

- 206, TITLE: ASP-based Discovery of Semi-Markovian Causal Models under Weaker Assumptions  
<https://www.ijcai.org/proceedings/2019/206>  
AUTHORS: Zhalama, Jiji Zhang, Frederick Eberhardt, Wolfgang Mayer, Mark Junjie Li  
HIGHLIGHT: In this paper, we study weakenings of Faithfulness for constraint-based discovery of semi-Markovian causal models, which accommodate the possibility of latent variables, and show that both (1) and (2) remain the case in this more realistic setting.
- 207, TITLE: On the Integration of CP-nets in ASPRIN  
<https://www.ijcai.org/proceedings/2019/207>  
AUTHORS: Mario Alviano, Javier Romero, Torsten Schaub  
HIGHLIGHT: In general, we extend ASPRIN with a preference program for CP-nets in order to compute most preferred answer sets via an iterative algorithm. For the specific case of acyclic CP-nets, we provide an approximation by partially ordered set preferences, which are in turn normalized by ASPRIN to take advantage of several highly optimized algorithms implemented by ASP solvers for computing optimal solutions. Finally, we take advantage of a linear-time computable function to address dominance testing for tree-shaped CP-nets.
- 208, TITLE: Compilation of Logical Arguments  
<https://www.ijcai.org/proceedings/2019/208>  
AUTHORS: Leila Amgoud, Dragan Doder  
HIGHLIGHT: We show that they may miss intuitive consequences, and discuss two sources of this drawback: the definition of logical argument i) may prevent formulas from being justified, and ii) may allow irrelevant information in argument's support.
- 209, TITLE: Observations on Darwiche and Pearl's Approach for Iterated Belief Revision  
<https://www.ijcai.org/proceedings/2019/209>  
AUTHORS: Theofanis Aravanis, Pavlos Peppas, Mary-Anne Williams  
HIGHLIGHT: In this article, we make further observations on the DP approach.
- 210, TITLE: Do You Need Infinite Time?  
<https://www.ijcai.org/proceedings/2019/210>  
AUTHORS: Alessandro Artale, Andrea Mazzullo, Ana Ozaki  
HIGHLIGHT: In this paper, we investigate first-order temporal logic over finite traces, lifting some known results to a more expressive setting.
- 211, TITLE: Stratified Evidence Logics  
<https://www.ijcai.org/proceedings/2019/211>  
AUTHORS: Philippe Balbiani, David Fernández-Duque, Andreas Herzig, Emiliano Lorini  
HIGHLIGHT: In this paper we propose an extended framework which allows one to explicitly quantify either the number of evidence sets, or effort, needed to justify a given proposition, provide a complete deductive calculus and a proof of decidability, and show how existing frameworks can be embedded into ours.
- 212, TITLE: Worst-Case Optimal Querying of Very Expressive Description Logics with Path Expressions and Succinct Counting  
<https://www.ijcai.org/proceedings/2019/212>  
AUTHORS: Bartosz Bednarczyk, Sebastian Rudolph  
HIGHLIGHT: We show that this assumption can be dropped without an increase in complexity and EXPTIME-completeness can be achieved when bounding the number of query atoms, using a novel reduction from query entailment to knowledge base satisfiability.
- 213, TITLE: Comparing Options with Argument Schemes Powered by Cancellation  
<https://www.ijcai.org/proceedings/2019/213>  
AUTHORS: Khaled Belahcene, Christophe Labreuche, Nicolas Maudet, Vincent Mousseau, Wassila Ouerdane  
HIGHLIGHT: We introduce a way of reasoning about preferences represented as pairwise comparative statements, based on a very simple yet appealing principle: cancelling out common values across statements.
- 214, TITLE: Possibilistic Games with Incomplete Information  
<https://www.ijcai.org/proceedings/2019/214>  
AUTHORS: Nahla Ben Amor, Helene Fargier, Régis Sabbadin, Meriem Trabelsi  
HIGHLIGHT: This paper proposes a representation framework for ordinal games under possibilistic incomplete information (?-games) and extends the fundamental notion of Nash equilibrium (NE) to this framework.
- 215, TITLE: Reasoning about Disclosure in Data Integration in the Presence of Source Constraints

