Rafael Ricardo Rentería Ramos

Profile

My academic and research background has expanded over the course of my professional and academic life, and has taught me to work effectively both individually and in teams. These abilities have aided me in the proposal and implementation of interdisciplinary research projects, which have contributed to social, environmental, and economic growth on local, regional, and national levels. I have a flexible and open attitude toward innovation and am adaptable to the dynamics generated thereby. In addition to these qualities, I am familiar with the technological tools which facilitate the comprehension of the educational and investigative processes required for their use.

Academic background

2017–2018   **Postdoctoral studies in Statistics and Social Physics -** Faculty of Science, *Universidad Nacional de Colombia,* Bogota*, Thesis title: Victims of the internal armed conflict in Colombia and their determinants in public health. Application of statistical, network analysis, and social physics developments.*

Directors: Ph.D Piedad Urdinola and Ph.D Rafael Hurtado Heredia

2011–2015   **Ph.D in Economic Sciences - Specialization in Population Dynamics and Complex Systems,** *Universidad de La Habana*, Havana, *Thesis title: Assessment of the socioeconomical influence of the arrival of persons displaced by the internal armed conflict to the municipality of Santiago de Cali. Based on a hybrid artificial society model with complex agents and networks.*

Director: Dra. Alicia Vitale Alfonso

2002–2005   **B.S. Industrial Engineering**, *Universidad Libertadores*, Bogota, *Integrated SIRC management system design.*

Director: M.S. Edilson Cuartas

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1993–1999   **Technical and industrial degree with a specialization in electronics**, *Instituto Técnico Industrial,* Palmira.

 Complementary training

July–2008   **Higher education skills training**, *Corporación Universitaria Autónoma de Nariño,* Santiago de Cali.

September–2010 **Investigation methodology for Doctors of Science and Political Economy**, *Corporación Universitaria Autónoma de Nariño*, Santiago de Cali.

January–2012   **The social problems of science and technology**, *Universidad de La Habana*, Havana, El Vedado municipality.

 Awards

06–06–2014   **SIAM (Society for Industrial Applied Mathematics) prize winner for contributions to applied mathematics in student category 2013-2014,** *Universidad Nacional de Colombia*, Manizales**.**

08–28–2014   **Distinction of Excellence from the Colombian Air Force, via the Santiago de Cali Military Aviation Academy, for the "Model Application based on Agents and Gis in Population Dynamics",** *Colombian Air Force*, Santiago de Cali.

10–23–2014   **Distinction of Excellence from the Colombian Air Force, via the Santiago de Cali Military Aviation Academy, for the "Application of Information Network Theories to the Study of Crime Variables",** *Colombian Air Force*, Santiago de Cali..

05–29–2016   **Distinction of Excellence from the Colombian Air Force, via the Santiago de Cali Military Aviation Academy, for the "Application of Complex Adaptive Systems in Post-conflict Scenarios",** *Colombian Air Force*, Santiago de Cali.

 Work experience

Teaching- Undergraduate

2008–2014   **Full-time teaecher**, *Fundación Centro Colombiano de Estudios Profesionales, Engineering Faculty, Electronics and Mechatronics programs,* Santiago de Cali.

- Led operations research courses.
- Led elective logistics and production courses.
- Led logistics and production model simulation.
- Led I.T. programming courses which trained students in problem-solving skills via hardware-software interfaces.
- Led electronics courses which taught skills in solution design for automation and improvement of goods and services' production processes.
- Coordinated the research line and robotics - smart systems group, and advised on projects from both programs.
- Coordinated artificial intelligence and digital signal processing electives, which equipped students with cutting-edge digital systems for the digital analysis of various analogue signals.
- Coordinated the telemedicine investigation line and its projects, carried out via tomographies, x-rays, and sonography processing, to develop diagnostic tools to enhance professional assessments.
- Advised in the development of RICS processing systems, micro-processers with software interfaces.

2009–2012 **Professor**, *Corporación Universitaría Autónoma de Nariño*, Engineering Faculty, Electronics and Mechatronics programs, Santiago de Cali.

- Led programming courses on desktop, web, and mobile platforms, in both Java and Visual Studio programming languages.
- Led transmission media and telecommunication network courses.
- Led all electronics courses.
- Coordinated the virtual platform, as well as the advancement of its virtual learning objectives.
- Coordinated the institution's technological dimension.
- Simulated business ability, logistics, and infrastructure processes.

2011 **Professor**, *Universidad Minuto de Dios*, Engineering Faculty, Computer Engineering programs, Santiago de Cali.

