801, TITLE: SparseSense: Human Activity Recognition from Highly Sparse Sensor Data-streams Using Set-based Neural Networks
https://www.ijcai.org/proceedings/2019/801
AUTHORS: Alireza Abedin, S. Hamid Rezatofighi, Qinfeng Shi, Damith C. Ranasinghe
HIGHLIGHT: In this paper, we rigorously explore the problem of learning activity recognition models from temporally sparse data.

802, TITLE: Governance by Glass-Box: Implementing Transparent Moral Bounds for AI Behaviour
https://www.ijcai.org/proceedings/2019/802
AUTHORS: Andrea Aler Tubella, Andreas Theodorou, Frank Dignum, Virginia Dignum
HIGHLIGHT: In this paper, we present an approach to evaluate the moral bounds of an AI system based on the monitoring of its inputs and outputs.

803, TITLE: Decision Making for Improving Maritime Traffic Safety Using Constraint Programming
https://www.ijcai.org/proceedings/2019/803
AUTHORS: Saumya Bhatnagar, Akshat Kumar, Hoong Chuin Lau
HIGHLIGHT: To achieve this, we a) formalize the decision model for traffic hotspot mitigation including realistic maritime navigational features and constraints through consultations with domain experts; and b) develop a constraint programming based scheduling approach to mitigate hotspots.

804, TITLE: Evaluating the Interpretability of the Knowledge Compilation Map: Communicating Logical Statements Effectively
https://www.ijcai.org/proceedings/2019/804
AUTHORS: Serena Booth, Christian Muise, Julie Shah
HIGHLIGHT: We find that domain, formula size, and negated logical connectives significantly affect comprehension while formula properties typically associated with interpretability are not strong predictors of human ability to comprehend the theory.

805, TITLE: AI-powered Posture Training: Application of Machine Learning in Sitting Posture Recognition Using the LifeChair Smart Cushion
https://www.ijcai.org/proceedings/2019/805
AUTHORS: Katia Bourahmoune, Toshiyuki Amagasa
HIGHLIGHT: We present the application of a sitting posture training smart cushion called LifeChair that combines a novel pressure sensing technology, a smartphone app interface and machine learning (ML) for real-time sitting posture recognition and seated stretching guidance.

806, TITLE: Improving Law Enforcement Daily Deployment Through Machine Learning-Informed Optimization under Uncertainty
https://www.ijcai.org/proceedings/2019/806
AUTHORS: Jonathan Chase, Duc Thien Nguyen, Haiyang Sun, Hoong Chuin Lau
HIGHLIGHT: To efficiently minimize the response times of a law enforcement agency operating in a dense urban environment with limited manpower, we consider in this paper the problem of optimizing the spatial and temporal deployment of law enforcement agents to predefined patrol regions in a real-world scenario informed by machine learning.

807, TITLE: Risk Assessment for Networked-guarantee Loans Using High-order Graph Attention Representation
https://www.ijcai.org/proceedings/2019/807
AUTHORS: Dawei Cheng, Yi Tu, Zhenwei Ma, Zhibin Niu, Liqing Zhang
HIGHLIGHT: In this paper, we propose a high-order graph attention representation method (HGAR) to learn the embedding of guarantee networks.

808, TITLE: PI-Bully: Personalized Cyberbullying Detection with Peer Influence
https://www.ijcai.org/proceedings/2019/808
AUTHORS: Lu Cheng, Jundong Li, Yasin Silva, Deborah Hall, Huan Liu
HIGHLIGHT: In this paper, we propose a personalized cyberbullying detection framework, PI-Bully, that draws on empirical findings from psychology highlighting unique characteristics of victims and bullies and peer influence from like-minded users as predictors of cyberbullying behaviors.

809, TITLE: The Price of Local Fairness in Multistage Selection
https://www.ijcai.org/proceedings/2019/809
AUTHORS: Vitalii Emelianov, George Arvanitakis, Nicolas Gast, Krishna Gummadi, Patrick Loiseau
HIGHLIGHT: In this paper we study fairness in k-stage selection problems where additional features are observed at every stage.

810, TITLE: Enhancing Stock Movement Prediction with Adversarial Training
https://www.ijcai.org/proceedings/2019/810
AUTHORS: Fuli Feng, Huimin Chen, Xiangnan He, Ji Ding, Maosong Sun, Tat-Seng Chua
HIGHLIGHT: The key novelty is that we propose to employ adversarial training to improve the generalization of a neural network prediction model.

