BRACIS 2020

Rio Grande/RS - Brasil

from October 20 to 23, 2020

Brazilian Conference on Intelligent Systems

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WELCOME MESSAGE

Bem-vindos à Nona edição do Brazilian Conference on Intelligent Systems (BRACIS), ao 16º Encontro Nacional de Inteligência Artificial e Computacional (ENIAC), e ao 12º Concurso de Teses e Dissertações em Inteligência Artificial e Computacional (CTDIAC). Neste ano, o BRACIS 2020 está sendo realizado em conjunto com o VIII Symposium on Knowledge Discovery, Mining and Learning (KDMiLe) e o IV Brazilian Competition on Knowledge Discovery in Databases (KDD-BR).

Os cinco eventos combinados tem o objetivo de promover as pesquisas em Sistemas Inteligentes e o intercâmbio científico entre pesquisadores, desenvolvedores, cientistas e engenheiros em IA, IC e áreas correlatas.

Nesta edição, devido à pandemia e às questões sanitárias e econômicas relacionadas, o BRACIS 2020 será uma conferência virtual (online) através da plataforma da Underline.io. Embora a oportunidade de interagir pessoalmente tenha sido prejudicada, uma conferência virtual implicou em custos bastante reduzidos para os organizadores e participantes. Trabalhamos da melhor forma para oferecer palestras e apresentações sem perder o aspecto social que sempre foi uma parte central do BRACIS.

Eduardo N. Borges, Graçaliz P. Dimuro, Hélida S. Santos e Leonardo R. Emmendorfer

Universidade Federal do Rio Grande (FURG)

• GENERAL PROGRAMME

October 20th, 2020				
	BRACIS	ENIAC	CTDIAC	KDMiLe
9h-10h		ETS 1	M1	
10h-11h	BTS 1		M1	
11h-12h	Keynote Speaker: Aline Paes (UFF)			
12h-13h	Lunch			
13h-14h	Opening cerimony			
14h-15h	BTS 2 Best papers			KTS 1
15h-16h	BTS 3	ETS 2		KTS 2
16h-17h	CEIA / CEIC Meeting			

BTS1	TUESDAY	10h-11h	OCTOBER 20
A new hybridization of evolutionary algorithms, GRASP and set-partitioning formulation for the Capacitated Vehicle Routing Problem (CVRP)			André Machado, Geraldo Mauri, Maria Claudia Boeres, Rodrigo Rosa
Applying Dynamic Evolutionary Optimization to the Multiobjective Knapsack Problem			Thiago Lafetá, Gina Oliveira
Backtracking Group Search Optimization: A Hybrid Approach for Automatic Data Clustering			Luciano Pacífico, Teresa Ludermir
Dynamic Software Project Scheduling Problem with PSO and Dynamic Strategies Based on Memory			Gabriel Fontes da Silva, Leila Silva, André Britto
Evaluation of metaheuristics in the optimization of Laguerre-Volterra Networks for nonlinear dynamic system identification			Victor Costa, Felipe Müller
EvoLogic: Intelligent Tutoring System to Teach Logic			Cristiano Galafassi, Fabiane Galafassi, Eliseo Reategui, Rosa Viccari
Multi-objective Quadratic Assignment Problem: An approach using a hyper-heuristic based on the choice function			Bianca Namie K. Senzaki, Sandra Venske, Carolina P. Almeida
On Improving the Efficiency of Majorization-Minorization for the Inference of Rank Aggregation Models			Leonardo Emmendorfer

BTS 1

BRACIS TECHNICAL SESSION

Chairs: Leonardo Emmendorfer, Teresa Ludemir

BTS2	TUESDAY	14h-15h	OCTOBER 20
A Distance-weighted Selection of Unlabelled Instances for Self-training and Co-training Semi-supervised Methods			Cephas A. S. Barreto, Arthur Gorgônio, João C. Xavier-Júnior, Anne Canuto
BERTimbau: pretrained BERT models for Brazilian Portuguese			Fábio Souza, Rodrigo Nogueira, Roberto Lotufo
Decoding machine learning benchmarks			Lucas Cardoso, Vitor Cirilo A. Santos, Regiane Kawasaki, Ricardo Prudêncio, Ronnie Alves
Impacts of Multiple Solutions on the Lackadaisical Quantum Walk Search Algorithm			Jonathan Carvalho, Luciano de Souza, Fernando de Paula Neto, Tiago Ferreira
Parallel Monte Carlo Tree Search In General Video Game Playing			Sandro Rigo, William da Rosa Fröhlich, Luis Gustavo S. Centeleghe
Towards a Theory of Hyperntensional Belief Change			Marlo Souza

BTS 2

BRACIS BEST PAPERS SESSION

Chairs: Ana Carolina Lorena, Denis Mauá, Gina Oliveira

BTS3	TUESDAY	15h-16h	OCTOBER 20
A deep learning approach for pulmonary lesion identification in chest radiographs			Eduardo Pooch, Carla Becker, Thatiane Alves
A Pipelined Approach to Deal with Image Distortion in Computer Vision			Cristiano Steffens, Silvia Botelho, Paulo Lilles Drews Jr., Lucas R. V. Messias
A Robust Automatic License Plate Recognition System for Embedded Devices			Pedro P. Rebouças Filho, Lucas Fernandes, Francisco H.S. Silva, Elene F. Ohata, Aldísio Medeiros, Aloisio Lira, Yuri Lenon, Paulo Rego
Assessing Deep Learning Models for Human-Robot Collaboration Collision Detection in Industrial Environments			Iago Silva, Gibson Barbosa, Carolina Cani, Assis Filho, Judith Kelner, Djamel Sadok, Silvia Lins, Ricardo Souza
Diagnosis of Apple Fruit Diseases in the Wild with Mask R-CNN			Ramásio F. Melo, Gustavo Lameirão, Guilherme Correia, Bruno Zatt, Marilton Aguiar, Gilmas Nachtigall, Ricardo Araújo
Ensemble of algorithms for multifocal cervical image segmentation			Geovani Martins, Daniel Ferreira, Fátima Medeiros, Geraldo Ramalho
Improving Face Recognition Accuracy for Brazilian Faces in a Criminal Investigation Department			Jones Jose Silva Junior Anderson da Silva Soares
Neural Architecture Search in Graph Neural Networks			Gisele Pappa, Matheus Nunes

BTS 3

BRACIS TECHNICAL SESSION

Chairs: Gisele Pappa, Paulo Liles Drews Junior

Short Bio

Aline Paes is a professor in the Institute of Computing at Universidade Federal Fluminense (UFF), and a "Young Scientist of Our State" by FAPERJ. She leads the research group MeLLL-UFF (Machine Learning and Language Learning) virtual lab at UFF. She holds a D.Sc. and an M.Sc. degree in Systems Engineering and Computer Science from PESC/COPPE, UFRJ. During the doctorate, she was a visiting scholar at Imperial College London, UK. Aline works in Computer Science, with an emphasis on Artificial Intelligence, with interests and contributions in the following topics: relational machine learning, integrated with neural, statistical and logical techniques, natural language processing, updating and adapting models by transfer learning, theory review, explainable AI, induction of programs, games and AI for social good. Aline Paes has regularly published articles in one of the leading journals of the ML (Machine Learning Journal), among others, and national and international conferences of Artificial Intelligence. She regularly participates in the program committee of the major international conference of Artificial Intelligence, namely AAAI and IJCAI, among others, and acts as an ad-hoc reviewer of international journals. She has experience coordinating research projects approved by funding agencies, including CNPQ Universal, FAPERJ APQ1, and JCNE, all of them in the area of Artificial Intelligence and Machine Learning.