<https://www.ijcai.org/proceedings/2019/215>

AUTHORS: Michael Benedikt, Pierre Bourhis, Louis Jachiet, Michaël Thomazo  
HIGHLIGHT: We study the problem of determining whether a given data integration system discloses a source query to an attacker in the presence of constraints, providing both lower and upper bounds on source-aware disclosure analysis.

216, TITLE: Mixed-World Reasoning with Existential Rules under Active-Domain Semantics

<https://www.ijcai.org/proceedings/2019/216>

AUTHORS: Meghyn Bienvenu, Pierre Bourhis  
HIGHLIGHT: In this paper, we study reasoning with existential rules in a setting where some of the predicates may be closed (i.e., their content is fully specified by the data instance) and the remaining open predicates are interpreted under active-domain semantics.

217, TITLE: Guarantees for Sound Abstractions for Generalized Planning

<https://www.ijcai.org/proceedings/2019/217>

AUTHORS: Blai Bonet, Raquel Fuentetaja, Yolanda E-Martín, Daniel Borrajo  
HIGHLIGHT: In this work we address this limitation by performing an analysis of the abstraction with respect to the collection, and show how to obtain formal guarantees for generalization.

218, TITLE: Ontology Approximation in Horn Description Logics

<https://www.ijcai.org/proceedings/2019/218>

AUTHORS: Anneke Bötcher, Carsten Lutz, Frank Wolter  
HIGHLIGHT: In this paper, we show how to construct complete approximations.

219, TITLE: Oblivious and Semi-Oblivious Boundedness for Existential Rules

<https://www.ijcai.org/proceedings/2019/219>

AUTHORS: Pierre Bourhis, Michel Leclère, Marie-Laure Mugnier, Sophie Tison, Federico Ulliana, Lily Gallois  
HIGHLIGHT: We study the notion of boundedness in the context positive existential rules, that is, whether there exists an upper bound to the depth of the chase procedure, that is independent from the initial instance.

220, TITLE: Reasoning about Quality and Fuzziness of Strategic Behaviours

<https://www.ijcai.org/proceedings/2019/220>

AUTHORS: Patricia Bouyer, Orna Kupferman, Nicolas Markey, Bastien Maubert, Aniello Murano, Giuseppe Perelli  
HIGHLIGHT: We introduce and study SL[F], a quantitative extension of SL (Strategy Logic), one of the most natural and expressive logics describing strategic behaviours.

221, TITLE: The Complexity of Model Checking Knowledge and Time

<https://www.ijcai.org/proceedings/2019/221>

AUTHORS: Laura Bozzelli, Bastien Maubert, Aniello Murano  
HIGHLIGHT: We establish the precise complexity of the model checking problem for the main logics of knowledge and time.

222, TITLE: Planning for LTLf/LDLf Goals in Non-Markovian Fully Observable Nondeterministic Domains

<https://www.ijcai.org/proceedings/2019/222>

AUTHORS: Ronen I. Brafman, Giuseppe De Giacomo  
HIGHLIGHT: In this paper, we investigate non-Markovian Nondeterministic Fully Observable Planning Domains (NMFONs), variants of Nondeterministic Fully Observable Planning Domains (FONs) where the next state is determined by the full history leading to the current state.

223, TITLE: Causal Discovery with Cascade Nonlinear Additive Noise Model

<https://www.ijcai.org/proceedings/2019/223>

AUTHORS: Ruichu Cai, Jie Qiao, Kun Zhang, Zhenjie Zhang, Zhifeng Hao  
HIGHLIGHT: In this work, we propose a cascade nonlinear additive noise model to represent such causal influences--each direct causal relation follows the nonlinear additive noise model but we observe only the initial cause and final effect.

