

CURRICULUM VITAE

PERSONAL INFORMATION:

Felipe Humberto Contreras Alcala
Posgrado en Ciencias de la Complejidad
Universidad Autonoma de la Ciudad de Mexico
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E-mail: Felipe.Contreras@uacm.edu.mx / Hobber.Mallow@gmail.com
Birth: July 2, 1970
Languages: Spanish, English
Citizenship: Mexican

ACADEMIC DEGREES:

Ph.D. [Computer Science] University of Ottawa (UofO), Canada. Dec. 2002. Thesis: *A Uniform Randomized Routing Algorithm*. Supervisor: Jorge Urrutia (1998 – 2002).

Master of Science [Computer Science] UofO, Canada, Sep. 1998. Thesis: *Cutting polygons and a problem on illumination of stages*. Supervisor: Jorge Urrutia (1996 – 1998)

Bachelor of Science [Mathematics] Universidad Autonoma de Yucatan (Yucatan Autonomous University, UADY) Mexico, 1993. Thesis: *Invitacion a la Geometria computacional*. Supervisor: Jose Antonio Gomez Ortega. (1987 – 1991)

WORK EXPERIENCE:

- Academics and committees

Full time professor

Universidad Autonoma de la Ciudad de Mexico (Mexico City Autonomous University, UACM), Complexity Sciences Masters program, formerly Non Linear Dynamics and Complex Systems Masters program Aug. 2002 to date. (coordinator of the program

from Oct. 2011 to date). Courses: Complex Systems, Research and Thesis seminars, Complexity workshop and diverse computer programming and mathematics courses.

Informatics and telecom

UACM, Chief information officer for the University, managing 21 people and \$6.5M US budget (2007 – 2008). Committee member for informatics and telecom, (UACM) 2006 – 2008

Lecturer

Universidad Nacional Autonoma de Mexico (National Autonomous University of Mexico, UNAM), Direccion General de Servicios de Computo Academico (Academic Computing Services Department, DGSCA), *C programming language*, *Java programming language*, *Introduction to the Unix operating system*, *Programming techniques*, *Introduction to Internet*, *Unix system administration* (DGSCA, certified Jul. 2001), (Jul. 2001 – Dec. 2001)

UNAM, Science Faculty, *Programming 2: Data structures* (Jan. 2001 – Jun. 2001), *Programming 1* (Jun. 2001 – Oct. 2001), *Algorithms Analysis* (Jun. 2001 – Oct. 2001)

Teaching assistant

UofO, CSI3150, *Computational Methods for Numerical Problems*, (5/97 - 8/97), CSI2115, *Concepts in Programming Languages*, (9/97 – 12/97, 9/99 – 12/99), CSI1303, *Introduction to Computing Concepts*, (9/98 – 12/98), CSI1390, *Introduction to Computers*, (1/99 – 4/99), CSI2172, *C++ Concepts Laboratory*, (5/99 – 8/99, 1/00 – 4/00)

UNAM, Science Faculty, *Analytic Geometry*, *Support to the computing facilities* (1992 – 1996)

• Technician

Full time technician “C”

UNAM, DGSCA

- Sysadmin consulting for SGI/Sun systems to UNAM academic units.
- Visualization techniques consulting for the Visualization Laboratory and Supercomputing.

- Founder and main developer of the 3D Reconstruction group at the Visualization Laboratory.

(1992 – 1996)

Full time technician “B”

UNAM, Science Faculty

- In charge of the computing facilities for professors of the mathematics department
- Systems consulting for the mathematics department

Full time academic technician

UADY, Mathematics department

- In charge of the computing facilities for students
- Systems administrator

(1990 – 1992)

- Consulting

- Physics Institute, UNAM. Implementing the computer systems database. (Jun. 2002 – Jul. 2002)
- CADS, Colegio de Bachilleres. Unix systems and network administration. (Jun. 2002 – Jul. 2002)

GRANTS:

- **UACM-ICyT, PI-2010-4** Trafico en grandes ciudades, Algorithms, Research project sponsored by Mexico City Science and Technology agency (2011)
- **UACM-ICyT, PI-2010-56R** Trafico en grandes ciudades, Computer simulations, Research project sponsored by Mexico City Science and Technology agency (2013)

RESEARCH INTERESTS:

- **Complexity Theory** Network analysis, big cities traffic and pattern formation.
- **Computational Geometry** Cuts on geometric objects, point location, etc.

- **Routing algorithms** On-line routing using geometric information and randomized techniques.
- **Computer graphics** Illumination models, 3D reconstruction, image recognition.
- **Distributed and parallel computing**
- **Geometry, Combinatorics and Graph theory**
- **Security in networks and systems, Cryptography**

SCHOLARSHIPS AND AWARDS:

- **Best candidate to the Ph.D. program award** UofO, Canada (1998)
- **CONACyT scholarship** for studies abroad, Mexico 110147 (1996 – 2001)
- **UNAM-Cray scholarship**, DGSCA (1994)
- **Academic exchange scholarship** UNAM, (1992 – 1993)

CO-ORGANIZER OF THE FOLLOWING CONFERENCES:

- **National Conference on Free Software 2008** at UACM.
- **Latinamerican festival on free software installing FLISOL 2008-2014** at UACM
- **Coloquio de teoría de las gráficas, combinatoria y sus aplicaciones** (2001 – 2002)
- **Seminar: Charlas sobre Mathematica** (1994)
- **Seminar: Visualización** (1994)

THESIS DIRECTOR:

- Claudia Margarita Duran Sanchez, *Trafico en grandes ciudades*, Masters in Non linear dynamics and Complex systems thesis UACM, to be submitted.