Keynote speaker: Aline Paes (UFF)

October 20th 11h

Learning Representations for Natural Language Processing: methods, challenges, and applications

Language development is considered one of the most significant turning points in the evolution of human intelligence. Hence, understanding natural language has been one of the grand challenges of Artificial Intelligence since its early days. While we are still far from making our computers understand language and capture meaning as we do, recently we have seen tremendous advances in several natural language tasks tackled with neural network language models. In this talk, we will first visit the early attempts of using Machine Learning to rely on distributional semantics when solving Natural Language Process tasks. We will then discuss the recent approaches to learn language models using Deep Learning, including static and contextualized embeddings, and the plethora of tasks addressed with them. We will see how transfer learning has enhanced the field's possibilities in the last couple of years. Finally, we will examine the open challenges that the area still has with a glance at ethics and responsible AI.

ETS 1

ENIAC TECHNICAL SESSION EVOLUTIONARY COMPUTATION

Chair: Fernando Santos

ETS 1	TUESDAY	9h-10h	OCTOBER 20
A Novel Strategy for Selecting Individuals in Manyobjective Algorithms with Local Search Applied to the Network Design Problem			Jorge Nascimento, Danilo Araújo, Péricles Miranda
A Parallel Strategy for a Genetic Algorithm in Routing Wavelength Assignment Problem Using GPU with CUDA			Esdras La-Roque, Cassio Batista, Josivaldo de Araujo
Image Clustering Based on a Hybrid Group Search Optimization and K-Means Approach for Automatic Plant Disease Segmentation			Luciano Pacífico
Proposta de paralelização em GPUs CUDA do algoritmo MPS para resolução do K-Shortest Loopless Paths em grafos direcionados e não direcionados			Sérgio Ricardo de Souza, Anolan Milanés, Alvaro Espíndola, Daniel Reis
A C++ Library for Developing Evolutionary Algorithms to the QCaRS Problem			Tiago Funk, Fernando Santos
A Multilevel Thresholding Approach Based on Improved Particle Swarm Optimization for Color Image Segmentation			Larissa Britto, Luciano Pacífico, Teresa Ludermir
Hybrid Algorithm for the Multi-objective Permutation Flow Shop Problem			Volmir Fiorini Júnior, Sandra Venske, Carolina Paula de Almeida
On the Analysis of Mutation Operators in Multiobjective Cartesian Genetic Programming for Designing Combinational Logic Circuits			Lucas Souza, Heder Bernardino
Using Genetic Algorithms to Design an Optimized Keyboard Layout for Brazilian Portuguese			Gustavo Pacheco, Eduardo Palmeira, Keiji Yamanaka

ETS 2

ENIAC TECHNICAL SESSION

TEXT AND WEB MINING

Chair: Péricles Miranda

ETS 2	TUESDAY	15h-16h	OCTOBER 20
A Framework for Multi-Document Extractive Summarization of Reviews with Aspect-Based Sentiment Analysis			André Seidel Oliveira, Anna Costa, Eduardo Hruschka
A Cooking Recipe Multi-Label Classification Approach for Food Restriction Identification			Larissa Britto, Luciano Pacífico, Emilia Oliveira, Teresa Ludermir
A glance of gastronomic tourism: A case on TripAdvisor			Fabio Lobato, Jorge Silva Junior, Luiz Carlos Fernandes Junior
A Sentiment Classification Approach for Books Reviews in Brazilian Portuguese Using Different Feature Extraction Methods			Larissa Britto, Luciano Pacífico
Automatic Cooking Recipe Difficulty Level Inference using Natural Language Processing Techniques			Larissa Britto, Luciano Pacífico, Teresa Ludimir
Classification of Court Lawsuits Pages using Multimodal Convolution Neural Networks			Caio Mota, Andressa Lima, André Nascimento, Péricles Miranda Rafael Ferreira L. Mello
The Construction of a Corpus for Detecting Irony and Sarcasm in Portuguese			Gabriel Schubert

CTDIAC M.Sc.

Chairs: Denis Mauá, Edson Takashi Matsubara, Solange Rezende

M1	TUESDAY	9h-11h	OCTOBER 20
Asymmetric Action Abstractions for Real-Time Planning in Extensive-Form Games			Rubens Moraes Filho, Levi Lelis (Universidade Federal de Viçosa)
Automatic Algorithm Selection for the Quadratic Assignment Problem Using Meta-learning and Fitness Landscape Measures			Augusto Dantas, Aurora Pozo (UFPR)
ML-MDLText: um método de classificação de textos multirrótulo de aprendizado incremental			Marciele Bittencourt, Renato Silva, Tiago Almeida (UFSCar)
Semi-Supervised Self-Organizing Maps with Time-Varying Structures for Clustering and Classification			Pedro Braga, Hansenclever F. Bassani (UFPE)

KTS 1

KDMILE TECHNICAL SESSION

Chairs: Luiz Merschmann, Elaine Faria

KTS 1	APPLICATIONS PART 1	TUESDAY	14h-14h30	OCTOBER 20
Improving automatic data extraction from financial statements with clustering analysis				Victor Ferraz, Gabriel Olivato, Igor Magollo, Murilo Naldi
Impact of Unusual Features in Credit Scoring Problem				Luiz Felipe Vercosa, Rodrigo Lira, Rodrigo Monteiro, Kleber Silva, Jailson Magalhaes, Alexandre Maciel, Byron Leite, Carmelo Bastos-Filho
Short-term Forecasting in Bitcoin Timeseries Using LSTM and GRU RNNs				Marcelo de Caux, Flavia Bernardini, Jose Viterbo
Acidentes de trabalho no Brasil: uma análise descritiva				Daniela Giacomelli, Murilo Naldi, Elaine Faria

KTS 1	APPLICATIONS PART 2	TUESDAY	14h30-15h	OCTOBER 20
Evaluation of the Usefulness of Explanations of Post-hoc Interpretability for Malaria Detection				Vinícius Araújo Leandro Marinho
Machine Learning to Assist in Pneumonia Decision Making: A Systematic Review of the Literature				Victor Silva, Amanda Days, Damires Souza, Alex Rêgo
Clinical risk factors of ICU & fatal COVID-19 cases in Brazil				Juliana B. Mattos, Renato Vimieiro, Paulo S.G. de Mattos Neto, Eraylson G. Silva
Towards ideal time window for classifying motor imagery in brain-computer interfaces				Vitor Mendes Vilas-Boas, Vitor da Silva Jorge, Cleison Daniel Silva.

KTS 2

KDMILE TECHNICAL SESSION

Chairs: Moacir Ponti, Elaine Faria

KTS 2	MACHINE LEARNING AND NATURAL LANGUAGE PROCESSING	TUESDAY	15h-15h30	OCTOBER 20
Experimenting split-and-rephrasing sentences using part-of-speech labels				P. Neto Berlanga, E. E. S. Ruiz, E. Y. Okano
CONLL Dependency Parser: Extrinsic Evaluation through the Open Information Extraction task				Jardel Baia, Arley Prates, Daniela Claro
From audio to information: Learning topics from audio transcripts				João Rodrigues, Emerson Paraiso
Learning Probabilistic Sentential Decision Diagrams by Sampling				Renato Geh, Denis Mauá, Alessandro Antonucci

KTS 2	MACHINE LEARNING IN BRAZILIAN ELECTIONS	TUESDAY	15h30-16h	OCTOBER 20
Spending Segmentation and Outlier Detection in Brazilian Elections				Leandro G. C. Simoes, Filipe A. N. Verri, Takashi Yoneyama
A Sentiment Analysis of Brazilian Elections Tweets				André Cristiani, Douglas Lieira, Heloisa Camargo
Brazilian Presidential Elections: Analyzing Voting Patterns in Time and Space Using a Simple Data Science Pipeline				Lucas Henrique M. Jacintho, Tiago P. Silva, Antonio Rafael S. Parmezan, Gustavo Enrique A. P. Alves Batista