224, TITLE: Enriching Ontology-based Data Access with Provenance

<https://www.ijcai.org/proceedings/2019/224>

AUTHORS: Diego Calvanese, Davide Lanti, Ana Ozaki, Rafael Penaloza, Guohui Xiao  
HIGHLIGHT: We address this challenge by enriching OBDA with provenance semirings, taking inspiration from database theory.

225, TITLE: Chasing Sets: How to Use Existential Rules for Expressive Reasoning

<https://www.ijcai.org/proceedings/2019/225>

AUTHORS: David Carral, Irina Dragoste, Markus Krötzsch, Christian Lewe  
HIGHLIGHT: We propose that modern existential rule reasoners can enable fully declarative implementations of rule-based inference methods in knowledge representation, in the sense that a particular calculus is captured by a fixed set of rules that can be evaluated on varying inputs (encoded as facts).

226, TITLE: Simple Conditionals with Constrained Right Weakening

<https://www.ijcai.org/proceedings/2019/226>

AUTHORS: Giovanni Casini, Thomas Meyer, Ivan Varzinczak  
HIGHLIGHT: In this paper we introduce and investigate a very basic semantics for conditionals that can be used to define a broad class of conditional reasoning.

227, TITLE: Explanations for Query Answers under Existential Rules

<https://www.ijcai.org/proceedings/2019/227>

AUTHORS: ?small ?lkan Ceylan, Thomas Lukasiewicz, Enrico Malizia, Andrius Vaicenavi?ius  
HIGHLIGHT: In this paper, we close this gap, and study the problem of explaining query answers in terms of minimal subsets of database facts.

228, TITLE: Semantic Characterization of Data Services through Ontologies

<https://www.ijcai.org/proceedings/2019/228>

AUTHORS: Gianluca Cima, Maurizio Lenzerini, Antonella Poggi  
HIGHLIGHT: We present a thorough complexity analysis of two computational problems, namely verification (checking whether a query is an s-to-o rewriting of a given data service), and computation (computing an s-to-o rewriting of a data service).

229, TITLE: Measuring the Likelihood of Numerical Constraints

<https://www.ijcai.org/proceedings/2019/229>

AUTHORS: Marco Console, Matthias Hofer, Leonid Libkin  
HIGHLIGHT: Our goal is to measure the likelihood of the satisfaction of numerical constraints in the absence of prior information.

230, TITLE: From Statistical Transportability to Estimating the Effect of Stochastic Interventions

<https://www.ijcai.org/proceedings/2019/230>

AUTHORS: Juan D. Correa, Elias Bareinboim  
HIGHLIGHT: In this paper, we study these violations through causal lens using the formalism of statistical transportability [Pearl and Bareinboim, 2011] (PB, for short).

231, TITLE: Answer Set Programming for Judgment Aggregation

<https://www.ijcai.org/proceedings/2019/231>

AUTHORS: Ronald de Haan, Marija Slavkovic  
HIGHLIGHT: We take advantage of this and propose a natural and modular encoding of various judgment aggregation procedures and related problems in JA into ASP.

232, TITLE: An ASP Approach to Generate Minimal Countermodels in Intuitionistic Propositional Logic

<https://www.ijcai.org/proceedings/2019/232>

AUTHORS: Camillo Fiorentini  
HIGHLIGHT: We present a procedure to generate minimal models in the number of worlds relying on Answer Set Programming (ASP).

233, TITLE: Learning Description Logic Concepts: When can Positive and Negative Examples be Separated?

<https://www.ijcai.org/proceedings/2019/233>

AUTHORS: Maurice Funk, Jean Christoph Jung, Carsten Lutz, Hadrien Pulcini, Frank Wolter  
HIGHLIGHT: We study the fundamental question of when a separating DL concept exists and provide useful model-theoretic characterizations as well as complexity results for the associated decision problem.

