

Junior Barrera's summary

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Junior Barrera was born in September 8th of 1959 in São Paulo, SP, Brazil. He is the first son of João Barrera Chacon and Helena (Politti) Barrera. His father family is a big Spanish family with several uncles and cousins. His mother family is a small Italian family. He lived the first twenty years of his life in Brás, an old Italian region in the center of São Paulo. He realized his fundamental studies at two public schools: Grupo Escolar Romão Puigari and Colégio Estadual de São Paulo. In 1978, he was admitted as a student at the Polytechnic School of São Paulo State University (USP). His youngness was mainly dedicated to books and sports. In 1980, when he was in the beginning of the fourth year of his studies in Electrical Engineering, he knew Dr. André Fábio Kohn, a young Electronic Engineer that had just come back of his PhD in UCLA on Neuronal Sciences. He worked with Dr. Kohn on simulation of neuronal networks by the next three years. In 1983, their studies on neural networks was chosen by the Brazilian Society for Computer Science (SBC) as one of the best undergraduate researches of the country. The following year he began his master studies on image processing at the National Brazilian Space Research Institute (INPE). In 1985, he was admitted as researcher at the Image Processing Department of INPE. At that time, he began to work in the design of a software for microscopic images analysis that was based on a new theory for image transformations, created by Dr. Georges Matheron and Dr. Jean Serra at the Paris School of Mines and called mathematical morphology. At that time, INPE researchers had been introduced to this new subject by Christian Guichou, an young French Engineer. In 1987, he finished his master studies at INPE advised by Dr. Nelson D. Mascarenhas and Dr. Gerald J. F. Banon. The subject of his master research was applications of mathematical morphology experiments on digital image analysis. In 1988, he began his PhD studies at the Electronics Department of the Polytechnic School of USP (POLI-USP), advised by Dr. Banon. In the first year of his PhD studies, Banon and Barrera developed the general theorem of translation invariant set operator representation by elementary operators of mathematical morphology. This result, that generalizes previous works of Matheron, Maragos and Dougherty, got some notoriety in the following years. In 1989, he went to study in Fontainebleau at the Paris School of Mines with Dr. Jean Serra and Dr. Fernand Meyer. At that time, he had the chance of knowing the most famous morphologists of the world and some brilliant young students like Luc Vincent and Pierre Soille. In Fontainebleau, he began the work on lattice operator decomposition that generalizes classical results on Boolean algebra. In the next year in Brazil, Banon and Barrera closed this work. During all this intellectual effervescence, in 1987, he married with Sylvia, a young psychologist, and in 1988 got his first daughter, Juliana. In 1992, he presented his PhD and leaved INPE to work at the Department of Computer Science of the Institute of Mathematics and Statistics of USP (IME-USP). In the same year, his PhD thesis was chosen as the best thesis produced at POLI-USP in that year. In 1993, he wrote with Banon the book "Bases da morfologia matemática para análise de imagens binárias". In the same year, Sylvia gave him his second son, Rodrigo. At that time, he knew two researchers that had a strong influence in the next steps of his career: Dr. Edward R. Dougherty and Dr. Roberto A. Lotufo. The first meeting with Dougherty was in San Diego, in a SPIE conference. After that, they worked together for about ten years on the basis of a formal theory of non linear filter design based on mathematical morphology operators representation. The first meeting with Lotufo was in São Paulo, in a medical image conference at INCOR. Lotufo and Barrera designed together several image processing software for morphological image processing. Some of these software became very popular as Khoros and MATLAB toolboxes. In 1998 and 2005, he became, respectively, associated professor and full professor of IME-USP. He was one of the founders and the first scientific director of the USP Center for Bioinformatics. He was also one of the founders and, for three times, vice-coordinator of the USP PhD program on Bioinformatics. In 2002, he was jury of two PhD thesis on mathematical morphology at the university of Amsterdam. In 2004, he leaded together with Dr. Hernando del Portillo the Brazilian team that wined the CAMDA 2004 concourse on malaria microarray data analysis, organized by Duke University. Nowadays, he is vice-president of the Brazilian Society of Bioinformatics and Computational Biology; member of EMBRAPA Informatics board director; president of the Scientific Research committee of IME-USP; and editor of the journals: Journal of Electronic Imaging (SPIE) and Patter Recognition (ISPR). At IME-USP, he advised 11 masters and 4 PhD students. In 1996, his first master student, Nina Sumiko Tomita, wined the SBC concourse of master dissertations. During his scientific career, he already published 32 journal papers, 75 conference papers, 6 book chapters, edited 4 journal

special issues, a magazine paper, and 2 international patents. He presented some tens invited international lectures and several others in Brazil. His contributions cover the field of non linear operator design, lattice algebra, automatic theorem proof, image processing and gene expression data analysis. In 2006, he was considered one the 10.000 most cited authors in Computer Science of the world. His hobbies are swimming, rowing, sailing, and poetry.