

Tivadar Pápai - March 21, 2012

CONTACT INFORMATION

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RESEARCH INTEREST

Markov logic, probabilistic graphical models, machine learning (theory and applications)
Current projects:

- Preprocessing hard constraints with given evidence in Markov logic networks using constraint programming techniques to reduce the size of the ground network and to speed up the inference (advisor: Prof. Henry Kautz)
- Introducing a Markov logic based probabilistic model in temporal/sequential domains that has certain advantageous properties compared to the standard conditional random field based Markov logic network instantiation (advisors: Prof. Henry Kautz, Prof. Daniel Stefankovic)
- Weight learning in Markov logic networks without having access to sufficient training data relying on the knowledge of domain experts (continuation of the summer internship project at SRI International under the supervision of Dr. Shalini Ghosh)
- Working on an algebra which provides a new characterization of probabilities in Bayesian networks (advisor: Prof. Len Schubert)

WORK EXPERIENCE

2011 Summer, Research Intern at SRI International, Menlo Park, California

- Developing a weight learning algorithm under the supervision of Shalini Ghosh which allows training of Markov logic networks when there is insufficient or no training data available at all, but there is a domain expert whose knowledge can be used to train the network
- Implementing the weight learning algorithm in the Probabilistic Consistency Engine (PCE) in C

2010 Summer, Intern at IMO.IM, Palo Alto, California

- Developing a VoIP application for Android and integrating it into the existing imo.im Android application

2008 Summer, Intern at SAP Labs, Palo Alto, California

- Implementing an SSL based tunneling tool in Java
- Deploying BIRT into NetWeaver Application Server (J2EE)

EDUCATION

University of Rochester, Rochester, New York USA

Ph.D. in Computer Science, Department of Computer Science (GPA: 4.0/4.0)

- Advisor: Professor Henry Kautz

M.S. in Computer Science, Department of Computer Science (graduated in 2008, GPA: 4.0/4.0)

Budapest University of Technology and Economics, Budapest, Hungary

M.S. in Technical Informatics (~ Computer Engineering), Faculty of Electrical Engineering and Informatics (graduated in June 2007 with excellent result, GPA: 4.71/5.00)

- Thesis Topic: Intelligent Path Following Control of Model Vehicles
- Advisor: Professor Laszló T. Kóczy
- Specialization: Software Engineering (Department of Automation and Applied Informatics)
- Participated in a Biomedical Engineering M.S. program for a semester studying anatomy and biochemistry

TECHNICAL
SKILLS

Programming

- Advanced level (with industrial experience): **Java**, C# .NET, C, Python
- Basic level: Java EE, C++, Prolog, SML, PHP, Matlab

PAST RESEARCH
EXPERIENCE
(PRIOR
UNIVERSITY OF
ROCHESTER)

- Intelligent Path Following Control of Model Vehicles
2006 spring - 2007 spring
 - Writing the high level parts of the software in C# .NET
 - Developing a semicircle detection algorithm for position and orientation detection
 - Designing and implementing a controller for path following
- Energy Balancing by Combinatorial Optimization for Wireless Sensor Networks
2005 fall - 2007 spring
- SPECT: 2D - 3D Resolution Recovery (reducing collimator blurring by EM algorithm)
2006 spring - 2006 fall

INTERNATIONAL
COMPETITIONS

- **33rd International Physics Olympiad in Bali, Indonesia, 2002: Bronze medal**
(296 students from 69 countries)
- ACM International Collegiate Programming Contest, 2006
National Qualifying Contest 3rd place,
Central European Programming Contest, Honorable Mention
- 24-Hour Programming Contest, Final Round: 12th place (2nd place among Hungarian teams)

SCHOLARSHIPS

- GE (General Electric) Foundation Scholar-Leaders Program (2004-2006)
(awarded to 15 students each year in Hungary)
- Scholarship of the Hungarian Republic (2006)
(awarded to the top 0.8% of the students at Budapest University of Technology and Economics)

CONFERENCE
PAPERS

- T. Papai, P. Singla, H. Kautz. Constraint Propagation for Efficient Inference in Markov Logic Networks. J. Lee (Ed.): Proceedings of the 17th International Conference on Principles and Practice of Constraint Programming (CP 2011), LNCS 6876, pp. 691-705. Springer, Heidelberg, September 2011.
- J. Levendovszky, A. Olah, Cs. Orosz, T. Papai, T. L. Tran. Energy Balancing by Combinatorial Optimization for Wireless Sensor Networks. In Proceedings of the 6th International Workshop on Rare Event Simulation (RESIM 2006), pp. 74-85, Bamberg, Germany, October 2006.
- L. Siroki, T. Papai, A. Geresdi. Component-based Hardware-software System for Fuzzy Control of Automated Vehicles. Scientific Conference of Students, Miskolc, Hungary, April 2007. (Available only in Hungarian.)
- A. Geresdi, T. Papai, L. Siroki. In Atlas Series of the Solar System (10): Experimental Space Probe Model (Hunveyor Husar). Hungarian Academy of Sciences, Cosmic Materials Space Research Group. Budapest, 2006. (Available only in Hungarian.)
ISBN 963 00 6314 X
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- A. Geresdi, T. Papai, L. Siroki, L. T. Koczy. Component-based Hardware-software System for Fuzzy Control of Automated Vehicles. In Proceedings of SEFI and IGIP Joint Annual Conference 2007, pp. 397-399. Miskolc, Hungary, 1-4 July 2007.
ISBN 978-863-661-772-1

POSTERS

- Modal Markov Logic. Tivadar Papai and Henry Kautz. Abductive Inference ARO MURI Workshop. Carnegie Mellon University, August 31st 2009.