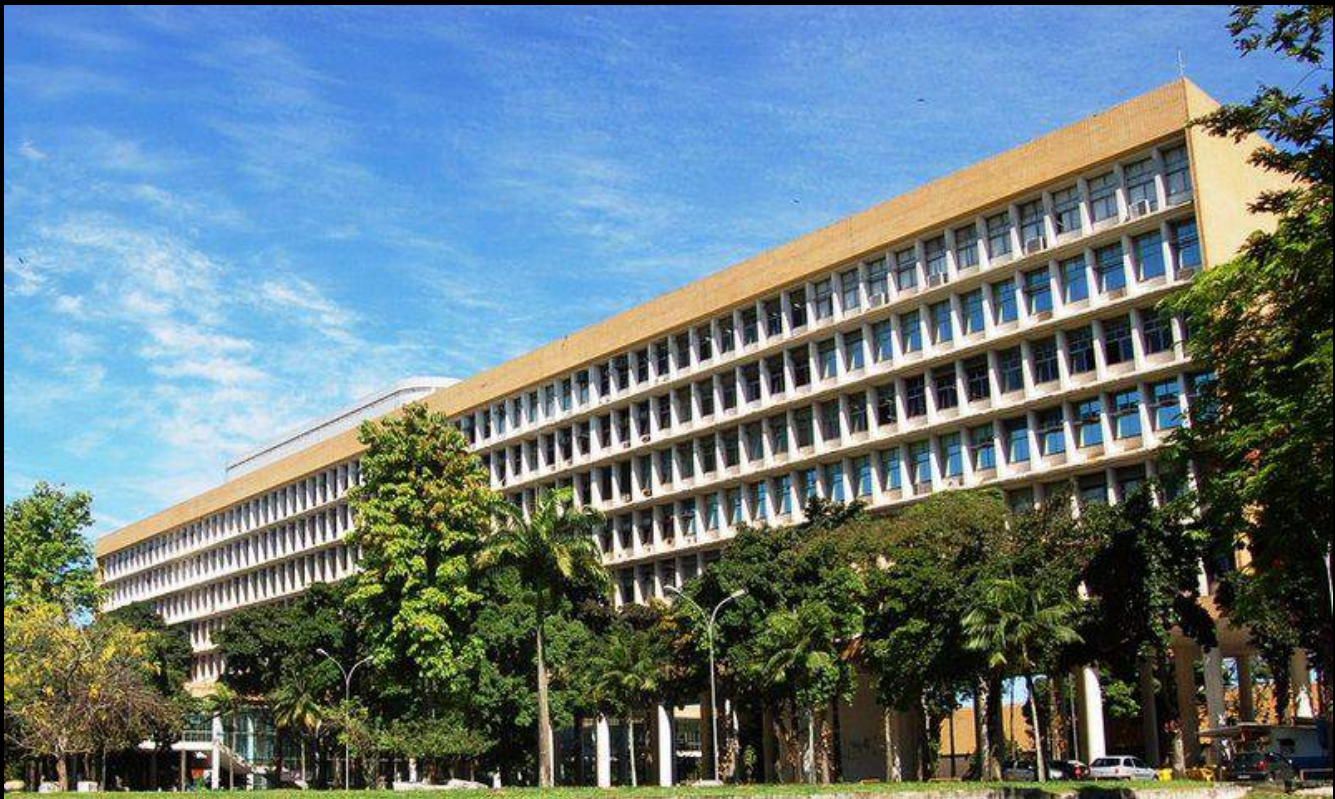




# COPPE UFRJ - FUZZY LOGIC LABORATORY

<http://www.labfuzzy.coppe.ufrj.br>



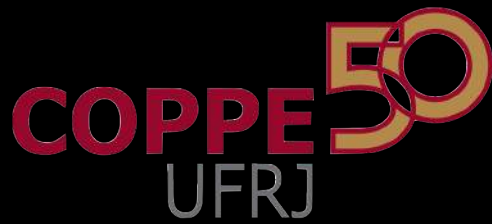


*UFRJ Administrative Centre Building - Oscar Niemeyer Project*



*The Federal University of Rio de Janeiro (UFRJ), also known as University of Brazil, is the largest federal university in the country and constitute one of the Brazilian centers of excellence in teaching and research. In terms of scientific, artistic and cultural production is recognized nationally and internationally, thanks to the performance of researchers and evaluations carried out by external agencies. In 2014 QS World University Rankings put UFRJ as the best Brazilian federal university as well as the third best university in the country, fourth among the institutions of Latin America and the 60th best university of the BRICS and other countries in development. The University Ranking Folha de S. Paulo 2013, by its turn ranked UFRJ as the second best Brazilian university and as the best federal the country.*