• GENERAL PROGRAMME

October 21st, 2020				
	BRACIS	ENIAC	CTDIAC	KDMiLe
9h-10h		ETS 3	M2	
10h-11h	BTS 4			
11h-12h	Keynote Speaker: André Paim (Loggi)			
12h-13h	Lunch			
13h-14h			D1	
14h-15h	BTS 5		D1	KTS 3
15h-16h	BTS 6	ETS 4 Best papers		KTS 4 Best papers
16h-17h	Industry Panel 1			
17h-18h	CEIA Meeting – CEIC Meeting			

BTS4	WEDNESDAY	10h-11h	OCTOBER 21
A Multi-Level Approach to the Formal Semantics of Agent Societies			Alison Panisson, Rafael Bordini, Antonio Carlos da Rocha Costa
An Argumentation-based Approach for Explaining Goals Selection in Intelligent Agents			Mariela Morveli-Espinoza, Cesar Tacla, Henrique Jasinski
Application-Level Load Balancing for Reactive Wireless Sensor Networks: An Approach Based on Constraint Optimization Problems			Igor Pereira, Lisane Brisolara, Paulo Roberto Ferreira Jr
Cooperative Observation of Smart Target Agents			Leonardo F. Costa, Matheus Araújo, Vinicius Sampaio, Thayanne da Silva, João Andrade, Raimundo Ferro Junior, Gustavo Campos, Gabriel Melo
Finding Feasible Policies for Extreme Risk-Averse Agents in Probabilistic Planning			Milton Condori, Leliane N. Barros, Karina Valdivia-Delgado, Valdinei Freire, Denis Mauá
On the Performance of Planning through Backpropagation			Leliane N. Barros, Denis Mauá, Thiago Bueno, Renato Scaroni
Risk Sensitive Stochastic Shortest Path and LogSumExp: from theory to practice			Karina Valdivia-Delgado, Elthon Manhas de Freitas, Valdinei Freire
Testing Multiagent Systems under Organizational Model Moise using a Test Adequacy Criterion based on State Transition Path			Ricardo Arend, Eder Mateus Gonçalves

BTS 4

BRACIS TECHNICAL SESSION

Chairs: Alison Panisson, Leliane Barros

BTS5	WEDNESDAY	14h-15h	OCTOBER 21
A Differential Evolution Algorithm for Contrast Optimization			Artur Leandro da Costa Oliveira, André Britto
A Reinforcement Learning Based Adaptive Mutation for Cartesian Genetic Programming Applied to the Design of Combinational Logic Circuits			Frederico Möller, Heder Bernardino, Luciana B. Gonçalves, Stênio Sã Rosário Soares
An Evolutionary Algorithm for Learning Interpretable Ensembles of Classifiers			Henry Cagnini, Alex Freitas, Rodrigo Barros
An Evolutionary Analytic Center Classifier			Renan Goulart, Saulo Villela, Carlos C. Borges, Raul Fonseca
Genetic Learning Analysis of Fuzzy Rule-Based Classification Systems considering Data Reduction			Matheus G. Pires, Fabiana Bertoni, Allen Hichard M. Santos
Improving FIFA Player Agents Decision-Making Architectures based on Convolutional Neural Networks through Evolutionary Techniques			Matheus Faria, Rita Maria Silva Julia, Lídia Tomaz
On the Multiple Possible Adaptive Mechanisms of the Continuous Ant Colony Optimization			Victor Costa, Felipe Müller
Solving Multi-Agent Pickup and Delivery Problems Using a Genetic Algorithm			Ana Carolina L.C. Queiroz, Heder Bernardino, Alex Borges Vieira, Helio Barbosa

BTS 5

BRACIS TECHNICAL SESSION

Chairs: Lídia Tomaz, Matheus Giovanni Pires

BTS6	WEDNESDAY	15h-16h	OCTOBER 21
A computational tool for automated detection of genetic syndrome using facial images			Eduardo Pooch, Carla Becker, Thatiane Alves
Domain Adaptation of Transformers for English Word Segmentation			Ruan C. Rodrigues, Marcelo Inuzuka, Hugo do Nascimento, Acquila Santos Rocha
Impact of Text Specificity and Size on Word Embeddings Performance: an Empirical Evaluation in Brazilian Legal Domain			Thiago Dal Pont, Isabela Sabo, Jomi Hübner, Aires J Rover
People Identification Based on Soft Biometrics Features Obtained from 2D Poses			Henrique Tavares, João B. Cardia, Joao Papa, Danilo Colombo, Aparecido Marana
Photovoltaic Generation Forecast: model training and adversarial attack aspects			Everton Santana, Ricardo Petri, Bruno Zarpelão, Sylvio Barbon Junior
Texture analysis based on structural co-occurrence matrix improves the colorectal tissue characterization			Elias Paulino Medeiros, Geraldo Ramalho, Daniel Ferreira
Unsupervised Learning Method for Encoder-Decoder-Based Image Restoration			Claudio Mello Jr., Lucas Ricardo Vieira Messias, Paulo Lilles Drews Jr, Silvia Botelho

BTS 6

BRACIS TECHNICAL SESSION

Chairs: Hugo Nascimento, Sylvio Barbon

Short Bio

André Paim Lemos has a degree in Computer Science from the Federal University of Minas Gerais (UFMG) in 2003 and a master's degree (2007) and a doctorate (2011) in Electrical Engineering with an emphasis on Artificial Intelligence from the same university. Between 2011 and 2018 worked as a full professor in the Department of Electronic Engineering at UFMG. During this period he taught undergraduate and graduate courses in the areas of Automation, Distributed Systems, Real Time Programming, Computational Intelligence and Machine Learning; supervised several undergraduate, master's and doctoral students; published more than 70 articles in journals and conference proceedings in the field of Artificial Intelligence; and participated in R&D projects related to Data Mining and Artificial Intelligence applications in industrial problems financed by companies such as Petrobras, CEMIG, Gerdau, CHESF, among others. He currently works as Head of Data Analytics at Loggi, where he coordinates data management and analysis projects in the areas of Business Intelligence, Data Engineering and Data Science. Currently he also serves as a Collaborating Professor in the Graduate Program at the Faculty of Electrical and Computer Engineering (FEEC) at the University of Campinas (Unicamp).

Keynote speaker: André Paim (Loggi)

October 21st 11h

Loggi - Data Science Applications for problem solving in the Logistics Chain

Brazilian logistics sector still has great challenges to be overcome when compared to those of large world economies. This lecture will give an overview of the objectives, activities and solutions of Loggi Tecnologia Ltda, established in 2013. Loggi has positioned itself, in an unprecedented way, to be an express logistics solution with national coverage, facilitating the growth of a new trade in Brazil, with economy, agility and reliability. By 2021, Loggi's goal is to connect all Brazilians, covering 100% of the cities, a goal that demands high quality development processes and methods and human resources. The development and evolution of software solutions at Loggi is carried out based on evidence, from historical data analyzes using data science methods and techniques. Some examples of application of data sciences in Loggi solutions in the logistics chain will be illustrated, such as routing, allocation of routes to couriers, package tracking, among others. To learn more about Loggi, visit: loggi.com/venha.