- Led programming courses for the development of mobile, web, desktop platforms in the Java programming language.
- Led programming courses which trained students in programming skills for the resolution of problems via hardware-software interfaces.
- Developed applications using the J2SE and J2ME packages.
- Developed distributed applications.

2011–2014 **Professor**, *Universidad de San Buenaventura*, Faculty of Economic and Engineering Sciences, Business Administration, Economics, and Industrial Engineering programs, Santiago de Cali.

o Led courses in the production, servuction, logistics, and operations research areas.
o Developed content and/or skills in the servuction and production areas.
o Offered business consults in the technological park regarding the technical-operational area.
o Offered tutoring on degree projects in the sustainable development, production, logistics, operations, process improvement, quality, entrepreneurship, and optimization areas.
o Offered entrepreneurship consults in the production, transport, and inventory areas to entrepreneurs.
o Developed tools for the productivity improvement using the strategic planning approach.
o Evaluated projects in the technical, operational, and finance areas.

2017–Present **Full-time Professor**, *Universidad Nacional Abierta y A Distancia de Colombia*, School of Basic Sciences and Engineering, Industrial Engineering majors, Bogota.

o Leads supply chain, technology, and knowledge management courses.
o Directs the *Investigación Publicaciones e Investigación* journal.
o Acts as a research professor and director of the hospital logistics and epidemiology areas.
o Coordinates research for Industrial Engineering majors.
o Evaluates research projects.
o Directs research projects in modeling and simulation of management models and complex adaptive systems.
o Director of the professional technical institute

Teaching - Postgraduate

2013–Present **Professor**, *Universidad de San Buenaventura*, Faculty of Economic Science, Specialization in Environmental Economy and Sustainable Development, Santiago de Cali.

o Leads environmental impact assessment courses.
o Tutors degree work in the assessment and sustainable development research line, in which quantitative techniques must be applied.

2014–Present **Professor**, *Universidad de San Buenaventura*, Faculty of Economic Science, Specialization in Strategic Cost Management, Santiago de Cali.

o Leads courses on quantitative methods applied to decision-making.
o Leads courses on theory of constraints for management model development.

2015–2017   **Full-time Professor**, *Universidad Tecnológica de Pereira*, Faculty of Industrial Engineering, Master's program in Operational and Statistical Research, Pereira.

o Coordinated the modeling and simulation research line in: computational sociology, social network analysis, simulation based on agents and system dynamics in the *Análisis Envolvente de Datos* research group.
o Acted as investigative support professor in the industry, social systems, and modeling areas of the Engineering doctoral program.
o Participated in research projects with the *Centro de Innovación y Desarrollo Tecnológico* (CDIT).

2015–Present **Professor**, *Universidad Tecnológica de Pereira*, Faculty of Environmental Science, Doctoral program in Environmental Science, Pereira.

o Leads course in socio-environmental modeling and simulation.
o Applies complex tools to study environmental impacts and create support programs.
o Works with complex adaptive systems.
o Works with modeling and simulation of complex social networks.

2018–Present **Professor**, *Universidad Nacional de Colombia*, Faculty of Sciences, Statistics and Physics, Bogota.

o Leads statistical computation course.
o Leads data mining course.
o Leads social physics course (shared).

2017–Present **Full-time Professor**, *Universidad Nacional Abierta y A Distancia de Colombia*, School of Basic Sciences and Engineering, Master's program in Information Technology Management, Bogota.

+ Big data.

Other professional experience

2006–2008   **Base Engineer**, *Laboratorio Baxter*, Pharmaceutical company, Service and assistance in Bioengineering, Santiago de Cali.

o Worked as a field engineer in the dialysis and hemodialysis field.
o Was responsible for inventory management and control systems based on technical service in Cali.

2009–2013 **General Manager**, *PSI Tecnología*, Private company, emphasis on integral solutions for the productive sector, Pereira.

o Designed productive processes in different areas of the industry, especially in raw material transformation.
o Advised on the design of business logistical processes and in foundations.
o Constructed supply chain, logistical process, capacity, transport, route, and optimization simulations.
o Constructed inventory management system simulations and models.

2015–2018 **Legal Representative**, *Fundación Grupo de Estudios en Desarrollo Sostenible (FUNGEDS),* Non-governmental organization, design, accompaniment, and execution of programs and/or sustainable development policies, Pereira.

o Responsible for legal representation and presidency of the foundation.
o Responsible for the design, analysis, and modeling of the socioeconomic, socio-environmental, and socio-demographic sustainable development problems.