*First official institution of higher education in Brazil, UFRJ has uninterrupted in activity since 1792, with the founding of the Royal Artillery, Fortification and Design Academy, which gave birth to the current Politechnical School. As the first federal university created in the country in 1920 served as a model for the others. In addition to the 157 undergraduate and 580 graduate courses, has seven museums - notably the National Museum - nine hospitals, hundreds of laboratories and 43 libraries. Its history and identity are aligned the course of development in Brazil in the quest of building a modern, competitive and socially just country.*



**"50 years anticipating the future"**



COPPE Administrative Centre Building

*COPPE/UFRJ – The Alberto Luiz Coimbra Institute for Graduate Studies and Research in Engineering – helped renew Brazilian universities; thereby contributing to the country's overall development. Founded in 1963 by the engineer Alberto Luiz Coimbra, the institution made it possible to create graduate courses in Brazil. Over the last four decades, it has become the most important centre for engineering research and education in Latin America.*

*The academic output reflects the standard of excellence. About 200 doctoral degrees and 300 master's degrees are awarded annually. COPPE researchers publish about 2,000 scientific papers in national and international journals and conferences every year.*

*According to the latest evaluation by CAPES (the Brazilian Federal Agency for Support and Evaluation of Graduate Courses), in September, 2010, COPPE stood out as Brazil's leading engineering graduate institute with the highest number of courses rated 7, which is equivalent to the performance of the most important and respected research and teaching centres in the world.*





# LABFUZZY WORLDWIDE CONNECTIONS

*The process of internationalization of COPPE UFRJ Fuzzy Logic Laboratory is an initiative that aims to connect our researchers with those of the most important research centers and universities.*

*So, whenever opportunities arise, our researchers seek partnership to develop research, production of articles and publications, interacting and integrating with researchers worldwide, in a collaborative development of knowledge.*

*The search for excellency is what the drive in constructing of important links to achieve better performance and solutions to complex problems in engineering and computer science.*

*Innovative, creative or trivial, wherever there is a challenge to science, we seek to collaborate and develop responses consistent with the scale and energy required.*



*The cable-stayed bridge "The Bridge of Knowledge", built to give research centers in universities access to highways of the city of Rio de Janeiro.*



## FUZZY LOGIC LABORATORY AT COPPE UFRJ



*We are more than 50 researchers from various specialties gathered around one goal: to be a reference in the development of research on Fuzzy Logic.*

*Led by Emeritus Professor Carlos Alberto Nunes Cosenza and Francisco Antonio Moares of Accioli Doria, researchers with diverse specialties are guided in developing research with applications in Fuzzy decision-making, hierarchy analysis, Fuzzy relationships, Fuzzy semantics optimization, offering solution for problems of high complexity.*

*The COPPE COSENZA Model for spatial location of economic activities has been exploited in many applications where supply and demand are collated elements.*



*Carlos Alberto Nunes Cosenza, Ph.D.  
Emeritus at Federal University of Rio de Janeiro  
Coordinator at LABFUZZY COPPE*



*Francisco Antonio de Moraes Accioli Doria, Ph.D.  
Emeritus at Federal University of Rio de Janeiro  
Coordinator at LABFUZZY COPPE*

<http://www.labfuzzy.coppe.ufrj.br>





# MANCHESTER BUSINESS SCHOOL

MANCHESTER  
1824

The University of Manchester  
Manchester Business School



Original Thinking Applied

*Manchester Business School is the largest campus-based business and management school in the UK.*

*Manchester is recognised for its original thinkers: our long and proud history of research excellence continues the spirit of innovation and achievement for which the city is renowned. The School was one of the first two business schools in the UK (both founded in 1965).*

*It provides world-class business and management education to undergraduates, postgraduates, experienced practitioners, and those with career orientated academic and research ambitions.*



