Latin America Google Research Awards Recipients

Altigran Soares da Silva, *Universidade Federal do Amazonas (Brazil)*

Proposal: “An Active Learning Approach to Match Networked Schemas”

Using classifiers and active learning, this project develops and evaluates a method to enable the integration of the schemas by establishing which pairs of schema elements have the same semantics.

Anna Helena Reali Costa, Universidade de São Paulo (Brazil)

Proposal: “Improving Deep Reinforcement Learning through Knowledge Transfer”

This project focuses on improving the performance of Deep Reinforcement Learning (DRL) agents with the use of abstractions, generalizations and knowledge transfer (Transfer Learning - TL) in the area of Machine Learning. The ultimate goal is to present a new DRL algorithm that can learn a variety of tasks using knowledge acquired with TL.

Carlos Gershenson, *Universidad Nacional Autónoma de México (Mexico)*

Proposal: “Urban Coordination of Autonomous Vehicles”

The goal is to design and test coordination algorithms for autonomous vehicles at intersections to maximize flow and safety. An open source simulator will be deployed and made available to the public.

Catalina Elizabeth Stern Forgach, *Universidad Nacional Autónoma de México (Mexico)*

Proposal: “Interconnected Dual Biosensor for Type II Diabetes Mellitus”

This project will develop a biosensor that will measure glucose and insulin levels simultaneously in real time, in order to diagnose and monitor type 2 diabetes mellitus, even in stages where there are no obvious symptoms. The data will be stored online via an app universally accessible and useful for construction of a database and further analysis.

Diego de Freitas Aranha, *Universidade Estadual de Campinas (Brazil)*

Proposal: “Machine learning over ciphertexts using homomorphic encryption”

This project will develop and implement homomorphic versions of two algorithms widely used in machine learning that can be evaluated over encrypted data using somewhat homomorphic encryption schemes: Principal Component Analysis (PCA) and KNearest Neighbors (K-NN).

Diego Raphael Amancio*, Universidade de São Paulo (Brazil)*

Proposal: “Word sense disambiguation via topological and dynamical analysis of complex networks”

The problem of interest is word sense disambiguation (WSD), i.e., how to solve ambiguities in texts. For that, the authors use the framework of complex networks to combine structural and semantic contextual information.

Éric Tanter, *Universidad de Chile (Chile)*

Proposal: Gradual Security Typing for the Web

The project will contribute to security type system design, with formal models and proofs, as well as implement extensions to Dart and develop secure versions of existing Web applications written in Dart.

Gustavo Enrique de Almeida Prado Alves Batista, *Universidade de São Paulo (Brazil)*

Proposal: "Controlling Dengue Fever Mosquitoes using Intelligent Sensors and Traps"

Proposes the construction of an inexpensive device that will empower the population with the knowledge of Aedes aegypti (urban mosquito) densities to motivate local mosquito control activities.

Jussara Marques de Almeida, *Universidade Federal de Minas Gerais (Brazil)*

Proposal: "Beyond Relevance: Addressing Novelty, Diversity and Personalization in Tag Recommendation"

With tagging being one of the best ways of associating metadata with media objects on the Web, the main goal is to develop new tag recommendation strategies that tackle all four aspects of the problem: relevance, diversity, novelty and personalization.

Marcos André Gonçalves, *Universidade Federal de Minas Gerais (Brazil)*

Proposal: "Boosting Out-of-Bag Estimators for Learning to Rank"

This project aims at solving the L2R (Learning To Rank) problem by developing an original and novel Random Forest-based algorithm which smoothly combines properties of the bagging with the boosting procedures.

Pablo Arbelaez, *Universidad de Los Andes (Colombia)*

Proposal: "Learning Dynamic Action Units for Three-dimensional Facial Expression Recognition"

This project will develop convolutional neural network architectures for fine-grained localization, RGB-D scene understanding and video analysis to improve human-computer interaction.

Sandra Maria Aluísio, *Universidade de São Paulo (Brazil)*

Proposal: "ANAA-Dementia: Automated neuropsychological assessments for Brazilian citizens during their lifetime"

The objective of this project is to create an automated personal neuropsychological test, accessible via web or from mobile devices, to detect dementias, such as Mild Cognitive Impairment, which is considered a pre-clinical state of Alzheimer's disease in the early stages when it's still reversible.