BRACIS 2020

ETS 3

ENIAC TECHNICAL SESSION MACHINE LEARNING I

Chair: Myriam Delgado

ETS 3	WEDNESDAY	9h-10h	OCTOBER 21
A biased sampling method for applying DBSCAN			Igor Ventorim, Diego Luchi, Flávio Miguel Varejão
Clustering for Data-driven Unraveling Artificial Neural Networks			Felipe Farias, Teresa Ludermir, Carmelo Bastos-Filho
Towards Heterogeneous Multi-Agent Reinforcement Learning with Graph Neural Networks			Douglas Meneghetti, Reinaldo Bianchi
Use of Convolutional Neural Networks to Identify Focal Cortical Dysplasia in Patients with Refractory Epilepsy			Samuel Henrique Silva, Fabricio Simozo, Luiz Otavio Murta Junior, Renato Tinos
A Clustering Visualization Query Language			Ana Paula Sodré, Luis E. Floriano, Aurora Pozo, Carmem Hara
Aprendizado Profundo Aplicado na Previsão de Receita Tributária Utilizando Variáveis Endógenas			Karla Figueiredo, Priscila Silva
Medicinal Plant Recognition Using Color, Texture and Shape Features			Larissa Britto, Luciano Pacífico, Matheus Fidelis da Silva, Teresa Ludermir
Training Data Filtering for Deep Learning Applied to Inspection of Welded Joints in Oil Pipelines			Rafael Silva, Myriam Delgado, Ricardo D. Silva, Fernando Suyama

ETS 4

ENIAC TECHNICAL SESSION

RUNNERS UP BEST PAPER

Main Track	Chairs: João Carlos Xavier, Heloísa Camargo, Ricardo Rios	WEDNESDAY 15h-16h	OCTOBER 21
Comparative Study of Photovoltaic Power Forecasting Methods			Pablo Jaskowiak, Angelo Pelisson, Thiago Covoes, Anderson W. Spengler
Gated Recurrent Unit Networks and WaveletsDiscrete Transformations Applied to Forecastingand Trading in the Stock Market			Victor Biazon, Reinaldo Bianchi
Optimizing Random Forest from the pondering of regression tree leaves			Caio Ponte, João José Vasco Furtado, Carlos Caminha Neto
Sample Bias Effect on Meta-Learning			Mariane Reis, Ana Carolina Lorena
Similarity Search using the NK Interaction Graph			José Carlos B. Moraes, Renato Tinos
Undergraduate Track	**Chairs: Hélida Santos, Leliane Barros, Tatiane Nogueira**		
Avaliação empírica de classificadores e métodos de balanceamento para detecção de fraudes em transações com cartões de créditos			Victor Nicola, Marcelo Lauretto, Karina Valdivia-Delgado
Cloud Computing and Machine Learning for Analysis of Large Volumes of Educational Data Networks			Francisco Neto, Romero Silva, Roberta Gouveia, Maria Batista, Igor Gomes de Oliveira
Meta-Characteristics Extraction from Image Datasets for Selection of Convolutional Neural			Lucas Dias, Péricles Miranda, André Nascimento, Filipe Cordeiro, Rafael F.L. Mello, Ricardo Prudêncio, Ricardo Oliveira
Unsupervised Machine Learning Based on Heterogeneous Networks for Text Clustering			José Vitor Santos, Rafael Rossi
Using Artificial Neural Networks to Classify Treadmill Running Patterns in High-Performance Sports			Sergio Baldo, Paulo Santiago, Renato Tinos

CTDIAC M.Sc.

Chairs: Denis Mauá, Edson Takashi Matsubara, Solange Rezende

M2	WEDNESDAY	9h-10h	OCTOBER 21
Sequencing Operator Counts with State-Space Search			Wesley Kaizer, André Grahl Pereira, Marcus Ritt (UFRGS)
Transfer Learning by Mapping and Revising Boosted Relational Dependency Networks			Rodrigo Azevedo Santos, Gerson Zaverucha (UFRJ), Aline M. Paes Carvalho (UFF)

CTDIAC Ph.D.

Chairs: Ana Carolina Lorena, Bruno Castro da Silva, Moacir Ponti

D1	WEDNESDAY	13h30-15h	OCTOBER 21
Avanços em Redes Neurais Quânticas			Fernando de Paula Neto (UFPE), Teresa Ludermir (UFPE), Wilson de Oliveira (UFRPE)
Goal Recognition over Imperfect Domain Models			Ramon Fraga Pereira, Felipe Meneguzzi (PUCRS)
Methods and Algorithms for Knowledge Reuse in Multiagent Reinforcement Learning			Felipe Leno da Silva (Advanced Institute for AI), Anna Costa (USP)

KTS 3

KDMILE TECHNICAL SESSION

Chairs: Ricardo Cerri, Elaine Faria

KTS 3	NEURAL NETWORKS AND REINFORCEMENT LEARNING	WEDNESDAY	14h-14h30	OCTOBER 21
Clustered Echo State Networks for Signal Observation and Frequency Filtering				Laercio Oliveira Junior, Florian Stelzer, Liang Zhao
Inducing selfish agents towards social efficient solutions				João Schapke, Ana Bazzan
An Experimental Analysis of Model Compression Techniques for Object Detection				Andrey de Aguiar Salvi, Rodrigo Coelho Barros
Accelerating learning of route choices with C2I: a preliminary investigation				Guilherme Santos, Ana Bazzan

KTS 3	TEXT MINING: PART 1	WEDNESDAY	14h30-15h	OCTOBER 21
Evaluating an Aspect Extraction Method for Opinion Mining in the Portuguese Language				Breno Cardoso, Denilson Pereira
Transfer learning for Twitter sentiment analysis: Choosing an effective source dataset				Eliseu Guimarães, Jonnathan Carvalho, Aline Paes, Alexandre Plastino
Combining compact news representations generated using DistilBERT and topological features to classify fake news				Carlos Abel Córdova Sáenz, Marcelo Dias, Karin Becker
Doclass: opensource software to support document labeling and classification				Marcelo Inuzuka, Hugo Nascimento, Fernando Almeida, Bruno Barros, Walid Jradi

KTS 4

KDMILE TECHNICAL SESSION

Chairs: Alexandre Plastino, Elaine Faria

KTS 4	TEXT MINING: PART 2	WEDNESDAY	15h-15h30	OCTOBER 21
A Characterization of Portuguese Tweets Regarding the Covid-19 Pandemic				Pedro V. Brum, Matheus C. Teixeira, Renato Vimieiro, Wagner Meira Jr, Gisele L. Pappa, Renato Miranda
Statistical analysis of small twitter data collection to identify dengue outbreaks				Carlos Euzebio, Sidney Agy, Boldorini Jr. Claudio, José Renato Alcarás, Lucas Porto, Alexandre Martinez, Evandro Ruiz
Forecasting future corn and soybean prices: an analysis of the use of textual information to enrich time series				Ivan José dos Reis Filho, Guilherme B. Correa, Guilherme Mendonça Freire, Solange Oliveira Rezende.

KTS 4	BEST PAPERS	WEDNESDAY	15h30-16h	OCTOBER 21
Extreme Events Characterization on Time Series				Marcos Wander Rodrigues, Luis Enrique Zárate
Prediction of Environmental Conditions for MaritimeNavigation using a Network of Sensors: A Practical Application of Graph Neural Networks				Caio Netto, Denis Mauá, Eduardo Tannuri, Fábio Cozman
Quarenteners vs. Cloroquiners: a framework to analyze the effect of political polarization on social distance stances				Régis Ebeling, Carlos Córdova, Jeferson Campos Nobre, Karin Becker
Automated classification of cardiology diagnoses in textual medical reports				João Antonio O. Pedrosa, Derick Oliveira, Wagner Meira Jr., Antônio Ribeiro

Industry panel 1

October 21st 16h

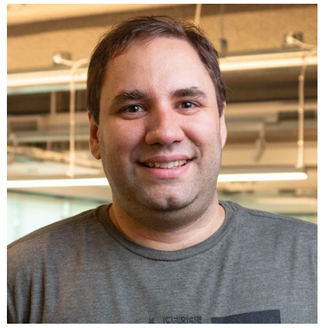
Applied AI: Bridging the Gap Between Academy and Industry

Sergio Novaes - Advanced Institute for Artificial Intelligence

He is Full Professor of Physics at the São Paulo State University (Unesp), Scientific Director of the Center for Scientific Computing from Unesp and the co-founder of the Advanced Institute for Artificial Intelligence (AI2). He obtained the B.Sc. and Ph.D. degrees in Physics from the University of São Paulo (USP) and he was a Postdoctoral Research Fellow at the Lawrence Berkeley National Laboratory (Berkeley, USA). He was visiting researcher at the University of Wisconsin (Madison, USA), University of Valencia (Spain), and at the Fermi National Accelerator Laboratory (Chicago, USA). He has been the PI of several R&D projects associated to the private sector (Padtec, Intel, Huawei, etc.) which include an Intel Parallel Computing Center (IPCC) and a Center of Excellence in Machine Learning, and Huawei is supporting the development of Kytos, a new SDN Controller. He and his team have a partnership for more than a decade with Caltech which set the record of data transmission between the North and South Hemispheres three times during the bandwidth challenges at the SuperComputing conferences.

