CRISOSTOMO ALBERTO BARAJAS-SOLANO

PERSONAL INFORMATION

Date and place of Birth:	Bucaramanga (Colombia), September 24th, 1984
ID Number:	91.534.314, Bucaramanga, Colombia
Profession:	Systems Engineer, Universidad Industrial de Santander (Colombia)
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PROFESSIONAL PROFILE

I am a Systems Engineer, with preparation in applied sciences and research. Specifically in the fields of modeling and simulation of complex physics, physiologic and environmental phenomena.

Also, I have formation in the field of Software Engineering and Development. This covers Web development (ASP .Net – C# -, ASP, Dreamwaver, JavaScript, VBScript) and stand-alone development (Visual Studio C# .Net, Visual Studio C++ 6.0); graphical design and development using Adobe Flash and Corel Draw.

My bachelor formation includes knowledge in the areas of:

- Solving problems using Systemic Thinking and Mathematical Modeling.
- Modeling and simulation of physics, physiological and environmental phenomena.
- Artificial Intelligence and non-conventional reasoning: expert and predictive systems, fuzzy logic, genetic algorithms.
- Analysis, design and development of solutions based on information systems.
- Analysis, design and development of solutions based on client interfaces.
- Web development: HTML, ASP, vbScript, JavaScript. Plataforms used: Dreamweaver, Visual Studio .NET.
- Office automation and Windows / Linux tools.

Bachelor Project: DEVELOPMENT OF A SIMULATION AND PROJECTION MODEL OF THE PHENOL BIOTRANSFORMATION PHENOMENA PRESENT IN INDUSTRIAL WASTEWATERS TO IDENTIFY OPPORTUNITIES OF IMPROVEMENT IN THE PHENOL REMOTION PROCESS IN ECOPETROL REFINERY (BARRANCABERMEJA CITY)

Project realized within the UIS-ICP agreement, under the direction of Dr. Nubia Ramirez (ICP) and Dr. Rodrigo Torres (UIS).

Platforms used: MatLab 6.5 (script editor), Visual Studio C# .NET 2003 (Windows app)

PERSONAL PROFILE

I am a person with capabilities for individual and group work, aware of my own limitations and the need of work group for solving those limitations.

I am a full supporter of modeling and it is clear to me that modeling and simulation are my chosen areas of expertise and professional development. I have ease at learning new technologies, methodologies and work tools, so as scientific paradigms of the field where I perform.

I consider myself able to answer under pressure, and if needed, to assume leadership in the moment of taking decisions. I have personal skills for music, informal literature, graphic design (2D and 3D) and sports.

EDUCATION

Grad School	Universidad Industrial de Santander Maestría en Ingeniería de Sistemas 2015 – to date Universitat de Girona Instituto de Informática y Automatización, IIA 2008 – 2012 (unfinished)
Undergrad Degree	Universidad Industrial de Santander. Facultad de Ingenierías Físico - Mecánicas. Escuela de Ingeniería de Sistemas 2000 - 2007 **Systems Engineer**
High School	Instituto Tecnológico Salesiano Eloy Valenzuela Bucaramanga 1.995 – 1.999 **Technical-Industrial Bachelor in Electricity and Electronics**
Elementary School	Colegio Juan Pablo II Piedecuesta 1989 - 1994

LANGUAGES

- Spanish (Native Language)
- English (Writting, reading and oral fluidity, high level). American-Colombo Center, Bucaramanga.
- French (Writting, reading and oral fluidity, mid-level) French-Colombian Alliances, Bucaramanga.
- Catalan (Writting, reading and oral fluidity, mid-level) Residence in Catalunya, 4 years.

INTERESTS AREAS AND SKILLS

- Modeling and simulation of dynamic systems (Matlab)
- Development of interactive applications and graphical design (Adobe Flash, CorelDRAW Graphics, Autodesk 3Ds Max, Swift 3D)
- Web development (Microsoft ASP .Net)
- Informatic solutions development (Microsoft .NET)
- Data bases
- Teaching of basic and applied sciences

- Office automation tools

OWN DEVELOPMENTS

- *MULTI RESOLUTION AND MULTI OBJECTIVE GLOBAL FITTING ROUTINE (TORO)*

  Many real-life phenomena can be represented using differential equation systems. However, these systems are ruled by a set of parameters that needs to be fitted in order to represent correctly a set of experimental data. The fitting routine realizes a staggered search of the parameter space, thus avoiding an immense number of unnecessary evaluations, like in the case of deep-search algorithms.

