

THE UNIVERSITY OF TEXAS
Cockrell School of Engineering

FULL NAME: Carlos Henrique Siqueira Caldas **TITLE:** Assistant Professor
DEPARTMENT: Civil, Architectural, and Environmental Engineering
EID: caldasch

EDUCATION:

Universidade Federal do Ceará	Civil Engineering	B.S.	1988 – Spring
Universidade Federal Fluminense	Civil Engineering	M.S.	1990 – Fall
University of Illinois Urbana-Champaign	Civil Engineering	Ph.D.	2003 – Fall

PROFESSIONAL REGISTRATION: Brazil no. 8842-D

CURRENT AND PREVIOUS ACADEMIC POSITIONS:

Universidade Federal do Ceará	Lecturer	Spring 1995 – Fall 1998
The University of Texas at Austin	Research Fellow	Fall 2003 – Summer 2004
The University of Texas at Austin	Assistant Professor	Fall 2004 – Present

OTHER PROFESSIONAL EXPERIENCE:

Frota Caldas Engineering and Construction	Project Manager	1988 – 1998
Expert Engineering and Planning	PM/Consultant	1991 – 1993
AGC – State of Ceará Chapter	Technical Director	1995 – 1995
The British Council	Visiting Scholar	1995

CONSULTING:

McCombs School Business Foundation, Shell Project Academy	Jan 2006 – Dec 2007
JMJ Associates	Aug 2007 – Mar 2008
Universidade Federal Fluminense, Petrobras	May 2008 – Present

HONORS AND AWARDS:

The Sandow Steam Electric Station Unit 5 RFID Trial received the FIATECH 2007 CETI Award in the Intelligent and Automated Construction Job Site category. This field trial was part of the CII RT240 Leveraging Technology to Improve Construction Productivity research study. Dr. Caldas is a PI on CII RT240. The main algorithms and computer systems used to track construction materials in this field trial were developed by Dr. Caldas' research group at the UT Field System and Construction Automation Laboratory (FSCAL). The field trials were conducted primarily by two of Dr. Caldas' graduate students (i.e. David Grau Torrent and Jie Gong) in a power-plant project in Rockdale, TX. The award was presented to Bechtel, the industry collaborator that hosted the trials.

University of Illinois at Urbana-Champaign: Fellowship – Computational Science and Engineering Program, 2001

Phi Kappa Phi Honor Society, 2001

Universidade Federal Fluminense, Brazil: Fellowship – Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq, 1989

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:

American Society of Civil Engineering – ASCE, USA – Associate Member

UNIVERSITY COMMITTEE ASSIGNMENTS:

Departmental	Member, Graduate Curricula and Policies Committee	2007 – present
	Member, Graduate Fellowships, Financial Aid, and Recruiting Committee	2005 – present
	Graduate Recruiting Coordinator - CAEE CEPM Area	2005 – present
	Member, CAEE Faculty Search Committee	2006 – 2007
	Member, CEPM Faculty Search Committee	2005 – 2006
	Member, CEPM Faculty Search Committee	2004 – 2005
	Member, Distinguished Lecture Series Committee	2004 – 2006
	Member, CE & ARE Curriculum Committee	2004 – 2005
	Member, Information Technology Committee	2003 – 2004
School	Member, Equal Opportunity in Engineering Committee	2004 – 2005

PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES:

International Association for Automation and Robotics in Construction, Board
Member since 2008

American Society of Civil Engineers, Construction Research Council
Member since 2003

American Society of Civil Engineers, TCCIT Database and Information Management (DIM) Committee
Member since 2003; Secretary (2003-2005); Chair Elect (2005-2007); Past Chair (2007-Present)

American Society of Civil Engineers, TCCIT Intelligent Computing Committee
Member since 2003

Construction Industry Institute, Academic Committee
Member since 2006

Texas Department of Transportation, RMC 3 Right-of-Way, Technical Advisory Panel
Member since 2006