2016–Present **Research leader**, *Fundación Salutia*, Private company, emphasis on data mining, data analysis modeling and simulation, models based on intelligent agents, Pereira.

o Defines data science and data mining architecture, as well as that related to computational architecture for knowledge discovery in the Territorial Health Modeling and Simulation Laboratory in the Risaralda Department, SimuDat.
o Structures methodology and simulation concept, as related to health and demography.
o Constructs multidimensional indices for assessment of social health determinants .
o Creates data mining, machine learning, and complexity models for quantification of health disparities between social groups (especially those which are socioeconomically vulnerable).
o Partially develops models based on agents for departmental demographic component studies (migration).

▬▬▬▬▬▬ Subjects of note

o Servuction and production logistics.
o Operations research.
o Operations management.
o Production management.
o Production and operations administration.

- Metaheuristic models applied to complex systems and optimization.
- System dynamics (linear, non-linear).
- Systematic thought.
- Population dynamic study models (social, economic, environmental).
- Sustainable development model modeling and simulation.
- Decision-making scenario simulation .
- Artificial intelligence (neuron networks, bio-inspired metaheuristics, expert agents, fuzzy logic).
- Artificial societies of computational agents for complex system study.
- Modeling and simulation of complex networks, social network analysis for intervention program creation.
- Data mining.
- Computation and statistical simulation.
- Hazards and emergencies.

Languages

Native language	Spanish	
English	Satisfactory	*Speech: Satisfactory, Writing: Satisfactory, Reading: Good*

I.T. skills

Mathematics:	Matlab, Python, WinQsb	Complexity:	Gephi, Mesa, UCINET
Simulation:	Vensim, NetLogo, AnyLogic	Others:	Latex, Javascript, Php, Jsp,Qgis
Programming:	C++, Java, Assembler	Industry:	Labview

Event participation

03-16-2015 **Social network structures in the migration of those displaced by violence to Santiago de Cali, and in urban conflicts in the city of Pereira,** *III Seminario Internacional de Análisis de Redes Sociales,* *Universidad Nacional***,** Presenter**,** Manizales.

01-22-2014 **The influence of the internal armed concflict on the Colombian soci-economic dynamic: a view from system complexity,** workshop modality Head Presenter**,** *Universidad de La Habana***,** Faculty of Economic Science, Department of Macro-Micro Economics.

01-11-2011 **Measurement of displacement as a result of the armed conflict, via the ant algorithm,** *Tercer congreso Internacional de Desarrollo Económico y Calidad de Vida***,** *Universidad Gran Colombia***,** Presenter**,** Bogota.

Publications

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Articles

o Rafael Rentería, Alicia Vitale. Construction of a complex network for the study of the selection of Santiago de Cali by displaced victims of the armed conflict in Colombia. In: Cuba Investigación Operacional. ISSN: 0257-4306 ed: v.36 fasc.1 p.60 - 69.

o Rafael Rentería, José Adalberto Soto. Design of an artificial society for the study of forced migration owing to the internal armed conflict in southwestern Colombia. Investigación Operacional 39 (2), 206-219.

o R Rentería-Ramos, A Velasco Bonilla, J María Burbano, A M Vitale. Construction of business clusters in the health sector in Santiago de Cali by way of the Multivariate Fuzzy C-Means algorithm. Economía y Desarrollo 158 (2), 129-140

Book chapters

+ Rafael Rentería, Alicia Vitale, Otilia Barrios. Exacerbation of the poverty trap due to the arrival of displaced victims of the Colombian internal armed conflict: approaching poverty, inequality, and violence in Latin America, a broad view. In: México ISBN: 978-607-96434-4-7.

Pending publications

o Rafael Rentería-Ramos, Rafael Hurtado - Heredia, and B.Piedad Urdinola. Morbi-mortality of the Victims of Internal Conflict and Poor Population in the Risaralda Province, Colombia.

o Rafael Rentería-Ramos, Rafael Hurtado - Heredia, and B.Piedad Urdinola. An approximation to health detriments from the well-being and complex network approach .

o Rafael Rentería-Ramos, José Adalberto Soto, Gerard Rafael Rentería-Ramos, Rafael Hurtado - Heredia, and B.Piedad Urdinola. Epidemiological trajectory studies from the science of networks and entropy models.

o Rafael Rentería-Ramos. Hospital logistics management model designs from network theory.

o Rafael Rentería-Ramos,Gerard Olivar, and J David Tabará. Socio-Ecological model for sustainable development based on SEIC and complex networks.

References

- Ph.D Gerard Olivar Tost
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  La Nubia campus
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