# Fuzzy Logic, Modelling and Decision Making

Manchester, 23rd and 24th of April 2015

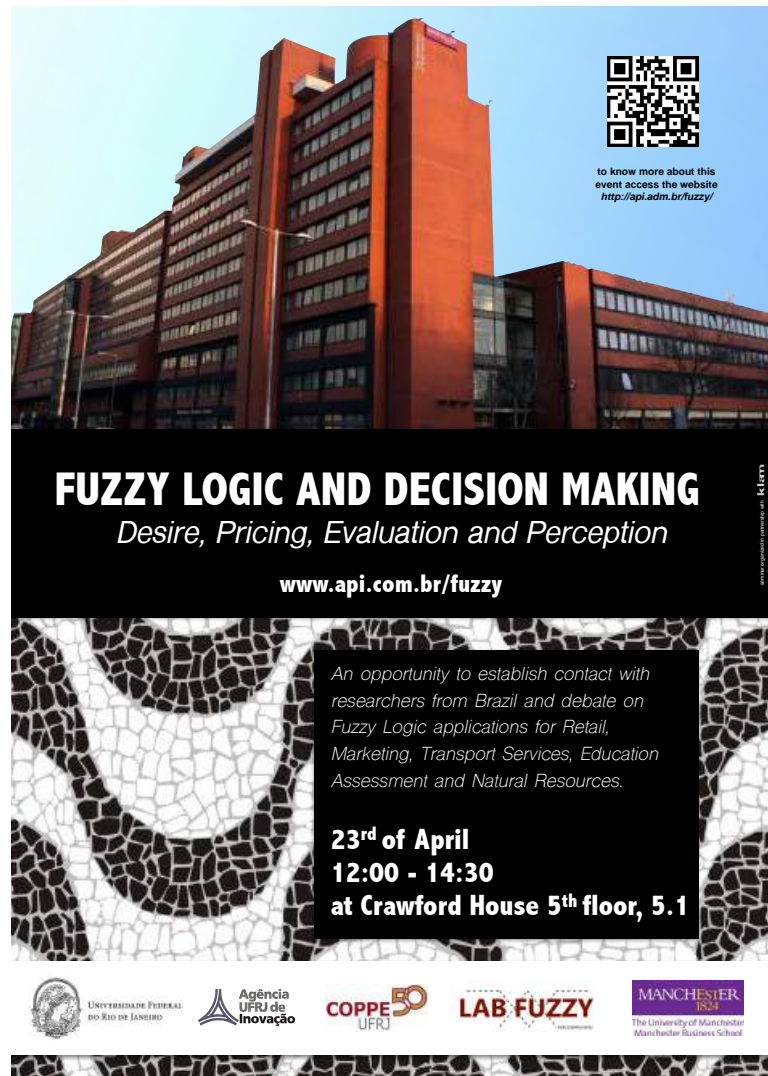
*This project aims at developing collaborative scientific and technological activities, taking into account the mutual interest in promoting scientific, technological and cultural cooperation, in fields of mutual specialisation.*

*The proposal is aligned with University of Manchester Research Strategy:*

*“Target partnerships with institutions in the USA and in BRIC countries to address underutilised opportunities, ensuring coordination with wider internationalisation strategy.”*

*In pursue of this target, a group of six researchers from LABFUZZY COPPE UFRJ have promoted this visit to The University of Manchester within a schedule of meetings aimed at opening opportunities for dialogues between the institutions for the development of research involving fuzzy logic applications.*

*The dialoguing space gives way for creative use of fuzzy logic in solving problems involving economic zoning, price fluctuation, retail, relationship between products, decision making and optimization.*



The poster features a photograph of a large, multi-story brick building with a modern glass extension. In the top right corner, there is a QR code and the text: "to know more about this event access the website <http://api.adm.br/fuzzy/>". The main title "FUZZY LOGIC AND DECISION MAKING" is in large, bold, white letters on a black background, with the subtitle "Desire, Pricing, Evaluation and Perception" below it. The website "www.api.com.br/fuzzy" is also listed. The bottom section of the poster has a mosaic background and contains the text: "An opportunity to establish contact with researchers from Brazil and debate on Fuzzy Logic applications for Retail, Marketing, Transport Services, Education Assessment and Natural Resources." followed by the event details: "23<sup>rd</sup> of April 12:00 - 14:30 at Crawford House 5<sup>th</sup> floor, 5.1". At the bottom, there are logos for the organizing institutions: Universidade Federal do Rio de Janeiro, Agência UFRJ de Inovação, COPPE 50 UFRJ, LAB FUZZY, and The University of Manchester Manchester Business School.