234, TITLE: Aggressive Driving Saves More Time? Multi-task Learning for Customized Travel Time Estimation

<https://www.ijcai.org/proceedings/2019/234>

AUTHORS: Ruipeng Gao, Xiaoyu Guo, Fuyong Sun, Lin Dai, Jiayan Zhu, Chenxi Hu, Haibo Li  
HIGHLIGHT: In this paper, we propose Customized Travel Time Estimation (CTTE) that fuses GPS traces, smartphone inertial data, and road network within a deep recurrent neural network.

- 235, TITLE: Approximating Integer Solution Counting via Space Quantification for Linear Constraints  
<https://www.ijcai.org/proceedings/2019/235>  
AUTHORS: Cunjing Ge, Feifei Ma, Xutong Ma, Fan Zhang, Pei Huang, Jian Zhang  
HIGHLIGHT: In this paper, we present and prove a bound of such error for LCs.
- 236, TITLE: Best Answers over Incomplete Data : Complexity and First-Order Rewritings  
<https://www.ijcai.org/proceedings/2019/236>  
AUTHORS: Amélie Gheerbrant, Cristina Sirangelo  
HIGHLIGHT: We compare different ways of casting query answering as a decision problem and characterise its complexity for first-order queries, showing significant differences in the behavior of best and certain answers. We then restrict attention to best answers for unions of conjunctive queries and produce a practical algorithm for finding them based on query rewriting techniques.
- 237, TITLE: On Division Versus Saturation in Pseudo-Boolean Solving  
<https://www.ijcai.org/proceedings/2019/237>  
AUTHORS: Stephan Gocht, Jakob Nordström, Amir Yehudayoff  
HIGHLIGHT: We show that PB solvers with division instead of saturation can be exponentially stronger.
- 238, TITLE: On Finite and Unrestricted Query Entailment beyond SQ with Number Restrictions on Transitive Roles  
<https://www.ijcai.org/proceedings/2019/238>  
AUTHORS: Tomasz Gogacz, Víctor Gutiérrez-Basulto, Yazmín Ibáñez-García, Jean Christoph Jung, Filip Murlak  
HIGHLIGHT: We study the description logic SQ with number restrictions applicable to transitive roles, extended with either nominals or inverse roles.
- 239, TITLE: Belief Revision Operators with Varying Attitudes Towards Initial Beliefs  
<https://www.ijcai.org/proceedings/2019/239>  
AUTHORS: Adrian Haret, Stefan Woltran  
HIGHLIGHT: In this work we look at operators that can assume different attitudes towards original beliefs.
- 240, TITLE: Some Things are Easier for the Dumb and the Bright Ones (Beware the Average!)  
<https://www.ijcai.org/proceedings/2019/240>  
AUTHORS: Wojciech Jamroga, Michał Knapik  
HIGHLIGHT: In this paper, we look at the verification of models with "extreme" epistemic structure, and identify several special cases for which model checking is easier than in general.
- 241, TITLE: Converging on Common Knowledge  
<https://www.ijcai.org/proceedings/2019/241>  
AUTHORS: Dominik Klein, Rasmus Kræmmer Rendsvig  
HIGHLIGHT: Focusing on the coordinated attack problem modeled using dynamic epistemic logic, this paper discusses unreliable communication protocols from a topological perspective and asks "If the generals may communicate indefinitely, will they then \*converge\* to a state of common knowledge?"
- 242, TITLE: Rational Inference Relations from Maximal Consistent Subsets Selection  
<https://www.ijcai.org/proceedings/2019/242>  
AUTHORS: Sébastien Konieczny, Pierre Marquis, Srdjan Vesic  
HIGHLIGHT: In this paper we point out new such relations based on selection of some of the maximal consistent subsets, leading thus to inference relations with a stronger inferential power.
- 243, TITLE: How to Handle Missing Values in Multi-Criteria Decision Aiding?  
<https://www.ijcai.org/proceedings/2019/243>  
AUTHORS: Christophe Labreuche, Sébastien Destercke  
HIGHLIGHT: Given a model that has been elicited on the complete set of attributes, we are looking thus for a way -- called restriction operator -- to automatically remove the missing attributes from this model.
- 244, TITLE: A Tractable, Expressive, and Eventually Complete First-Order Logic of Limited Belief  
<https://www.ijcai.org/proceedings/2019/244>  
AUTHORS: Gerhard Lakemeyer, Hector J. Levesque  
HIGHLIGHT: In this paper, we propose a novel logic of limited belief, which has all three desired properties.
- 245, TITLE: Travel Time Estimation without Road Networks: An Urban Morphological Layout Representation Approach  
<https://www.ijcai.org/proceedings/2019/245>