  In addition, this routine follows a deterministic approach, and always offers a *best* fitting solution. Almost any ordinary differential equation systems can be implemented within the routine without any need of parameter reduction or variable constraints.

  The fitting routine is written in Visual C# .NET, with a full user-friendly interface for intake/output, and multi-processor capabilities for ease of use.

- *SUPPORT AND DATA PROCESSING SUITE FOR ECO-ILI LINE INSPECTION TOOLS, ECOPETROL S.A.*

  The Line Inspection Tools ECO-ILI were developed at ICP (ECOPETROL) with the main objective of identifying and locationg events that might compromise the physical integrity of ECOPETROL's pipelines. In order to accomplish this objective a software suite was developed in parallel. This suite analyzes and processes the data captured by the ECO-ILI devices. This data includes geometric information, temperature, pressure, illegal valves and inertial position.

  ECO-ILI suite was developed in Visual C# .NET with a full graphic user interface, modular and re-scalable.

PUBLICATIONS

- *C. A. BARAJAS, S. L. HERNÁNDEZ, G. J. M. RINCÓN, J. A. SILVA, A. F.VILLAMIZAR*. **IDENTIFICACIÓN ANTROPOMÉTRICA CON BASE EN FOTOGRAFÍAS DIGITALES FACIALES**. Conexxion EISI, Edicion 05, 2005.

- *M.A. MARTÍNEZ, C. BARAJAS, A. MENDOZA, C. BLANCO, C. ORTIZ-LÓPEZ, N.MARTÍNEZ, M.P. DÍAZ AND R. TORRES SÁEZ*. **KINETIC MODELLING AND DYNAMIC SIMULATION OF PHENOL BIODEGRADATION OF PETROLEUM REFINERY EFFLUENTS IN COLOMBIA**. Journal of Biotechnology, Volume 131, Issue 2, Supplement 1, September 2007, Page S159.

- *M.A. MARTÍNEZ, C. BARAJAS.* **NUESTRA EXPERIENCIA EN SIMULACION AMBIENTAL**. Revista ASEDUIS Bucaramanga, Edición 2, Pag 60-61.Mayo 2008.

CONGRESS AND EVENTS

- *M.A. MARTÍNEZ, C. BARAJAS*. **ESCUELA INTERNACIONAL CIMPA-UNESCOREALMA** "**MATEMÁTICAS PARA EL MODELAMIENTO Y LA SIMULACIÓN**". Junio 12 – 22, 2007.

Oral Presentation: **DESARROLLO DE UN MODELO DE SIMULACIÓN Y PROYECCIÓN DEL PROCESO DE BIOTRANSFORMACIÓN DE FENOL EN AGUAS RESIDUALES INDUSTRIALES QUE PERMITA IDENTIFICAR OPORTUNIDADES DE MEJORAMIENTO EN EL BIOPROCESO DE REMOCIÓN DE FENOL DE LA REFINERÍA DE BARRANCABERMEJA.**

- *C. BARAJAS.* **WORKSHOP ON CONTROL, DYNAMICS, MONITORING AND APPLICATIONS 2011**. Febrero 7 – 9, 2011. Oral Presentation: **CRITICAL REVIEW ON ABSORPTION MODELS FOR MIXED MEALS**.

- *C. BARAJAS-SOLANO, R. CALM, P. HERRERO, J. BONDIA, J. VEHÍ.* **ADVANCED TECHNOLOGIES & TREATMENTS FOR DIABETES.** Poster: **A REVIEW OF ABSORPTION MODELS FOR MIXED MEALS**. Barcelona, 2012.