PROFESSIONAL ACTIVITIES:***Journal editor:******Automation in Construction***

Member of the Editorial Board since 2007

ASCE Journal of Construction Engineering and Management

Assistant Specialty Editor (2004-2007); Specialty Editor (2007 - Present)

Proposal review panels:**National Science Foundation**

Civil and Mechanical Systems, Information Technology and Infrastructure Systems (06/2006)

Manuscript reviews:

Journals: ASCE Journal of Construction Engineering and Management, ASCE Journal of Infrastructure Systems, ASCE Journal of Management in Engineering, ASCE Journal of Computing in Civil Engineering, Automation in Construction, Journal of Advanced Engineering Informatics, and Computer-Aided Civil and Infrastructure Engineering.

Conferences: ICCCBE-X in Germany (2004), IGLC12 in Denmark (2004), CRC in San Diego, CA (2005), ICC in Cancun, Mexico (2005), ICCCBE-XI in Canada (2006), 13th IG-ICE in Switzerland (2006), IGLC14 in Chile (2006), CRC in Bahamas (2007), and ASCE IT in CE in Pittsburgh (2007), ISARC in Austin (2009), ASCE IT in CE in Austin (2009).

Conference committees:

2009 ASCE International Workshop on Computing in Civil Engineering, Austin, TX
Co-Organizer and future Co-Chair

2009 International Symposium on Automation and Robotics in Construction, Austin, TX
Co-Organizer and future Co-Chair

2009 Annual Workshop of the European Group for Intelligent Computing (EG-ICE), Berlin, Germany
Scientific Committee

2009 TIC - IV Encontro de Tecnologia de Informação e Comunicação na Construção, Rio de Janeiro, Brazil
Scientific Committee

2008 European Group for Intelligent Computing in Engineering 2008 Conference, Plymouth, UK
Scientific Committee

2008 International Symposium on Automation and Robotics in Construction, Vilnius, Lithuania
International Programme Committee

CIB W102 3rd International Conference on Information & Knowledge Management, Stuttgart, Germany
Member of the Scientific Committee

2007 ASCE International Workshop on Computing in Civil Engineering, Pittsburgh, PA, 2007
Member of the Technical Committee

2005 Construction Research Congress, San Diego, CA, 2005
Coordinator and Co-Chair, Information Technology Track

COURSES TAUGHT:

Semester Courses – The University of Texas at Austin

- Project Management and Economics
- Project Information Management Systems
- Artificial Intelligence for Construction Engineering and Project Management
- Data Mining
- Materials and Methods of Building Construction

Short Courses:

- Construction Industry Institute Project Management Course II -- Project Construction & Startup, UT Center for Lifelong Engineering Education, October 2008, Austin, TX.
- Construction Industry Institute Project Management Course I -- Planning & Design, UT Center for Lifelong Engineering Education, October 2008, Austin, TX.
- Construction Industry Institute Project Management Course II -- Project Construction & Startup, UT Center for Lifelong Engineering Education, July 2008, Austin, TX.
- Construction Industry Institute Project Management Course I -- Planning & Design, UT Center for Lifelong Engineering Education, July 2008, Austin, TX.
- Construction Industry Institute Project Management Course II -- Project Construction & Startup, UT Center for Lifelong Engineering Education, April 2008, Austin, TX.
- Construction Industry Institute Project Management Course I -- Planning & Design, UT Center for Lifelong Engineering Education, April 2008, Austin, TX.
- Construction Industry Institute Project Management Course II -- Project Construction & Startup, UT Center for Lifelong Engineering Education, October 2007, Austin, TX.
- Construction Industry Institute Project Management Course I -- Planning & Design, UT Center for Lifelong Engineering Education, October 2007, Austin, TX.
- PA200 Advanced Project Management, Shell Project Academy, November, 2006, Houston, TX.
- PA200 Advanced Project Management, Shell Project Academy, June, 2006, Kuala Lumpur, Malaysia.