## LABFUZZY VISITORS TEAM



*Antonio Carlos Dias Lima Morim, M.Sc.*

*Is an Associate Researcher to LABFUZZY (Laboratory for Fuzzy Mathematical Modelling) at Production Engineering Program (PEP) of COPPE/UFRJ. Currently a Doctoral Student in Industrial Engineering at Production Engineering Program (PEP) of COPPE/UFRJ. Most recent researches involves pricing modulation strategies based in Fuzzy Logic Application.*



*Fabio Luiz Peres Krykhtine, M.Sc.*

*Fabio Krykhtine is the vice chief and an Associate Researcher to LABFUZZY (Laboratory for Fuzzy Mathematical Modelling) at Production Engineering Program (PEP) of COPPE/UFRJ. Currently a Doctoral Student in Industrial Engineering at Production Engineering Program (PEP) of COPPE/UFRJ. Most recent research works involve the application of fuzzy logics in optimization of fuel consumption in turbofan engines. He is also the inventor of the an "Algorithm for Understanding Customer's Desire".*



*Guilherme Weber Martins, M.Sc.*

*Is an Assistant-Professor in Microeconomics at Federal Rural University of Rio de Janeiro (UFRRJ) and an Associate Researcher to LABFUZZY (Laboratory for Fuzzy Mathematical Modelling) at Production Engineering Program (PEP) of COPPE/UFRJ. Currently a Doctoral Student in Industrial Engineering at Production Engineering Program (PEP) of COPPE/UFRJ. Most recent research works involve the application of fuzzy logics in evaluation, hierarchy processes and valuation of natural resources and ecosystem services.*



*Ilan Chamovitz, D.Sc.*

*Is an Associate Researcher at LABFUZZY (Laboratory for Fuzzy Mathematical Modelling) at Production Engineering Program (PEP), COPPE/UFRJ. Currently a visiting researcher at Manchester Business School. Most recent research works involve the fuzzy logic application in forum messages for students' assessment in distance education collaborative activities.*



*Luís Odair Azevedo Gomes Raymundo, M.Sc.*

*Associate Researcher to LABFUZZY (Laboratory for Fuzzy Mathematical Modelling) and PhD Student in Industrial Engineering at Production Engineering Program at COPPE/UFRJ (Brazil) under Prof Carlos Cosenza supervising. Currently he is developing his research at Loughborough University under Prof David Pitfield supervising. Most of his recent works involve fuzzy logic application for airport performance perception evaluation.*



*Paulo de Oliveira Reis Filho, D.Sc.*

*Paulo Reis holds a Master degree in Industrial Engineering, Master degree in Intellectual Property and a Doctorate degree in Civil Engineering. His most recent work involves Cognitive Maps, Fuzzy Inference Systems and development of new technologies for Data Visualization - where applies his extensive experience in Design Thinking to built interfaces for data capture and presentation of information for decision-making systems. Was leader of project that applied fuzzy logic to measure the impact of educational projects for the Roberto Marinho Foundation. Paulo Reis is a professor in leading business schools in Brazil, including the FGV and ESPM. He also shares his agenda between the UFRJ Innovation Agency and the Fuzzy Logic Lab, where makes important connections with globally renowned technology companies.*



## MBS HOST TEAM



*Dr Ludmil Mikhailov*

*After joining the Decision Technologies Group at the Computation Department, UMIST in January 1997, Ludmil started to investigate new methods for multiple criteria decision-making. He is the author of about 90 technical papers in peer-reviewed journals and international conferences, and holds two patents in the area of systems and control. Ludmil's results in the area of fuzzy decision-making are internationally recognized. He has been serving as a programme committee member of many international conferences and as a reviewer of many journals on decision science. He is also an Associate Editor of the International Journal of Operations Research.*