Davi Reis - Loggi

Davi Reis, Computer Scientist, started his career working as a developer and white hat hacker in the world of ISPs. During his MSc, working as a database and information retrieval scientist, created the RTDM algorithm, co-authored the CMPH open source library and joined Akwan, the startup that became Google Brazil. He worked ten years at Google, leading projects in Search, Mobile and Social Ads. He brought Orkut from zero revenue to profitability. He also led project Google Pigeon, improving local search for billions of people. Co-founded, almost scaled and acquisold WorldSense. He is currently helping rebuild Brazil's logistics as the CTO for Loggi.



Hans De Canck - AI Experience Centre

Hans De Canck manages and directs the development of the AI Experience Center of the Vrije Universiteit Brussels (VUB). The AI Experience Center is a state of the art Digital Innovation Hub in Brussels. Several research centers from the Vrije Universiteit Brussel have joined forces to develop a multi-disciplinary Research and Innovation offering on AI towards Academia, Industry, Policy makers and the broader public. The AI Experience Center will accelerate this offering and collaborate with other stakeholders in the open innovation ecosystem. Hans works with the research teams across the university and acts as a coordinator for the AI for the Common Good initiative, launched early 2019. He has a background in research and IT development. The last 15 years he held different management positions in Research and Technology Organisations like iMinds, imec and VITO.

Stênio Fernandes - ElementAi

Stenio Fernandes is one of the leaders in the AI Platform group at Element AI in Montreal, Canada. He is leading a team of Applied Research Scientists and AI Developers in the context of Time-dependent problems, such as Time Series Forecasting, Anomaly Detection, Spatio-Temporal modelling, and Concept Drifting. Element AI (EAI) models have been applied to several problems to different industry verticals, such as Capital Markets, Retail, Cybersecurity, Manufacturing, Insurance, and Transportation and Logistics. Currently, Stenio's team is fine-tuning EAI's state-of-the-art models on time series forecasting and making them viable to integrate into EAI products and services' portfolio. He provides technical, strategic, and intellectual leadership to all team members. He holds a Ph.D. in Computer Science (UFPE) with Post-Doctoral experience conducted at the University of Ottawa, Canada. He is an IEEE Senior Member and a certified Project Management Professional - PMP. As a former Professor of Computing Science, he was involved in dozens of scientific research projects in Brazil (UFPE) and Canada (University of Ottawa and Carleton University). He published more than 140 scientific research papers in major peer-reviewed conferences and journals. His citation indexes are: h-index = 18, i10-index = 30.

- **GENERAL PROGRAMME**

October 22nd, 2020			
	BRACIS	ENIAC	KDD-BR
9h-10h		ETS 5	
10h-11h	BTS 7		
11h-12h	Keynote Speaker: Jose M. Alonso (CiTIUS, Univ. de Santiago de Compostela, Spain)		
12h-14h	Lunch		
13h-14h	Huawei Product Demo: Filipe Padilha Testa		
14h-15h	BTS 8		
15h-16h	BTS 9	ETS 6	
16h-17h	C3 Live - FURG		Top three teams
17h-18h	Keynote Speaker: David Cox (MIT-IBM Watson AI Lab)		

BTS7	THURSDAY	10h-11h	OCTOBER 22
A Study on the Impact of Intradomain Finetuning of Deep Language Models for Legal Named Entity Recognition in Portuguese			Luiz H. Bonifacio, Paulo Augusto A. Vilela, Gustavo Lobato, Eraldo Fernandes
Pre-trained Data Augmentation for Text Classification			Hugo Queiroz Abonizio, Sylvio Barbon Junior
Predicting Multiple ICD-10 Codes from Brazilian-Portuguese Clinical Notes			Arthur Reys, Danilo Silva, Daniel Severo, Saulo Pedro, Marcia Sá, Guilherme Augusto Salgado
Semi-Supervised Sentiment Analysis of Portuguese Tweets with Random Walk in Feature Sample Networks			Pedro Lourenço, Filipe Verri
The use of machine learning in the classification of electronic lawsuits: an application in the Court of Justice of Minas Gerais			Adriano Silva, Luiz Maia
Towards a Free, Forced Phonetic Aligner for Brazilian Portuguese Using Kaldi Tools			Ana Larissa Dias, Cassio Batista, Daniel Santana, Nelson Neto
Twitter Moral Stance Classification using Long Short-Term Memory Networks			Matheus Pavan, Wesley Santos, Ivandré Paraboni

BTS 7

BRACIS TECHNICAL SESSION

Chairs: Danilo Silva, Eraldo Fernandes

BTS8	THURSDAY	14h-15h	OCTOBER 22
A Fuzzy Approach For Classification and Novelty Detection in Data Streams Under Intermediate Latency			André Cristiani, Tiago Pinho da Silva, Heloisa Camargo
A Fuzzy Reasoning Method based on ensembles of generalizations of the Choquet integral			Giancarlo Lucca, Eduardo Borges, Graçaliz Dimuro, Helida Santos, Tiago Asmus, José A Sanz, Humberto Bustince
A Useful Tool to Support the Ontology Alignment Repair			Miriam dos Santos, Carlos E. Mello, Tadeu Classe
Aggregation with Weak, Axiological and Strong Sufficientarian Functions			Henrique Oliveira, João Fernando Lima Alcântara
An alternative to Power Measure for Fuzzy Rule-Based Classification Systems			Frederico Tiggemann, Bryan S. Pernambuco, Giancarlo Lucca, Eduardo Borges, Helida Santos, Gracaliz Dimuro, José Antonio Sanz, Humberto Bustince
Exceptional Survival Model Mining			Juliana Mattos, Renato Vimieiro, Paulo Mattos Neto, Eraylson Galdino
FT-BlinGui: a fuzzy-based wearable device system to avoid visually impaired collision in real time			Elidiane Nascimento, Ricardo Rios, Tatiane Nogueira

BTS 8

BRACIS TECHNICAL SESSION

Chairs: Heloisa Camargo, Tatiane Nogueira

BTS9	THURSDAY	15h-16h	OCTOBER 22
2CS: Correlation-guided Split Candidate Selection in Hoeffding Tree Regressors			Saulo M. Mastelini, André Ponce L. F. de Carvalho
Active Learning embedded in incremental decision trees			Vinicius Martins, Victor Turrisi da Costa, Sylvio Barbon Junior
An Online Pyramidal Embedding Technique for High Dimensional Big Data Visualization			Adriano Barreto, Igor Matheus Moreira, Claudomiro Souza Junior, Caio Flexa, Eduardo Cardoso
Comparative study of Fast Stacking Ensembles families algorithms			Laura P. Mariño, Agustín A. Ortiz Díaz, Germano Vasconcelos
Ensemble of Binary Classifiers Combined Using Recurrent Correlation Associative Memories			Rodolfo Anibal Lobo, Marcos Eduardo Valle
Link prediction in social networks: an edge creation history retrieval-based method that combines topological and contextual data			Argus Barbosa Cavalcante, Claudia Justel, Ronaldo Goldschmidt
Particle Competition for Unbalanced Community Detection in Complex Networks			Luan Martins, Liang Zhao
Towards an Instance-Level Meta-Learning-Based Ensemble for Time Series Classification			Diego Furtado Silva, Caio Ueno, Igor Braga