COMMUNITY ACTIVITIES :

Leader, St. Thomas More Parish Families of Faith Ministry	2007 – present
ACE Mentor Program	2006
DestiNation Imagination	2004 – present

PUBLICATIONS:

A. Refereed Archival Journal Publications (* designates graduate student advisee)

*Grau Torrent, D. and Caldas, C. H. “A Methodology for Automating the Identification and Localization of Construction Components on Industrial Projects.” *ASCE Journal of Computing in Civil Engineering*, accepted on 02/05/08, tentative publication date of January 2009.

Caldas, C. H., *Chou, C., and O'Connor, J. T. “Negotiation-Based Decision Support Model for Utility Relocations in Transportation Infrastructure Projects.” *Construction Management and Economics*, accepted on 07/07/08, tentative publication date of February 2009.

*Chi, S., Caldas, C. H., and Kim, D. Y. “A Methodology for Object Identification and Tracking in Construction based on Spatial Modeling and Image Matching Techniques.” *Computer-Aided Civil and Infrastructure Engineering*, accepted on 04/03/08, tentative publication date of April 2009.

- Caldas, C. H., Gibson Jr., G. E., *Weerasooriya, R., and *Yohe, A. M. "Identification of Effective Management Practices and Technologies for Lessons Learned Programs in the Construction Industry." *ASCE Journal of Construction Engineering and Management*, accepted on 09/03/08, tentative publication date of May 2009.
- *Hwang, B-G., Thomas, S. R., Haas, C. T., and Caldas, C. H. "Measuring the Impacts of Rework on Construction Cost Performance." *ASCE Journal of Construction Engineering and Management*, accepted on 09/24/08, tentative publication date of May 2009.
- Yun, S. and Caldas, C. H. "Analyzing Decision Variables that Influence Preliminary Feasibility Studies Using Data Mining Techniques." *Construction Management and Economics*, accepted on 10/28/08, tentative publication date of July 2009.
- *Chi, S., Caldas, C., and *Gong, J. (2008). "A Crash Avoidance Framework for Heavy Equipment Control Systems Using 3D Imaging Sensors." *ITCon Special Issue on Sensors in Construction and Infrastructure Management*, 13, 118-133.
- *Gong, J. and Caldas, C. H. (2008). "Data Processing for Real-Time Construction Site Spatial Modeling." *Automation in Construction*, 17(5), 526-535.
- *Hwang, B-G. Thomas, S. R., Degezelle, D., and Caldas, C. H. (2008). "Development of a Benchmarking Framework for Pharmaceutical Capital Projects." *Construction Management and Economics*, 26(2), 177-195.
- Soibelman, L., Wu, J., Caldas, C., Brilakis, I., and Lin, K-Y. (2008). "Management and Analysis of Unstructured Construction Data Types." *Advanced Engineering Informatics*, 22(1), 15-27.
- *Chou, C-C., Caldas, C. H., and O'Connor, J. T. (2007). "Decision Support System for the Combined Transportation and Utility Construction Strategy." *Transportation Research Record, Journal of the Transportation Research Board*, No. 1994, 9-16.
- *Teizer, J., Caldas, C. H., and Haas, C. T. (2007). "Real-Time Three-Dimensional Occupancy Grid Modeling for the Detection and Tracking of Construction Resources." *ASCE Journal of Construction Engineering and Management*, 133(11), 880-888.
- Song, J., Haas, C. T., and Caldas, C. H. (2007). "A Proximity-Based Method for Locating RFID Tagged Objects." *Advanced Engineering Informatics*, 21(4), 367-376.
- Caron, F., Razavi, S. N., Song, J., Vanheeghe, P., Duflos, E., Caldas, C., and Haas, C. (2007). "Locating Sensor Nodes on Construction Projects." *Autonomous Robots*, 22(3), 255-263.
- Caldas, C. H., *Grau Torrent, D., and Haas, C. T. (2006). "Using Global Positioning System to Improve Materials-Locating Processes on Industrial Projects." *ASCE Journal of Construction Engineering and Management*, 132 (7), 741-749.
- Song, J., Haas, C. T., and Caldas, C. H. (2006). "Tracking the Location of Materials on Construction Job Sites." *ASCE Journal of Construction Engineering and Management*, 132 (9), 911-918.
- Costa, D. B., Formoso, C. T., Kagioglou, M., Alarcón, L. F., and Caldas, C. H. (2006). "Benchmarking Initiatives in the Construction Industry: Lessons Learned and Improvement Opportunities." *ASCE Journal of Management in Engineering*, 22(4), 158-167.