*Dr Yu-Wang Chen*

*Dr. Chen is lecturer in Decision Sciences. Prior to his current appointment, he was a Postdoctoral Research Associate at the Decision and Cognitive Sciences (DCS) research centre of Manchester Business School, The University of Manchester, and a Postdoctoral Research Fellow at the Department of Computer Science, Hong Kong Baptist University. He received the PhD degree in Control and System Engineering from Shanghai Jiao Tong University in 2008. His research interests are mainly in the areas of Decision and System Sciences, Operational Research and Artificial Intelligence. He is a member of International Society of Multiple Criteria Decision Making, and the Chinese Automation and Computing Society in UK.*



*Dr Babis Theodoulidis*

*Dr Theodoulidis holds the position of Associate Professor at Manchester Business School. He is a member of the editorial board of Information Systems and e-Business Management Journal and previously of the Journal of Database Management. He has published extensively (over 150 refereed journal and conference articles) and his research work (as Principal or Co-Investigator) has received funding of over 4m from UK and European funding bodies over the last 12 years. During this time, he has successfully supervised 20 PhD theses and over 20 MPhil theses. Main research areas: modelling, analysis and management of service systems. In particular, he investigates the design of service-based information systems, the temporal and spatial aspects of information, the analysis of information using data and text mining techniques (service analytics) with focus on customer analytics, the visualisation of information, and service information management issues within organisations such as information retention, audit and ownership. Over the recent years, he has investigated information management issues within financial markets and especially, the role of algorithmic trading and high frequency trading and their implications. He has also investigated information management issues within the context of marketing and especially, customer feedback management.*



*Professor Jian-Bo Yang – Director of the Decision and Cognitive Sciences Research Centre*

*Over the last twenty years, Professor Yang has been conducting research in the areas of multiple criteria decision analysis using both quantitative and qualitative information with uncertainties, hybrid decision methodologies using techniques from both operational research and artificial intelligence, multiple objective optimisation, linear and non-linear programming, intelligent decision support systems, and dynamic system modelling, simulation and control of engineering and management systems. The current application areas cover design decision-making, quality management, risk and safety assessment, supply chain management and environmental management.*



*Professor Nikolay Mehandjiev – Head of the MOMS Division of the Manchester Business School*

*Dr Mehandjiev is a Professor of Enterprise Information Systems at the Centre for Service Research, MBS. He has initiated and managed projects worth €5,5m of which € 2,2m to the University of Manchester. The most recent project in which he participates is SOA4All, a €13.6 mln project involving 17 partners, including SAP, BT and Atos Origin. He is currently involved with the EUD4Services.org initiative, aiming to open the design of software services to non-programmers.*



*Dr Ilias Petrounias – Head of Services Systems Research Group*

*Dr Ilias Petrounias researches business intelligence, with particular interests in data mining and big data analytics and competitive intelligence. The techniques developed are based on either algorithmic or neural network approaches. They have been applied in a variety of domains, including healthcare management, electricity supply prediction and food management. Recent research is concerned with data analytics for social media and data analysis of video images in business environments.*

# ÉCOLE NATIONALE DE L'AVIATION CIVILE



*Entrance porch of ENAC TOULOUSE, referral center for aeronautics research.*



*Felix Antoine Claude Mora Camino, Ph.D.  
Professor at École Nationale de l'Aviation Civile  
Researcher at MAIAA ENAC and LABFUZZY COPPE*

*It was founded in 1949 in Paris-Orly, and moved to Toulouse in 1968. It merged with the SEFA (Service d'Exploitation de la Formation Aéronautique) on January 1, 2011. The « Ecole Nationale de l'Aviation Civile » (ENAC) is a unique example : it is the only aviation-oriented university in France offering a wide and complete panel of aeronautics-oriented training programmes and activities, serving the aeronautical world, and particularly the air transport sector.*





*The research for the development of a decision-making algorithm based on fuzzy logic to optimize fuel consumption of a fleet of aircrafts in air transport operations through dynamic Cost Index adjustment is the theme proposed to be developed in a cooperation research work between the LABFUZZY COPPE and the MAIAA ENAC.*

*The researcher Fabio Krykhtine works supervised by Carlos Alberto Nunes Cosenza (COPPE) and Felix Mora Camino (ENAC) explores algorithms solutions that can provide aircraft fleet managers with information that can lead to millions per year in fuel costs savings.*







LAB FUZZY - LABORATÓRIO DE LÓGICA FUZZY  
PEP/COPPE/UFRJ

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