811, TITLE: Safe Contextual Bayesian Optimization for Sustainable Room Temperature PID Control Tuning
https://www.ijcai.org/proceedings/2019/811
AUTHORS: Marcello Fiducioso, Sebastian Curi, Benedikt Schumacher, Markus Gwerder, Andreas Krause
HIGHLIGHT: We use Safe Contextual Bayesian Optimization to optimize the PID parameters without human intervention.

812, TITLE: DDL: Deep Dictionary Learning for Predictive Phenotyping
https://www.ijcai.org/proceedings/2019/812
AUTHORS: Tianfan Fu, Trong Nghia Hoang, Cao Xiao, Jimeng Sun
HIGHLIGHT: To address this label-insufficient challenge, we propose a deep dictionary learning framework (DDL) for phenotyping, which utilizes unlabeled data as a complementary source of information to generate a better, more succinct data representation.

813, TITLE: Improving Customer Satisfaction in Bike Sharing Systems through Dynamic Repositioning
https://www.ijcai.org/proceedings/2019/813
AUTHORS: Supriyo Ghosh, Jing Yu Koh, Patrick Jaillet
HIGHLIGHT: To bridge this gap, we propose a dynamic bike repositioning approach based on a probabilistic satisficing method which uses the uncertain demand parameters that are learnt from historical data.

814, TITLE: mdfa: Multi-Differential Fairness Auditor for Black Box Classifiers
https://www.ijcai.org/proceedings/2019/814
AUTHORS: Xavier Gitiaux, Huzefa Rangwala
HIGHLIGHT: This paper presents a new tool, mdfa that identifies the characteristics of the victims of a classifier's discrimination.

815, TITLE: CounterFactual Regression with Importance Sampling Weights
https://www.ijcai.org/proceedings/2019/815
AUTHORS: Negar Hassanpour, Russell Greiner
HIGHLIGHT: In this work, we borrow ideas from domain adaptation to address the distributional shift between the source (outcome of the administered treatment, appearing in the observed training data) and target (outcome of the alternative treatment) that exists due to selection bias.

816, TITLE: MINA: Multilevel Knowledge-Guided Attention for Modeling Electrocardiography Signals
https://www.ijcai.org/proceedings/2019/816
AUTHORS: Shenda Hong, Cao Xiao, Tengfei Ma, Hongyan Li, Jimeng Sun
HIGHLIGHT: In this work, we propose MultIlevel kNowledge-guided Attention networks (MINA) that predict heart diseases from ECG signals with intuitive explanation aligned with medical knowledge.

817, TITLE: RDPD: Rich Data Helps Poor Data via Imitation
https://www.ijcai.org/proceedings/2019/817
AUTHORS: Shenda Hong, Cao Xiao, Trong Nghia Hoang, Tengfei Ma, Hongyan Li, Jimeng Sun
HIGHLIGHT: To deploy a competitive model in a poor-data environment without requiring direct access to multi-modal data acquired from a rich-data environment, this paper develops and presents a knowledge distillation (KD) method (RDPD) to enhance a predictive model trained on poor data using knowledge distilled from a high-complexity model trained on rich, private data.

818, TITLE: Systematic Conservation Planning for Sustainable Land-use Policies: A Constrained Partitioning Approach to Reserve Selection and Design.
https://www.ijcai.org/proceedings/2019/818
AUTHORS: Dimitri Justeau-Allaire, Philippe Vismara, Philippe Birnbaum, Xavier Lorca
HIGHLIGHT: This paper introduces a partitioning approach based on Constraint Programming (CP) for the reserve selection and design problem, dealing with both coverage and complex spatial constraints.

819, TITLE: Truly Batch Apprenticeship Learning with Deep Successor Features
https://www.ijcai.org/proceedings/2019/819
AUTHORS: Donghun Lee, Srivatsan Srinivasan, Finale Doshi-Velez

HIGHLIGHT: We introduce a novel apprenticeship learning algorithm to learn an expert's underlying reward structure in off-policy model-free batch settings.