- Oscar Valdes Ambrosio, *Modelacion de problemas para trafico vehicular en la Ciudad de Mexico*, Masters in Complexity Sciences, thesis UACM, to be submitted.
- Salvador Bermudez, *Cristales, moleculas: estructura y complejidad*, Masters in Complexity Sciences, thesis UACM, August 2014.
- Josiane Rodriguez, *Estudio de los efectos de perturbaciones a la estabilidad cultural en humanos mediante un modelo basado en agentes*, Masters in Complexity Sciences, thesis UACM, August 2014.

THESIS EXAMINER:

- Sergio Lopez Vazquez, *Estructuras jerarquizadas en grupos de trabajo colaborativo; un analisis utilizando Modelacion Basada en Agentes*, Masters in Non linear dynamics and Complex systems, thesis UACM, September 2014.
- Hernan Gonzalez Aguilar, *Teoria de Convexidad en Espacios Lineales. Una Introduccion*, Bachelor thesis in Mathematics, UADY, May 1997.
- Dulce Maria Rosas Diaz, *Algoritmos de subastas para algunos problemas de redes*, Actuary thesis, UNAM, Mar. 1996.

PUBLICATIONS:

1. Felipe Contreras. *A uniform randomized routing algorithm*. Ph.D. thesis. Submitted May 2002.
2. F. Contreras, C. Zamora, J. Urrutia. *Randomized routing algorithms*. In preparation.
3. F. Contreras, C. Zamora, Jorge Urrutia. *A note on the stability of link loads for randomized routing algorithms*. In preparation.
4. Felipe Contreras, Jurek Czyzowicz, Eduardo Rivera-Campo, Jorge Urrutia. *Optimal Floodlight Illumination of Stages, a video*. In Proceedings of the 14th ACM Symposium on Computational Geometry, Minneapolis MN, USA. Jun 1998.

5. Felipe Contreras, Jurek Czyzowicz, Nicolas Fraiji, Jorge Urrutia. *Illuminating Triangles and Quadrilaterals with Vertex Floodlights*. In Proceedings of the 10th Canadian Conference in Computational Geometry, Montreal PQ, Canada. Aug 1998.
6. J. Czyzowicz, F. Contreras-Alcala, J. Urrutia. *On measuring areas of polygons*. In Proceedings of the 10th Canadian Conference in Computational Geometry, Montreal PQ, Canada. Aug 1998.
7. Felipe Contreras. *Cutting polygons and a problem on illumination of stages*. Master Thesis. University of Ottawa. Ottawa ON, Canada. Sep. 1998. <http://www.site.uottawa.ca/~fhca/thesis>

CITATIONS:

Publication [5]

- Ismailescu, D. (2008). *Illuminating a convex polygon with vertex lights*. Periodica Mathematica Hungarica, 57(2), 177 – 184.

Publication [6]

- John Iacono, Stefan Langerman. *Volume Queries in Polyhedra*, Japanese Conference on Discrete and Computational Geometry, Nov. 2000, LNCS-2098 pag. 156 – 159.
- R. Boland and J. Urrutia. *Polygon Area Problems*, Proc. of the 12th Canadian Conf. on Computational Geometry, Fredericton, NB, Canada, 2000.
- Braß, P., Heinrich-Litan, L., & Morin, P. (2003). *Computing the center of area of a convex polygon*. International Journal of Computational Geometry & Applications, 13(05), 439 – 445.
- Abbott, T. G., Demaine, E. D., Demaine, M. L., Kane, D. M., Langerman, S., Nelson, J., & Yeung, V. (2005). *Dynamic Ham-Sandwich Cuts of Convex Polygons in the Plane*. In CCCG (pp. 61 – 64).
- Iacono, J., & Langerman, S. (2001). *Volume queries in polyhedra*. In Discrete and Computational Geometry (pp. 156-159). Springer Berlin Heidelberg.

- Abbott, T. G., Burr, M. A., Chan, T. M., Demaine, E. D., Demaine, M. L., Hugg, J., ... & Yeung, V. (2009). *Dynamic ham-sandwich cuts in the plane*. Computational geometry, 42(5), 419 – 428.
- Antunez, R. R., & Montero, L. H. (2012). *Análisis geométricos en SIG basada en un algoritmo genérico independiente del sistema de referencia*. Revista Cubana de Ciencias Informáticas, 5(3).

Publication [7]

- John Iacono, Stefan Langerman. *Volume Queries in Polyhedra*, Japanese Conference on Discrete and Computational Geometry, Nov. 2000, LNCS-2098 pag. 156 – 159.
- Stefan Langerman. *On the complexity of Halfspace Area Queries*, Proceedings of the 2001 ACM Symposium on Computational Geometry.
- R. Boland and J. Urrutia. *Polygon Area Problems*, Proc. of the 12th Canadian Conf. on Computational Geometry, Fredericton, NB, Canada, 2000.
- Antunez, R. R., & Montero, L. H. (2012). *Análisis geométricos en SIG basada en un algoritmo genérico independiente del sistema de referencia*. Revista Cubana de Ciencias Informáticas, 5(3).

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