BTS 9

BRACIS TECHNICAL SESSION

Chairs: Diego Silva, Liang Zhao

Short Bio

Dr. Jose M. Alonso received his M.Sc. and Ph.D. degrees in Telecommunication Engineering, both from the Technical University of Madrid (UPM), Spain, in 2003 and 2007, respectively. He is currently "Ramón y Cajal" researcher funded by the Spanish Government under project RYC-2016-19802, affiliated to CiTIUS-USC, secretary of the ACL Special Interest Group on Natural Language Generation (SIGGEN), board member of the European Society for Fuzzy Logic and Technology (EUSFLAT), Associate Editor of the IEEE Computational Intelligence Magazine (ISSN:1556-603X), member of the Editorial Board of the International Journal of Computational Intelligence Systems (ISSN: 1875-6883), Chair of the IEEE-CIS Task Force on Explainable Fuzzy Systems, member of the IEEE-CIS Task Force on Explainable Machine Learning, member of the IEEE-CIS Task Force on Fuzzy Systems Software, member of the IEEE-CIS Content Curation Subcommittee. In addition, he is the President of the Executive Board and Deputy Coordinator of the H2020-MSCA-ITN-2019 (Grant Agreement No 860621) project entitled “Interactive Natural Language Technology for Explainable Artificial Intelligence” (NL4XAI). He has published more than 140 papers in international journals, book chapters and conferences. His research interests include explainable artificial intelligence, computational intelligence, interpretable fuzzy systems, natural language generation, development of free software tools, etc.

Keynote speaker: Jose Alonso

(CiTIUS, Univ. de Santiago de Compostela, Spain)

October 22nd 11h

Paving the way from Fuzzy Logic towards Explainable Artificial Intelligence

In the era of the Internet of Things and Big Data, data scientists are required to extract valuable knowledge from the given data. They first analyze, cure and pre-process data. Then, they apply Artificial Intelligence (AI) techniques to automatically extract valuable knowledge from data. Explainable AI (or just XAI for short) emerges as an endeavor to evolve AI methodologies and technology by focusing on the development of agents capable of both generating decisions that a human could understand in a given context, and explicitly explaining such decisions. This way, it is possible to verify if automated decisions are made on the basis of accepted rules and principles, so that decisions can be trusted, and their impact justified in terms of safety, fairness, robustness, accountability and lineage.

The main goal of this talk is to provide audience with a holistic view of fundamentals and current research trends in the XAI field. We will pay special attention to fuzzy-grounded knowledge representation and reasoning. Fuzzy rules relate fuzzy sets and make it feasible to infer meaningful information granules at certain level of abstraction. Fuzzy modeling favors fairness, accountability, transparency, trustfulness and explainability. Interpretable fuzzy models represent knowledge in a way close to natural language, easy to interpret and understand by users no matter their background, because such models are endowed with linguistic interpretability and global semantics. Explainable fuzzy systems wrap interpretable fuzzy models with an interactive linguistic interface that makes them self-explanatory. Moreover, explainable fuzzy systems enhance human-machine interaction through factual and counterfactual multi-modal effective explanations supported by Fuzzy Logic and interactive Natural Language Technology.

BRACIS 2020

Huawei AI Solution Overview

October 22nd 13h

- *Filipe Padilha Testa trabalha na Huawei do Brasil desde fevereiro deste ano, atuando na unidade de negócios de Cloud & AI, e é responsável pelo portfolio de IT (Computing x86,ARM,AI - Storage - Private & Public Cloud). Antes disso, ele já havia trabalhado na Huawei como Engenheiro e Líder Técnico, sendo responsável pela arquitetura e implantação de soluções de tecnologia da informação e computação inteligente (IT/IC).*

Filipe Padilha Testa

HUAWEI

BRACIS 2020

ETS 5

ENIAC TECHNICAL SESSION MACHINE LEARNING II

Chair: Liang Zhao

ETS 5	THURSDAY	9h-10h	OCTOBER 22
A Network-Based High-Level Data Classification Algorithm Using Betweenness Centrality			Esteban Vilca Zuñiga, Liang Zhao
Classifying the Macronutrient Deficiency in Soybean Leaf with Deep Learning			Maicon Sartin
Evaluation of Texture Maps as Input to Extract Deep Features in Glaucoma Diagnosis			Daniel V. Silva, Romuere Silva
Inter-affection of Multiple Datasets in Speech EmotionRecognition with Neural Networks			Ronnypetson Souza da Silva, Valter Akira Miasato Filho
Stock Trading Classifier with Multichannel Convolutional Neural Network			Davi Nascimento, Anna Costa Reinaldo Bianchi
Death Registry Prediction in Brazilian Male Prisons with a Random Forest Ensemble			Nathan Garcia, Eduardo Borges, Giancarlo Lucca, Helida Santos, Gracaliz Dimuro
Descoberta de Conhecimento em Dados de Scout do Campeonato Brasileiro de Futebol			Luís Ortolan, Diego Furtado Silva
Hybrid Approach for Detecting Brazilian Real Coins with Localization Algorithms and Convolutional Neural Networks			David Yonekura, Elloá B. Guedes

ETS 6

ENIAC TECHNICAL SESSION

AUTOMATED PLANNING

Chair: Renato Tinos

ETS 6	THURSDAY	15h-16h	OCTOBER 22
A short-term electricity demand forecasting in the Southern Region of Brazil using the ARIMA Model and the Holt Exponential Smoothing Model (SEH)			Mariane Amaral, Anderson Silveira, Viviane L. D. Mattos, Eduardo Borges
Brain Tissue Classification to Detect Focal Cortical Dysplasia in Magnetic Resonance Imaging			Luiz Otavio Murta Junior, Fabricio Simozo, Marcos Soares de Oliveiras
Impact of Feature Selection on Clustering Images of Vertebral Compression Fractures			Raquel Candido, Rafael Del Lama, Natália Chiari, Marcello Nogueira-Barbosa, Paulo de Azevedo-Marques, Renato Tinos
Monte Carlo Tree Search Algorithm for SSPs Under the GUBS Criterion			Gabriel Crispino, Karina Valdivia-Delgado, Valdinei Freire
Políticas Sensíveis ao Risco para o Controle da Propagação de Doenças Infecciosas			Henrique Pastor, Valdinei Freire, Leliane Nunes de Barros, Karina Valdivia-Delgado
Sensor Validation for Indoor Air Quality using Machine Learning			Vagner Seibert, Ricardo Araújo
A Contact Network-Based Approach for Online Planning of Containment Measures for COVID-19			Guilherme Yambanis Thomaz, Denis Mauá, Leliane Nunes de Barros

KDD-BR

TOP THREE TEAMS

- Teams invited to present their solutions
- The top three teams are in alphabetic order and in this session the actual places will be disclosed.

Chair: Ana Carolina Lorena

KDD-BR	THURSDAY	16h-17h	OCTOBER 22
Adriano Avelar			
David Yonekura			
João Pedro Peinado			

C3 Live

October 22nd 16h

FURG

A era da Inteligência Artificial: Ressignificando Robôs e Humanos?

Essa live ocorrerá no contexto do projeto C3 Live, que consiste em uma live semanal, organizada pelo C3/FURG, para discutir temas diversos com a comunidade do C3 e geral. A ideia é uma conversa informal sobre o impacto da IA no futuro da humanidade sob diferentes aspectos.