- AUTHORS: Wuwei Lan, Yanyan Xu, Bin Zhao  
HIGHLIGHT: Thus, this paper proposes an end-to-end multi-task deep neural model, named Deep Image to Time (DeepI2T), to learn the travel time mainly from the built environment images, a.k.a. the morphological layout images, and showoff the new state-of-the-art performance on real-world datasets in two cities.
- 246, TITLE: Augmenting Transfer Learning with Semantic Reasoning  
<https://www.ijcai.org/proceedings/2019/246>  
AUTHORS: Freddy Lécué, Jiaoyan Chen, Jeff Z. Pan, Huajun Chen  
HIGHLIGHT: We exploit their semantics to augment transfer learning by dealing with when to transfer with semantic measurements and what to transfer with semantic embeddings.
- 247, TITLE: Revisiting Controlled Query Evaluation in Description Logics  
<https://www.ijcai.org/proceedings/2019/247>  
AUTHORS: Domenico Lembo, Riccardo Rosati, Domenico Fabio Savo  
HIGHLIGHT: In this paper we instead consider query answering over all possible optimal censors.
- 248, TITLE: Unit Selection Based on Counterfactual Logic  
<https://www.ijcai.org/proceedings/2019/248>  
AUTHORS: Ang Li, Judea Pearl  
HIGHLIGHT: Unlike previous works on this problem, which rely on ad-hoc heuristics, we approach this problem formally, using counterfactual logic, to properly capture the nature of the desired behavior.
- 249, TITLE: Story Ending Prediction by Transferable BERT  
<https://www.ijcai.org/proceedings/2019/249>  
AUTHORS: Zhongyang Li, Xiao Ding, Ting Liu  
HIGHLIGHT: In this study, we investigate a transferable BERT (TransBERT) training framework, which can transfer not only general language knowledge from large-scale unlabeled data but also specific kinds of knowledge from various semantically related supervised tasks, for a target task.
- 250, TITLE: Geo-ALM: POI Recommendation by Fusing Geographical Information and Adversarial Learning Mechanism  
<https://www.ijcai.org/proceedings/2019/250>  
AUTHORS: Wei Liu, Zhi-Jie Wang, Bin Yao, Jian Yin  
HIGHLIGHT: To alleviate these issues, we propose a geographical information based adversarial learning model (Geo-ALM), which can be viewed as a fusion of geographic features and generative adversarial networks.
- 251, TITLE: Automatic Verification of FSA Strategies via Counterexample-Guided Local Search for Invariants  
<https://www.ijcai.org/proceedings/2019/251>  
AUTHORS: Kailun Luo, Yongmei Liu  
HIGHLIGHT: In this paper, we consider the representation of general strategies that solve a class of (possibly infinitely many) games with similar structures, and their automatic verification, which is an undecidable problem.
- 252, TITLE: BiOWA for Preference Aggregation with Bipolar Scales: Application to Fair Optimization in Combinatorial Domains  
<https://www.ijcai.org/proceedings/2019/252>  
AUTHORS: Hugo Martin, Patrice Perny  
HIGHLIGHT: We study the biOWA model for preference aggregation and multicriteria decision making from bipolar rating scales.
- 253, TITLE: Satisfaction and Implication of Integrity Constraints in Ontology-based Data Access  
<https://www.ijcai.org/proceedings/2019/253>  
AUTHORS: Charalampos Nikolaou, Bernardo Cuenca Grau, Egor V. Kostylev, Mark Kaminski, Ian Horrocks  
HIGHLIGHT: We extend ontology-based data access with integrity constraints over both the source and target schemas.
- 254, TITLE: Monitoring of a Dynamic System Based on Autoencoders  
<https://www.ijcai.org/proceedings/2019/254>  
AUTHORS: Aomar Osmani, Massinissa Hamidi, Salah Bouhouche  
HIGHLIGHT: We propose in this paper an autoencoder model-based approach for tracking abnormalities in industrial application.
- 255, TITLE: Boosting for Comparison-Based Learning