820, TITLE: Scribble-to-Painting Transformation with Multi-Task Generative Adversarial Networks
https://www.ijcai.org/proceedings/2019/820
AUTHORS: Jinning Li, Yexiang Xue
HIGHLIGHT: We propose the Dual Scribble-to-Painting Network (DSP-Net), which is able to produce artistic paintings based on user-generated scribbles.

821, TITLE: Diversity-Inducing Policy Gradient: Using Maximum Mean Discrepancy to Find a Set of Diverse Policies
https://www.ijcai.org/proceedings/2019/821
AUTHORS: Muhammad Masood, Finale Doshi-Velez
HIGHLIGHT: In this work, we formalize the difference between policies as a difference between the distribution of trajectories induced by each policy, which encourages diversity with respect to both state visitation and action choices.

822, TITLE: KitcheNette: Predicting and Ranking Food Ingredient Pairings using Siamese Neural Network
https://www.ijcai.org/proceedings/2019/822
AUTHORS: Donghyeon Park, Keonwoo Kim, Yonggyu Park, Jungwoon Shin, Jaewoo Kang
HIGHLIGHT: In this work, we propose KitcheNette which is a model that predicts food ingredient pairing scores and recommends optimal ingredient pairings.

823, TITLE: MNN: Multimodal Attentional Neural Networks for Diagnosis Prediction
https://www.ijcai.org/proceedings/2019/823
AUTHORS: Zhi Qiao, Xian Wu, Shen Ge, Wei Fan
HIGHLIGHT: To increase the robustness towards noisy data, we introduce textual clinical notes in addition to medical codes.

824, TITLE: Global Robustness Evaluation of Deep Neural Networks with Provable Guarantees for the Hamming Distance
https://www.ijcai.org/proceedings/2019/824
AUTHORS: Wenjie Ruan, Min Wu, Youcheng Sun, Xiaowei Huang, Daniel Kroening, Marta Kwiatkowska
HIGHLIGHT: We define global robustness as an expectation of the maximal safe radius over a test dataset, and develop an algorithm to approximate the global robustness measure by iteratively computing its lower and upper bounds.

825, TITLE: Pre-training of Graph Augmented Transformers for Medication Recommendation
https://www.ijcai.org/proceedings/2019/825
AUTHORS: Junyuan Shang, Tengfei Ma, Cao Xiao, Jimeng Sun
HIGHLIGHT: To address these challenges, we propose G-BERT, a new model to combine the power of Graph Neural Networks (GNNs) and BERT (Bidirectional Encoder Representations from Transformers) for medical code representation and medication recommendation.

826, TITLE: Three-quarter Sibling Regression for Denoising Observational Data
https://www.ijcai.org/proceedings/2019/826
AUTHORS: Shiv Shankar, Daniel Sheldon, Tao Sun, John Pickering, Thomas G. Dietterich
HIGHLIGHT: We present a technique called 'three-quarter sibling regression' to partially overcome this limitation.

827, TITLE: Daytime Sleepiness Level Prediction Using Respiratory Information
https://www.ijcai.org/proceedings/2019/827
AUTHORS: Kazuhiko Shinoda, Masahiko Yoshii, Hayato Yamaguchi, Hirotaka Kaji
HIGHLIGHT: In this paper, we present the first step towards the continuous sleepiness tracking in daily living situations.

828, TITLE: Simultaneous Prediction Intervals for Patient-Specific Survival Curves
https://www.ijcai.org/proceedings/2019/828
AUTHORS: Samuel Sokota, Ryan D'Orazio, Khurram Javed, Humza Haider, Russell Greiner
HIGHLIGHT: In this paper we demonstrate that an existing method for estimating simultaneous prediction intervals from samples can easily be adapted for patient-specific survival curve analysis and yields accurate results.

829, TITLE: Controllable Neural Story Plot Generation via Reward Shaping
https://www.ijcai.org/proceedings/2019/829
AUTHORS: Pradyumna Tambwekar, Murtaza Dhuliawala, Lara J. Martin, Animesh Mehta, Brent Harrison, Mark O. Riedl
HIGHLIGHT: We present a reward-shaping technique that analyzes a story corpus and produces intermediate rewards that are backpropagated into a pre-trained LM in order to guide the model toward a given goal.

830, TITLE: Bidirectional Active Learning with Gold-Instance-Based Human Training
https://www.ijcai.org/proceedings/2019/830
AUTHORS: Feilong Tang
HIGHLIGHT: In this paper, we propose a Bidirectional Active Learning with human Training (BALT) model that can enhance human related expertise during labeling and improve relabelingquality accordingly.