- Kim, C., Haas, C. T., Liapi, K. A., and Caldas, C. H. (2006). "Human-Assisted Obstacle Avoidance System Using 3D Workspace Modeling for Construction Equipment Operation." *ASCE Journal of Computing in Civil Engineering*, 20 (3), 177-186.
- Song, J., Haas, C. T., Caldas, C., Ergen, E., and Akinci, B. (2006). "Automating the Task of Tracking the Delivery and Receipt of Fabricated Pipe Spools in Industrial Projects," *Automation in Construction*, 15(2), 166-177.
- *Teizer, J., Kim, C., Haas, C. T., Liapi, K., and Caldas, C. H. (2005). "Framework for Real-Time Three-Dimensional Modeling on Infrastructure." *Transportation Research Record, Journal of the Transportation Research Board*, No. 1913, 177-186.
- Caldas, C. H., Soibelman, L., and Gasser, L. (2005). "Methodology for the Integration of Project Documents in Model-Based Information Systems." *ASCE Journal of Computing in Civil Engineering*, 19(1), 25-33.
- Kim, C., Haas, C. T., Caldas, C. H., and Liapi, K. A. (2004). "Erfassung räumlicher Daten, Integration und Modellierung für Echtzeit-Projektlebenszyklus Anwendungen." Thesis, *Wissenschaftliche Zeitschrift der Bauhaus-Universität Weimar - Germany*, 1. Heft 2004 50. Jahrgang, 30-37.
- Caldas, C. H. and Soibelman, L. (2003). "Automating Hierarchical Document Classification for Construction Management Information Systems." *Automation in Construction*, 12(4), 395-406.
- Soibelman, L., Liu, L. Y., Kirby, J. G., East, E. W., Caldas, C. H., and Lin, K-Y. (2003). "Design Review Checking System with Corporate Lessons Learned." *ASCE Journal of Construction Engineering and Management*, 129(5), 475-484.
- Caldas, C. H., Soibelman, L., and Han, J. (2002). "Automated Classification of Construction Project Documents." *ASCE Journal of Computing in Civil Engineering*, 16(4), 234-243.
- *Chou, C., Caldas, C. H., O'Connor, J. T., Sroka, A. W., and Goldman, G. K. "Identification of Decision Drivers for the Strategy of Incorporating Utility Relocations into Highway Construction Contracts." *ASCE Journal of Construction Engineering and Management*, in review, submitted on 11/16/07.
- *Grau Torrent, D., Caldas, C. H., and Haas, C. T., Goodrum, P. M., and *Gong, J. "Assessing the Impact of Automated Materials Tracking Technologies on Construction Craft Productivity." *Automation in Construction*, in review, submitted on 04/26/08.
- *Le, T., Caldas, C. H., Gibson, G. E., and *Thole, M. "A Method for Assessing Project Scope and Managing Risk in Highway Construction." *ASCE Journal of Construction Engineering and Management*, in review, submitted on 05/23/08.
- Dong, Z., Goodrum, P.M., Haas, C. T., and Caldas, C. "Relationship between the Automation and Integration of Construction Information Systems and Labor Productivity." *ASCE Journal of Construction Engineering and Management*, in review, submitted on 07/30/08.