<https://www.ijcai.org/proceedings/2019/255>

AUTHORS: Michael Perrot, Ulrike von Luxburg

HIGHLIGHT: We consider the problem of classification in a comparison-based setting: given a set of objects, we only have access to triplet comparisons of the form "object A is closer to object B than to object C." In this paper we introduce TripletBoost, a new method that can learn a classifier just from such triplet comparisons.

256, TITLE: Data Complexity and Rewritability of Ontology-Mediated Queries in Metric Temporal Logic under the Event-Based Semantics

<https://www.ijcai.org/proceedings/2019/256>

AUTHORS: Vladislav Ryzhikov, Przemyslaw Andrzej Walega, Michael Zakharyashev

HIGHLIGHT: We investigate the data complexity of answering queries mediated by metric temporal logic ontologies under the event-based semantics assuming that data instances are finite timed words timestamped with binary fractions.

257, TITLE: Belief Update without Compactness in Non-finitary Languages

<https://www.ijcai.org/proceedings/2019/257>

AUTHORS: Jandson S Ribeiro, Abhaya Nayak, Renata Wassermann

HIGHLIGHT: We explore the reason behind this, and subsequently provide an alternative constructive accounts of belief update which is characterised by the full set of KM postulates in this more general framework.

258, TITLE: What Has Been Said? Identifying the Change Formula in a Belief Revision Scenario

<https://www.ijcai.org/proceedings/2019/258>

AUTHORS: Nicolas Schwind, Katsumi Inoue, Sébastien Konieczny, Jean-Marie Lagniez, Pierre Marquis

HIGHLIGHT: We present some sufficient conditions for it, identify its computational complexity, and report the results of some experiments about it.

259, TITLE: Estimating Causal Effects of Tone in Online Debates

<https://www.ijcai.org/proceedings/2019/259>

AUTHORS: Dhanya Sridhar, Lise Getoor

HIGHLIGHT: In this paper, we estimate the causal effect of reply tones in debates on linguistic and sentiment changes in subsequent responses.

260, TITLE: Out of Sight But Not Out of Mind: An Answer Set Programming Based Online Abduction Framework for Visual Sensemaking in Autonomous Driving

<https://www.ijcai.org/proceedings/2019/260>

AUTHORS: Jakob Suchan, Mehul Bhatt, Srikrishna Varadarajan

HIGHLIGHT: We demonstrate the need and potential of systematically integrated vision and semantics solutions for visual sensemaking (in the backdrop of autonomous driving).

261, TITLE: DatalogMTL: Computational Complexity and Expressive Power

<https://www.ijcai.org/proceedings/2019/261>

AUTHORS: Przemysław A. Wałczyński, Bernardo Cuenca Grau, Mark Kaminski, Egor V. Kostylev

HIGHLIGHT: We study the complexity and expressive power of DatalogMTL - a knowledge representation language that extends Datalog with operators from metric temporal logic (MTL) and which has found applications in ontology-based data access and stream reasoning.