831, TITLE: Group-Fairness in Influence Maximization
https://www.ijcai.org/proceedings/2019/831
AUTHORS: Alan Tsang, Bryan Wilder, Eric Rice, Milind Tambe, Yair Zick
HIGHLIGHT: Drawing on legal and game-theoretic concepts, we introduce formal definitions of fairness in influence maximization.

832, TITLE: Failure-Scenario Maker for Rule-Based Agent using Multi-agent Adversarial Reinforcement Learning and its Application to Autonomous Driving
https://www.ijcai.org/proceedings/2019/832
AUTHORS: Akifumi Wachi
HIGHLIGHT: We propose a method for efficiently finding failure scenarios; this method trains the adversarial agents using multi-agent reinforcement learning such that the tested rule-based agent fails.

833, TITLE: Protecting Neural Networks with Hierarchical Random Switching: Towards Better Robustness-Accuracy Trade-off for Stochastic Defenses
https://www.ijcai.org/proceedings/2019/833
AUTHORS: Xiao Wang, Siyue Wang, Pin-Yu Chen, Yanzhi Wang, Brian Kulis, Xue Lin, Sang Chin
HIGHLIGHT: We propose Defense Efficiency Score (DES), a comprehensive metric that measures the gain in unsuccessful attack attempts at the cost of drop in test accuracy of any defense.

834, TITLE: Who Should Pay the Cost: A Game-theoretic Model for Government Subsidized Investments to Improve National Cybersecurity
https://www.ijcai.org/proceedings/2019/834
AUTHORS: Xinrun Wang, Bo An, Hau Chan
HIGHLIGHT: To tackle the government's allocation problem, we introduce a Stackelberg game-theoretic model where the government first commits to an allocation and the companies/users and attacker simultaneously determine their protection and attack (pure or mixed) strategies, respectively.

835, TITLE: Automatic Grassland Degradation Estimation Using Deep Learning
https://www.ijcai.org/proceedings/2019/835
AUTHORS: Xiyu Yan, Yong Jiang, Shuai Chen, Zihao He, Chunmei Li, Shu-Tao Xia, Tao Dai, Shuo Dong, Feng Zheng
HIGHLIGHT: Based on AGDE-Dataset, we are able to propose a brand new scheme to automatically estimate grassland degradation, which mainly consists of two components. 1) Semantic segmentation: we design a deep neural network with an improved encoder-decoder structure to implement semantic segmentation of grassland images. In addition, we propose a novel Focal-Hinge Loss to alleviate the class imbalance of semantics in the training stage. 2) Degradation estimation: we provide the estimation of grassland degradation based on the results of semantic segmentation.

836, TITLE: Balanced Ranking with Diversity Constraints
https://www.ijcai.org/proceedings/2019/836
AUTHORS: Ke Yang, Vasilis Gkatzelis, Julia Stoyanovich
HIGHLIGHT: In this paper we study this phenomenon using datasets that comprise multiple sensitive attributes.

837, TITLE: A Decomposition Approach for Urban Anomaly Detection Across Spatiotemporal Data
https://www.ijcai.org/proceedings/2019/837
AUTHORS: Mingyang Zhang, Tong Li, Hongzhi Shi, Yong Li, Pan Hui
HIGHLIGHT: In this paper, we propose a decomposing approach to address these two challenges.

838, TITLE: Learning Interpretable Relational Structures of Hinge-loss Markov Random Fields
https://www.ijcai.org/proceedings/2019/838
AUTHORS: Yue Zhang, Arti Ramesh
HIGHLIGHT: In this work, we present an asynchronous deep reinforcement learning algorithm to automatically learn HL-MRF clause structures.

839, TITLE: K-margin-based Residual-Convolution-Recurrent Neural Network for Atrial Fibrillation Detection
https://www.ijcai.org/proceedings/2019/839
AUTHORS: Yuxi Zhou, Shenda Hong, Junyuan Shang, Meng Wu, Qingyun Wang, Hongyan Li, Junqing Xie
HIGHLIGHT: In this paper, we propose a K-margin-based Residual-Convolution-Recurrent neural network (K-margin-based RCR-net) for AF detection from noisy ECGs.