Artur H. Barcelos
Bacharelado em Arqueologia
Professor do Instituto de Ciências Humanas e da Informação ICHI/FURG

Nelson Duarte Filho
Professor C3/FURG

Graçaliz P. Dimuro
Professora C3/FURG

Silvia Botelho
Diretora C3 - Proferssora FURG

Keynote Speaker: David Cox
A joint initiative by BRACIS and C4AI
Center for Artificial Intelligence of IBM/USP/FAPESP

c4ai.inova.usp.br

October 22nd 17h

- David Cox is the IBM Director of the MIT-IBM Watson AI Lab, a first of its kind industry-academic collaboration between IBM and MIT, focused on fundamental research in artificial intelligence. The Lab was founded with a $240m, 10 year commitment from IBM and brings together researchers at IBM with faculty at MIT to tackle hard problems at the vanguard of AI.

- Prior to joining IBM, David was the John L. Loeb Associate Professor of the Natural Sciences and of Engineering and Applied Sciences at Harvard University, where he held appointments in Computer Science, the Department of Molecular and Cellular Biology and the Center for Brain Science. David's ongoing research is primarily focused on bringing insights from neuroscience into machine learning and computer vision research. His work has spanned a variety of disciplines, from imaging and electrophysiology experiments in living brains, to the development of machine learning and computer vision methods, to applied machine learning and high performance computing methods.

- David is a Faculty Associate at the Berkman-Klein Center for Internet and Society at Harvard Law School and is an Agenda Contributor at the World Economic Forum. He has received a variety of honors, including the Richard and Susan Smith Foundation Award for Excellence in Biomedical Research, the Google Faculty Research Award in Computer Science, and the Roslyn Abramson Award for Excellence in Undergraduate Teaching. He led the development of "The Fundamentals of Neuroscience" (http://fundamentalsofneuroscience.org) one of Harvard's first massive open online courses, which has drawn over 750,000 students from around the world. His academic lab has spawned several startups across a range of industries, ranging from AI for healthcare to autonomous vehicles.

Center for Artificial Intelligence

Neuro-Symbolic AI

Recent years have seen rapid progress in machine learning and artificial intelligence, which has enabled a wide range of applications across many industries. At the same time, as powerful as today's artificial intelligence technologies are, these technologies have important limitations that temper their ability to address many important real world problems. This talk will cover foundational research on neuro-symbolic AI ongoing at the MIT-IBM Watson AI Lab which is aimed at breaking down barriers to broad adoption of AI.

• GENERAL PROGRAMME

October 23rd, 2020		
	BRACIS	ENIAC
9h-10h	BTS 10	ETS 7
10h-11h	**Keynote Speaker: Celine Vens** (KULAK, Belgium)	
11h-12h	**Keynote Speaker: Yaochu Jin** (University of Surrey, Guildford, U.K.)	
12h-13h	Lunch	
13h-14h	BTS 11	
14h-15h	BTS 12	ETS 8
15h-16h	Industry Panel 2	
16h-17h	Awards/closing session	

BTS10	FRIDAY	9h-10h	OCTOBER 23
Data Streams are Time Series: Challenging Assumptions			Jesse Read, Ricardo Rios, Tatiane Nogueira, Rodrigo Mello
Evaluating a new approach to data fusion in wearable physiological sensors for stress monitoring			Sandro Rigo, William R. Fröhlich, Clarissa Rodrigues, Amanda Jabroski, Andréia Rodrigues, Elisa Kern Castro
Financial time series forecasting via CEEMDAN-LSTM with exogenous features			Renan Avila, Glauber De Bona
Intelligent Classifiers on the Construction of Pollution Biosensors Based on Bivalves Behavior			Bruna Guterres, Je Nam Junior, Amanda Gurreiro, Viviane Fonseca, Silvia Botelho, Juliana Sandrini
Measuring instance hardness using data complexity measures			Ana Carolina Lorena, José Luis Arruda, Ricardo Prudêncio
Simulating Complexity Measures on Imbalanced Datasets			Victor Barella, Luís Garcia, André Ponce L. F. de Carvalho
SSL-C4.5: Implementation of a classification algorithm for semi-supervised learning based on C4.5			Agustín A. Ortiz Díaz, Flávio Bayer, Fabiano Baldo

BTS 10

BRACIS TECHNICAL SESSION

Chairs: Luíz Garcia, Rodrigo Mello

BTS11	FRIDAY	13h-14h	OCTOBER 23
AgentDevLaw: A Middleware Architecture for Integrating Legal Ontologies and Multi-Agent Systems			Fábio Aiub Sperotto, Marilton Aguiar
Improved Multilevel Algorithm to Detect Communities in Flight Networks			Camila Tautenhain, Calvin Costa, Mariá Nascimento
KNN applied to PDG for source code similarity classification			Clóvis Daniel S. Silva, Leonardo Rocha, Gerardo Valdisio R. Viana, Leonardo Ferreira da Costa
New Fast Morphological Geodesic Active Contour Method for Segmentation of Hemorrhagic Stroke in computed tomography image			Pedro P. Rebouças Filho, Róger Sarmento, Aldísio Medeiros, Elizângela Rebouças, Lucas Santos
Predicting the Evolution of COVID-19 Cases and Deaths Through a Correlations-Based Temporal Network			Tiago Colliri, Alexandre Delbem, Liang Zhao
Quantifying Temporal Novelty in Social Networks using Time-Varying Graphs and Concept Drift Detection			Victor dos Santos, Rodrigo Mello, Tatiane Nogueira, Ricardo Rios
Robust Ranking of Brazilian Supreme Court Decisions			Jackson Souza, Marcelo Finger
Stocks Clustering Based on Textual Embeddings for Price Forecasting			André Oliveira, Pedro F. A. Pinto, Sérgio Colcher

BTS 11

BRACIS TECHNICAL SESSION

Chairs: Ricardo Cerri, Ronaldo Prati

BTS12	FRIDAY	14h-15h	OCTOBER 23
Authorship attribution of Brazilian literary texts through machine learning techniques			Bianca R. Bartolomei, Isabela Drummond
Deep learning models for representing out-of-vocabulary words			Johannes Lochter, Renato Silva, Tiago Almeida
DeepBT and NLP Data Augmentation Techniques: a new proposal and a comprehensive study			Taynan Maier Ferreira, Anna Costa
Dense Captioning using Abstract Meaning Representation			Antonio A. Neto, Helena Caseli, Tiago Almeida
Does Twitter data can be used to estimate Reality Show outcomes?			Edson Matsubara, Lucas Rodrigues, Kenzo Sakiyama
Entropy-Based Filter Selection in CNNs Applied to Text Classification			Rafael B. M. Rodrigues, Danilo Eler, Wilson Marcílio-Jr
Identifying fine-grained opinion and classifying polarity on coronavirus pandemic			Francielle Vargas, Rodolfo Sanches, Pedro Regattiere Rocha
Machine learning for suicidal ideation identification on Twitter for the Portuguese language			Vinícios Carvalho, Bianca Giacon, Carlos Nascimento, Bruno Nogueira

BTS 12

BRACIS TECHNICAL SESSION

Chairs: Bruno Nogueira, Tiago de Almeida

Short Bio

Celine Vens is an Associate Professor at the faculty of Medicine of KU Leuven, in Bel- gium. She obtained her PhD degree in computer science (machine learning) from the same university. Her research expertise focuses on multi-output learning (multi-label / multi-target / hierarchical prediction), tree based ensemble learning, survival analysis and biological network mining. She has published over 50 research papers in both computer science and biomedical journals or conferences, is member of the editorial board of Machine Learning and DAMI journals, and is programme director for the Biomedical Sciences programme at KU Leuven campus Kulak.