262, TITLE: Cross-City Transfer Learning for Deep Spatio-Temporal Prediction

<https://www.ijcai.org/proceedings/2019/262>

AUTHORS: Leye Wang, Xu Geng, Xiaojuan Ma, Feng Liu, Qiang Yang

HIGHLIGHT: To address the problem, we propose a novel cross-city transfer learning method for deep spatio-temporal prediction tasks, called RegionTrans.

263, TITLE: A Modal Characterization Theorem for a Probabilistic Fuzzy Description Logic

<https://www.ijcai.org/proceedings/2019/263>

AUTHORS: Paul Wild, Lutz Schröder, Dirk Pattinson, Barbara König

HIGHLIGHT: In the present paper, we provide a characterization of the expressive power of this logic based on this observation: We prove a probabilistic analogue of the classical van Benthem theorem, which states that modal logic is precisely the bisimulation-invariant fragment of first-order logic.

264, TITLE: Graph WaveNet for Deep Spatial-Temporal Graph Modeling

<https://www.ijcai.org/proceedings/2019/264>

AUTHORS: Zonghan Wu, Shirui Pan, Guodong Long, Jing Jiang, Chengqi Zhang

**HIGHLIGHT:** To overcome these limitations, we propose in this paper a novel graph neural network architecture, {Graph WaveNet}, for spatial-temporal graph modeling.

265, **TITLE:** Profit-driven Task Assignment in Spatial Crowdsourcing

<https://www.ijcai.org/proceedings/2019/265>

**AUTHORS:** Jinfu Xia, Yan Zhao, Guanfeng Liu, Jiajie Xu, Min Zhang, Kai Zheng

**HIGHLIGHT:** To deal with this challenge, we propose a novel Profit-driven Task Assignment (PTA) problem, which aims to maximize the profit of the platform.

266, **TITLE:** Boosting Causal Embeddings via Potential Verb-Mediated Causal Patterns

<https://www.ijcai.org/proceedings/2019/266>

**AUTHORS:** Zhipeng Xie, Feiteng Mu

**HIGHLIGHT:** To solve this problem, this paper proposes a method to boost causal embeddings by exploring potential verb-mediated causal patterns.

267, **TITLE:** Graph Convolutional Networks using Heat Kernel for Semi-supervised Learning

<https://www.ijcai.org/proceedings/2019/267>

**AUTHORS:** Bingbing Xu, Huawei Shen, Qi Cao, Keting Cen, Xueqi Cheng

**HIGHLIGHT:** In this paper, we propose GraphHeat, leveraging heat kernel to enhance low-frequency filters and enforce smoothness in the signal variation on the graph.

268, **TITLE:** TransMS: Knowledge Graph Embedding for Complex Relations by Multidirectional Semantics

<https://www.ijcai.org/proceedings/2019/268>

**AUTHORS:** Shihui Yang, Jidong Tian, Honglun Zhang, Junchi Yan, Hao He, Yaohui Jin

**HIGHLIGHT:** In this paper, we propose a novel knowledge graph embedding method named TransMS, which translates and transmits multidirectional semantics: i) the semantics of head/tail entities and relations to tail/head entities with nonlinear functions; and ii) the semantics from entities to relations with linear bias vectors.

269, **TITLE:** Neighborhood-Aware Attentional Representation for Multilingual Knowledge Graphs

<https://www.ijcai.org/proceedings/2019/269>

**AUTHORS:** Qiannan Zhu, Xiaofei Zhou, Jia Wu, Jianlong Tan, Li Guo

**HIGHLIGHT:** In this paper, we incorporate neighborhood subgraph-level information of entities, and propose a neighborhood-aware attentional representation method NAEA for multilingual knowledge graphs.