Lokshin, Talal El-Hefnawy, Milos Hauskrecht, Douglas P. Landsittel, James Lyons-Weiler, Richard C. Pelikan, Hiran C. Fernando, Rodney J. Landreneau, James D. Luketich, Joel L. Weissfeld, and Jill M. Siegfried. Serum SELDI-TOF-MS protein expression and Luminex xMAP marker panel profiling for lung cancer detection and classification. *Integrated Biomedical-Informatics and Enabling Technologies Symposium*. Windber, PA, August 2004.

William L. Bigbee, David E. Malehorn, Anna E. Lokshin, Talal El-Hefnawy, Milos Hauskrecht, Douglas P. Landsittel, James Lyons-Weiler, Richard C. Pelikan, Hiran C. Fernando, Rodney J. Landreneau, James D. Luketich, Joel L. Weissfeld, and Jill M. Siegfried. Serum SELDI-TOF-MS protein expression and Luminex xMAP marker panel profiling for lung cancer detection and classification. *12th Annual SPORE Investigators Workshop*, Baltimore MD, July 10-13, 2004.

M. Hauskrecht, R. Pelikan, and J. Lyons-Weiler. Techniques for Analyzing Proteomic Mass Spectrometry Data. *The Early Detection Research Network (EDRN) workshop on the analysis of proteomic spectral data including SELDI/MALDI-TOF-MS applications*, Seattle, March 2004.

James Lyons-Weiler, Milos Hauskrecht, Richard Pelikan, David Malehorn, Doug Landsittel, Bill Bigbee, Herb Zeh, David C. Whitcomb. Permutation Achieved Classification Error (PACE): A Significance Test for Assessing the Statistical Significance of Classifiers for Peptide Profiling via MALDI/SELDI-TOF Mass Spectrometry. *The EDRN workshop on the analysis of proteomic spectral data including SELDI/MALDI-TOF-MS applications*, Seattle, March 2004.

M. Hauskrecht, B. Kveton. Linear program approximations for factored continuous-state Markov decision processes. *NIPS Workshop on Planning for the Real World: The Promises and Challenges of Dealing with Uncertainty in Neural Information Processing Systems*, Vancouver, Canada, December 2003.

T. Singliar, M. Hauskrecht. Modeling of large stochastic networks. *NIPS Workshop on Robust Communication Dynamics in Complex Networks*, Vancouver, Canada, December 2003.

M. Hauskrecht, R. Pelikan, J. Lyons-Weiler. Comparative Analysis of Statistical Learning Techniques for Classification of Proteomic Profiles. *Advancing Practice, Instruction and Innovation through Informatics Conference (APIII 2003)*, Pittsburgh, October 2003.

Dissertation

M. Hauskrecht. Planning and control in stochastic domains with imperfect information. *PhD thesis*, MIT-LCS-TR-738, 1997.

MSc Thesis

M. Hauskrecht. A planning mechanism for selecting inference goals in a diagnostic expert system. *MSc thesis*, School of Electrical Engineering, Slovak Technical University, 1988.

Other publications

M. Hauskrecht and T. Singliar. Monte-Carlo approximations to resource allocation problems in stochastic networks. Technical Report, CS-03-01, University of Pittsburgh, 2003.

M. Hauskrecht. Monte-Carlo approximations to continuous-time semi-Markov processes. Technical Report, CS-03-02, University of Pittsburgh, 2003.

X. Lu, M. Hauskrecht, R.S. Day. Variational Bayesian learning of the cooperative vector quantizer model. Part I: The Theory. Technical Report, Center for Biomedical Informatics, CBMI-02-181, 2002.

M. Hauskrecht. Planning with temporally abstract actions. TR-CS-98-01, Brown University, Providence, RI, 1998.

M. Hauskrecht. Combining perfectly and partly observable Markov decision processes. Working paper, CS Department, Brown University, 1998.

M. Hauskrecht. Approximations for partially observable Markov decision processes. MIT-LCS-TM-565, 1997.

M. Hauskrecht. Learning Bayesian belief networks from data. MIT EECS Area exam, 1995.

M. Hauskrecht. Reinforcement learning of control policies. Working paper, MIT LCS, 1994.

R. Bodkin, M. Hauskrecht. Examining recursive decomposition. Working paper, MIT LCS, 1992.

Recent Invited Talks

M. Hauskrecht. Models of complex traffic systems. *Symposium on Disaster Risk Reduction and Response (Kobe University and University of Pittsburgh)*, September 2007.

R. Pelikan and M. Hauskrecht. In-silico protein identification methods for whole-sample proteomics. Invited talk, *2007 National Library of Medicine Informatics Training Conference*, Stanford, CA, June, 2007.

Milos Hauskrecht. Enhancing the analysis of MS proteomic profiles using prior knowledge and past data repositories. Invited talk, *39th Symposium on the Interface of Computing Science and Statistics: Systems Biology*, Philadelphia, PA, May 2007.

Milos Hauskrecht. Machine learning for analysis of SELDI-TOF-MS proteomic profiles. *Biomedical informatics distinguished lecture series*, University of Pittsburgh Medical School, Pittsburgh, February 3, 2006.

Milos Hauskrecht. Approximate Linear Programming for Solving Hybrid Factored MDPs. Invited Talk, *Ninth International Symposium on AI and Math*, Florida, January 2006.

Milos Hauskrecht. Machine learning for analysis of SELDI-TOF-MS proteomic profiles. Invited talk, *The 3rd Annual Biological Language Conference*, CMU, November 28 - 29, 2005.

Milos Hauskrecht. ALP for hybrid factored MDPs. panel discussion, *Workshop on Decision Making in Adversarial Domains*, University of Maryland, May 23-25, 2005.

Milos Hauskrecht. Machine Learning for SELDI-TOF-MS proteomic data analysis. Invited talk, *International Conference on Complexity in Acute Illness*, November 7 - 9, 2004.

Milos Hauskrecht. Feature selection for SELDI-TOF proteomic data analysis. *Biomedical informatics distinguished lecture series*, Center for Biomedical Informatics, University of Pittsburgh Medical School, October 22, 2004.

Milos Hauskrecht. Preprocessing and feature selection for SELDI-TOF proteomic data analysis. Invited talk, *Advancing Practice, Instruction and Innovation through Informatics Conference (APIII-04)*, section: *Bioinformatics of High-Throughput Proteomics*, October 8, 2004.

Milos Hauskrecht. Optimizations in Large Stochastic Transportation Networks. Invited talk. *AAAI Workshop on Learning and Planning in Markov Processes - Advances and Challenges*, July 2004.

Milos Hauskrecht. Machine Learning Techniques for Proteomic Data Analysis. Invited talk, *Center of Pathology and Oncology Informatics Colloquium*, University of Pittsburgh, May 5, 2004.