B. Refereed Conference Proceedings (* designates graduate student advisee)

- *Le, T., Caldas, C. H., and Gibson, G. E. "Managing Risks in the Project Development Process for Transportation Infrastructure Projects." Accepted to the 1st International Conference on Transportation Construction Management. Orlando, FL, February, 2009.
- *Grau Torrent, D. and Caldas, C. H. (2007). "Field Experiments of an Automated Materials Identification and Localization Model." Proceedings of the 2007 ASCE International Workshop on Computing in Civil Engineering, Pittsburgh, PA, July 24-27, 2007, pp. 689-696.
- *Chi, S., Caldas, C. and Kim, D. Y. (2007). "Object Identification Based on 3D Spatial Models of Construction Sites." Proceedings of the 2007 ASCE International Workshop on Computing in Civil Engineering, Pittsburgh, PA, July 24-27, 2007, pp. 729-736.
- *Gong, J. and Caldas, C. (2007). "Processing of High Frequency Local Area Laser Scans For Construction Site Resource Management." Proceedings of the 2007 ASCE International Workshop on Computing in Civil Engineering, Pittsburgh, PA, July 24-27, 2007, pp. 665-672.
- *Grau Torrent, D. and Caldas, C. H. (2007). "A Framework for Automated Localization of On-Site Construction Components." Proceedings of the 2007 Construction Research Congress, Freeport, Bahamas, May 6-8, 2007, 8 pages.
- *Le, T., Caldas, C. H., Gibson, G. E., and *Thole, M. (2007). "Critical Risk Elements During the Advance Planning Phase of Transportation Infrastructure Projects." Proceedings of the 2007 Construction Research Congress, Freeport, Bahamas, May 6-8, 2007, 8 pages.
- *Teizer, J., Haas, C. T., Caldas, C. H., and Bosche, F. (2006). "Real-Time Three-Dimensional Object Detection and Tracking in Transportation." Proceedings of the 9th International Conference on Applications of Advanced Technology in Transportation, Chicago, IL, August 13-16, 2006, pp. 123-128.
- *Chou, C-C., Caldas, C. H., O'Connor, J. T., and Goldman, G. K. (2006). "Development of Group Decision-Support Model and System for Combined Transportation and Utility Construction." Proceedings of the 9th International Conference on Applications of Advanced Technology in Transportation, Chicago, IL, August 13-16, 2006, pp. 786-791.
- Caldas, C. H., *Chi, S., *Teizer, J., and *Gong, J. (2006). "Intelligent Computing and Sensing for Active Safety on Construction Sites." Proceedings of the 13th Workshop of the European Group for Intelligent Computing in Engineering and Architecture, Ascona, Switzerland, June 25-30, 2006, pp. 101-108.
- Bosche, F., *Teizer, J., Haas, C. T., and Caldas, C. H. (2006). "Integrating Data From 3D CAD and 3D Cameras for Real-Time Modeling." Proceedings of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering, Montreal, Canada, June 14-16, 2006, pp. 37-46.
- Caldas, C. H. and Soibelman, L. (2006). "A Combined Text Mining Method to Improve Document Management in Construction Projects." Proceedings of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering, Montreal, Canada, June 14-16, 2006, pp. 2912-2918.