Keynote speaker: Celine Vens

(KULAK, Belgium)

October 23rd 10h

Interpretable models for biological network mining

Networks are omni-present in the biomedical domain: drug-target interation networks, protein-protein interaction networks and patient-drug response networks are just a few examples. An important task in this domain is to predict whether a link exists between two entities. This task can be modelled as a supervised machine learning problem. Interpretable models such as decision trees can lead to novel biological insights by providing an explanation for the predictions they make. I will discuss our recent work on predictive bi-clustering trees, that are specifically designed to learn from interaction data. As a side product, the decision tree provides a complete bi-clustering of the data set. I will further discuss two extensions that boost the predictive performance: constructing an ensemble of predictive bi-clustering trees and combining them with output space reconstruction methods like matrix factorization. Finally, an extension towards multi-label classification will be described.

BRACIS 2020

Keynote speaker: Yaochu Jin

(University of Surrey, Guildford, U.K.)

October 23rd 11h

Communication Efficient Federated Learning

Federated learning is a new distributed learning paradigm that can preserve data privacy in machine learning. One of the main challenges in federated learning is to reduce the communication costs for transmitting model parameters between the local devices and the central server. This talk presents some most recent work on communication efficient federated learning, including constructing compact local models, introducing heterogeneous parameter update, and using ternary quantization. Finally, future directions of research on federated learning will be briefly discussed.

Short Bio

Yaochu Jin received the B.Sc., M.Sc., and Ph.D. degrees from Zhejiang University, Hangzhou, China, in 1988, 1991, and 1996, respectively, and the Dr.-Ing. degree from Ruhr University Bochum, Germany, in 2001. He is currently a Distinguished Chair, Professor in Computational Intelligence, Department of Computer Science, University of Surrey, Guildford, U.K., where he heads the Nature Inspired Computing and Engineering Group. His main research interests include data-driven surrogate-assisted evolutionary optimization, multi-objective evolutionary learning, trustworthy machine learning, swarm robotics, and evolutionary developmental systems.

Dr Jin is presently the Editor-in-Chief of the IEEE TRANSACTIONS ON COGNITIVE AND DEVELOPMENTAL SYSTEMS and the Editor-in-Chief of Complex & Intelligent Systems. He was an IEEE Distinguished Lecturer and Vice President for Technical Activities of the IEEE Computational Intelligence Society. He is the recipient of the 2018 and 2021 "IEEE Transactions on Evolutionary Computation Outstanding Paper Award", the 2015, 2017, and 2020 "IEEE Computational Intelligence Magazine Outstanding Paper Award", and the Best Paper Award of the 2010 IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology. He was named by the Web of Science as a "Highly Cited Researcher in 2019". He is a Fellow of IEEE.

BRACIS 2020

ETS 7

ENIAC TECHNICAL SESSION

NATURAL LANGUAGE PROCESSING

Chair: Fábio Cozman

ETS 7	FRIDAY	9h-10h	OCTOBER 23
Automated Emergency Room Triage: Helping Patients Get the Best Treatment			Alexandre Inoue, Fábio Cozman, Marcus Prado
From Bag-of-Words to Pre-trained Neural Language Models: Improving Automatic Classification of App Reviews for Requirements Engineering			Adailton Araujo, Marcos Golo, Breno Viana, Felipe Sanches, Roseli A.F. Romero, Ricardo Marcacini
Hate Speech Detection in Portuguese with Naïve Bayes, SVM, MLP and Logistic Regression			Adriano Silva, Norton Roman
Post-processing of machine translation texts based on graph theory			Lucas Porto, Evandro Ruiz
Temporal analysis and visualisation of music			Luan Misael, Emanuel Fontelles, Vinicius Sampaio, Mardônio França
The Winograd Schemas from Hell			Fábio Cozman, Hugo Neri
Towards Fully Automated News Reporting in Brazilian Portuguese			Thiago Ferreira, André L.R. Teixeira, João Gabriel M. Campos, Fábio Cozman, Adriana Pagano
Investigating Sentences Features for Subjectivity and Polarity Classification in Brazilian Portuguese			Miguel de Oliveira, Tiago de Melo

ETS 8

ENIAC TECHNICAL SESSION

MULTIAGENT SYSTEMS

Chair: Ricardo Prudêncio

ETS 8	FRIDAY	14h-15h	OCTOBER 23
CbDGen: A Complexity-based Synthetic Dataset Generation Tool			Thiago França, Péricles Miranda, Ricardo Prudêncio, André Nascimento
Classificações Explicáveis para Imagens de Células Infectadas por Malária			Iam Palatnik de Sousa, Marley M. B. R. Vellasco, Eduardo Costa da Silva
Classifying Organizational Structures on Targets in the Cooperative Target Observation			Thayanne da Silva, Gustavo Campos, Raimundo Ferro Jr, Matheus Araújo, João Andrade, Leonardo F. Costa
Computational Mining on IBICT BDTD?s Thesis and Dissertation Metadata for Supporting Social Science Research			Hugo do Nascimento, Rodrigo Filho, Elismênnia Oliveira, Jordão Nunes, Marcelo Inuzuka
Multiagent Simulation to Support Disarmament Policies			Daniel Ferreira, Diana Adamatti, Tatiane Bastos
Simulating Indemnity in Civil Suits Through a Description Logic Ontology			Jean Araujo, Cleyton Rodrigues, Fred Freitas
Using the Fuzzy Triangular Naive Bayes to Assess Users in Gynecological Examination Training			Ingrid Luana A. Silva, Elaine M. G. Soares, Liliane Machado, Ronei Moraes
An Agent-based Simulation to Study the Spread of COVID-19 in Ibirama (SC)			Lucas Teixeira, Fernando Santos

Industry panel 2

October 23rd 15h

Análise de Dados em Tempo de Pandemia

Wagner Meira (mediador)

Professor titular do Departamento de Ciência da Computação da UFMG. Wagner é PhD em Ciência da Computação pela University of Rochester (1997), além de mestre e bacharel em Ciência da Computação pela UFMG (1993 e 1990, respectivamente). Atualmente Wagner é pesquisador em produtividade do CNPq (nível 1B) e sub-coordenador do INCT-Cyber - Instituto Nacional de Ciência e Tecnologia para uma Sociedade Massivamente Conectada. Publicou mais de três centenas de artigos em periódicos e conferências de impacto e é co-autor dos livros Data Mining and Analysis - Fundamental Concepts and Algorithms (2014) e Data Mining and Machine Learning - Fundamental Concepts and Algorithms (2020), publicados pela Cambridge University Press. Seus interesses de pesquisa são em sistemas paralelos e distribuídos, em particular na sua escalabilidade e eficiência, variando de sistemas massivamente paralelos a plataformas baseadas na Internet, e em algoritmos de mineração de dados, sua paralelização e aplicação em áreas como ciência de dados, recuperação de informação, cibersegurança e governança eletrônica.

Sylvio Barbon

Possui graduação em Ciência da Computação pelo Centro Universitário do Norte Paulista (2005) e Mestrado em Física Computacional pela Universidade de São Paulo (2007), graduação em Engenharia de Computação pelo Centro Universitário de Votuporanga (2008) e doutorado (2011) pelo IFSC/USP na área de Física Aplicada Computacional. Durante 2017 foi professor visitante na Università Degli Studi di Milano e desenvolveu um projeto de pós-doutorado na Università di Modena e Reggio Emilia. É professor no curso de Ciência da Computação da Universidade Estadual de Londrina e docente no Programa de Mestrado em Ciência da Computação da UEL e no Programa de Doutorado Associado em Engenharia Elétrica. Sua área de pesquisa está concentrada em Processamento Inteligente de Sinais, Aprendizado de Máquinas, Reconhecimento de Padrões e Visão Computacional.

Milton Stiilpen Júnior

Mestre em Ciência da Computação, área de atuação Recuperação de Informação e Mineração de Dados, atual CTO Stilingue, que é uma plataforma de social listening e responding desenvolvida para o português Brasil capaz de escutar as conversas online sobre sua marca e mercado, aplicando inteligência artificial no enriquecimento de dados.

Carlos Renato Lisboa Francês

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