AWARDS AND DISTINCTIONS

- Laureated Undergrad Project:
  DEVELOPMENT OF A SIMULATION AND PROJECTION MODEL OF THE PHENOL BIOTRANSFORMATION PHENOMENA PRESENT IN INDUSTRIAL WASTEWATERS TO IDENTIFY OPPORTUNITIES OF IMPROVEMENT IN THE PHENOL REMOTION PROCESS IN ECOPETROL REFINERY (BARRANCABERMEJA CITY). 2008

- Eloy Valenzuela Award, UIS
  M. A. MARTINEZ, C. A. BARAJAS. **PLANTEAMIENTO Y DESARROLLO DE UN MODELO MATEMATICO DEL PROCESO DE BIOTRANSFORMACION DE FENOL EN AGUAS RESIDUALES INDUSTRIALES DE REFINERIAS DE PETROLEO**. 2008

LABORAL EXPERIENCE

Company	**UNION TEMPORAL NATFRAC-DTH MA 5216603, ACTA 58 ICP, ECOPETROL**
	SUPPORT TO KNOWLEDGE TRANSFER ACTIVITIES IN IOS TECHNOLOGIES AND SOFTWARE TOOL FOR IOS TECHNOLOGIES SELECTION, ECO-IOS
	Systems Engineer, Consultant
	Leader ICP, Gabriel Cáceres.
	Coordinator UT, Neira Rosero
	Piedecuesta, Santander, Colombia
	June 03rd, 2015 – August 31st, 2015

Company	**UNION TEMPORAL NATFRAC-DTH MA 5216603, ACTA 2 ICP, ECOPETROL**
	VERIFICATION OF IN-SITU TESTS OF ECO-HH TECHNOLOGIES, DEVELOPMENT OF SUPPORT SUITE ECO-ILI, LABORATORY TESTS REPORT AND PROCESSING OF FIELD TESTS FOR THE CALIBRATION OF THE ECO-ILI DEVICES AND INSPECTION OF THE PIPELINE GALAN – CHIMITA, ECOPETROL S.A.
	Systems Engineer, Consultant
	Leader ICP, Edgar Patiño.

Coordinator UT, Arcesio Bello
Piedecuesta, Santander, Colombia
September 22nd, 2014– January 30th, 2015

Company	**COOPERATIVA DE TRABAJADORES PROFESIONALES, CTP LTDA CONTRATO MA-0012516, ACTA 105. ICP, ECOPETROL** VERIFICATION OF IN-SITU TESTS OF ECO-HH TECHNOLOGIES, DEVELOPMENT OF SUPPORT SUITE ECO-ILI, LABORATORY TESTS REPORT AND PROCESSING OF FIELD TESTS FOR THE CALIBRATION OF THE ECO-ILI DEVICES Systems Engineer, Consultant Leader ICP, Edgar Patiño. Coordinator CTP, Erika Guzman Piedecuesta, Santander, Colombia September 13rd – December 14th, 2013 April 1st – June 27th, 2014
Company	**EPSILON GROUP – MICELab AGREEMENT** SAAM II beta-tester Coordinator: Gail Kongable, Josep Vehi Casellas Girona
Company	**UNIVERSIDAD INDUSTRIAL DE SANTANDER** Full time researcher UIS – ICP agreement Agreement coordinator: Rodrigo Torres Saez Bucaramanga
Company	**UNIVERSIDAD INDUSTRIAL DE SANTANDER** General Secretariat, administrative axuliar Dra. Lilia Amanda Patiño de Cruz Bucaramanga
Company	**UNIVERSIDAD INDUSTRIAL DE SANTANDER** Teacher Assistant Dr. Jorge Herrera Castillo Bucaramanga
Company	**JORGE LUIS GROSSO** Teaching assistance applications development Chemical Engineering School, UIS Bucaramanga
Company	**VARIOUS DEVELOPMENTS** Adobe Flash Adobe DreamWeaver Microsoft Visual C++ .Net 2010 Microsoft Visual C# .Net 2010

REFERENCES

Dr. SERGIO FERNANDO CASTILLO CASTELBLANCO
Titular Professor, System Engineering School
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Bucaramanga, Santander, Colombia

Dr. JORGE HERRERA CASTILLO
Retired Professor, System Engineering School

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Dr. ALFONSO MENDOZA
Titular Professor, System Engineering School
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