- Caron, F., Razavi, S. N., Song, J., Vanheeghe, P., Duflos, E., Caldas, C., and Haas, C. (2006). "Models for Locating RFID Nodes." Proceedings of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering, Montreal, Canada, June 14-16, 2006, pp. 145-154.
- *Chou, C.-C., Caldas, C. H., O'Connor, J. T., Sroka, A., and Goldman, G. (2006). "Designing a Decision Support Process and Model for Combined Transportation and Utility Construction Projects." Proceedings of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering, Montreal, Canada, June 14-16, 2006, pp. 2919-2928.
- *Grau Torrent, D. and Caldas, C. H. (2006). "Proactive Field Materials Management Using Integrated Location and Identification Sensing Technologies." Proceedings of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering, Montreal, Canada, June 14-16, 2006, pp. 1006-1014.
- *Teizer, J., Bosche, F., Caldas, C. H., and Haas, C. T. (2006). "Real-Time Spatial Detection and Tracking of Resources in a Construction Environment." Proceedings of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering, Montreal, Canada, June 14-16, 2006, pp. 494-502.
- Caldas, C. H., Haas, C. T., Liapi, K. A., and Teizer, J. (2006). "Modeling Job Sites in Real-Time to Improve Safety during Equipment Operation." Proceedings of SPIE Vol. 6174, Smart Structures and Materials 2006: Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, February 27, 2006, San Diego, CA, 8 pages.
- *Teizer, J., Kim, C., Bosche, F., Caldas, C. H., and Haas, C. T. (2005). "Real-Time 3D Modeling for Accelerated and Safer Construction Using Emerging Technology." Proceedings of 1st International Conference on Construction Engineering and Management, Seoul, Korea, October 16-19, 2005, pp. 539-543.
- *Teizer, J., Bosche, F., Caldas, C. H., Haas, C. T., and Liapi, K. A. (2005). "Real-Time, Three-Dimensional Object Detection and Modeling in Construction." Proceedings of the 22st International Symposium on Automation and Robotics in Construction, Ferrara, Italy, September 11-14, 2005.
- Caldas, C. H., *Grau Torrent, D., and Haas, C. (2005). "GPS Technology for Locating Fabricated Pipes on Industrial Projects" Proceedings of the ASCE 2005 International Conference on Computing in Civil Engineering, Cancun, Mexico, July 12-15, 2005, 8 pages.
- Song, J., Haas, C., Caldas, C., and Liapi, K. (2005). "Locating Materials on Construction Site Using Proximity Techniques." Proceedings of the 2005 Construction Research Congress, San Diego, CA, April 5-7, 2005, pp. 550-554, 10 full-size pages.
- *Teizer, J., Liapi, K., Caldas, C. H., and Haas, C. T. (2005). Experiments in Real-Time Spatial Data Acquisition for Obstacle Detection." Proceedings of the 2005 Construction Research Congress, San Diego, CA, April 5-7, 2005, pp.545-549, 10 full-size pages.
- Caldas, C. H., *Torrent, D. G., and Haas, C. T. (2004). "Integration of Automated Data Collection Technologies for Real-Time Field Materials Management." Proceedings of the 21st International Symposium on Automation and Robotics in Construction, Jeju, Korea, September 21-25, 2004, 6 pages.

- Song, J., Caldas, C., Ergen, E., Haas, C., and Akinici, B. (2004). "Field Trials of RFID Technology for Tracking Pre-Fabricated Pipe Spools." Proceedings of the 21st International Symposium on Automation and Robotics in Construction, Jeju, Korea, September 21-25, 2004, 6 pages.
- Kim, C., Haas, C. T., Caldas, C. H., and Liapi, K. A. (2004). "Spatial Data Acquisition, Integration, and Modeling for Real-Time Project Life-Cycle Applications." Proceedings of the Xth International Conference on Computing in Civil and Building Engineering, Weimar, Germany, June 2-4, 2004, 11 pages.
- Caldas, C. H. and Soibelman, L. (2003). "Integration of Construction Documents in IFC Project Models." Proceedings of the 2003 ASCE Construction Research Congress, Honolulu, HI, March 19-21, 2003, 8 pages.
- Caldas, C. H. and Soibelman, L. (2002). "Implementing Automated Methods for Document Classification in Construction Management Information Systems." Proceedings of the ASCE Workshop on Information Technologies in Civil Engineering, Washington, DC, November 3-7, 2002, pp. 194-210.
- Caldas, C. and Soibelman, L. (2002). "Automated Classification Methods: Supporting the Implementation of Pull Techniques for Information Flow Management." Proceedings of the 10th International Group for Lean Construction Conference, Gramado, Brazil, August 6-8, 2002, 12 pages.
- Soibelman, L. and Caldas, C. (2001). "Automated Classification and Integration of Text-Based Information in Construction Inter-Organizational Systems." Proceedings of the ASCE Specialty Conference on Fully Integrated and Automated Project Processes in Civil Engineering, Blacksburg, VA, September 26-29, 2001, pp. 246-258.
- Soibelman, L. and Caldas, C. (2000). "Information Logistics for Construction Design Team Collaboration." Proceedings of the 8th International Conference on Computing in Civil and Building Engineering (VIII-ICCCBE), Stanford, CA, August 14-17, 2000, pp. 341-348.
- Soibelman, L. and Caldas, C. (2000). "Information Logistics Approach for Construction Inter-Organizational Information Systems." Proceedings of the CIB W78 IABSE EG-SEA-AI International Conference on Construction Information Technology (CIT 2000), Reykjavik, Iceland, June 28-30, 2000, 10 pages.
- Soibelman, L. and Caldas, C. H. (2000). "O Uso de Extranets no Gerenciamento de Projetos: o Exemplo Norte-Americano." Proceedings of the ENTAC-2000, Salvador, Brazil, April 26-28, 2000, 8 pages.
- Caldas, C. and Limmer, C. (1991). "Integrating Time and Cost Information in Project Planning and Control Systems." Proceedings of the XI ENEGEP, Rio de Janeiro-Brazil, September 1991.

C. Other Major Publications

- Bosche, F., Haas, C., and Caldas, C., (2005). "3D CAD Drawing as A-Priori Knowledge for Machine Vision in Construction." Proceedings of the 1st Annual Inter-University Symposium on Infrastructure Management, Waterloo, Ontario, Canada, August 6, 2005.

E. Technical Reports

- Construction Industry Institute (CII) Research Team 240 (2008). "Leveraging Technology to Improve Construction Productivity." Research Summary 240-1, Austin, TX, 2008.
- Construction Industry Institute (CII) Research Team 240 (2008). "LEVER: The Technology Prediction Tool." Implementation Resource 240-2, Austin, TX, 2008.
- Caldas, C. H., Le, T., Gibson, G. E., and Thole, M. (2007). "Identifying Right-of-Way Requirements during the Project Development Process." TxDOT Research Report 0-5478-1, October 2007.
- Caldas, C. H., Gibson, G. E., and Le, T. (2007). "User Guide for the Advanced Planning Risk Analysis Tool For Transportation Projects." TxDOT Research Report 0-5478-P1, August 2007.
- Caldas, C. H., Gibson, G. E., and Le, T. (2007). "TxDOT Best Practices Model and Implementation Guide for Advance Planning Risk Analysis for Transportation Projects." TxDOT Research Report 0-5478-P2, August 2007.
- Gibson, G. E., Caldas, C. H., Yohe, A. M., and Weerasooriya, R. (2007). "An Analysis of Lessons Learned Programs in the Construction Industry." Construction Industry Institute (CII) Research Report 230-11, 2007.
- Construction Industry Institute (CII) Research Team 230 (2007). "Effective Management Practices and Technologies for Lessons Learned Programs." Research Summary 230-1, Austin, TX, 2007.
- Construction Industry Institute (CII) Research Team 230 (2007). "Implementation of Lessons Learned Programs." Implementation Resource 230-2, Austin, TX, 2007.
- Caldas, C., Zhang, Z., Kockelman, K., Persad, K., Medina, D., and Chung, E. (2006). "Best Practices in Right-of-Way Valuations and Negotiations Report." TxDOT Research Report 0-5379-1, October 2006, Rev. January 2007.
- O'Connor, J. T., Caldas, C. H., Goldman, G., and Chou, C. (2006). "Effectiveness of the Combined Transportation and Utility Construction Strategy." TxDOT Research Report 0-4997-1, October 2006.
- Zhang, Z., Caldas, C. H., Moulvi, N., Piepmeyer, Z., and Liang L. (2006). "Electronic Appraisal Development Study." TxDOT Research Report 9-1523-1, August 2006.
- Kockelman, K., Caldas, C. H., Zhang, Z., Escatel, R., and Gao, L. (2006). "Estimating the Cost of Right-of-Way Acquisitions Along Texas Corridors." TxDOT Research Report 5-4079-01-1, August 2006.
- Kockelman, K., Caldas, C. H., Zhang, Z., Escatel, R., and Gao, L. (2006). "Right-of-Way Cost Estimating Tool User Manual." TxDOT Research Report 5-4079-01-P1, August 2006.
- Caldas, C., Zhang, Z., Kockelman, K., Persad, K., Medina, D., and Chung, E. (2006). "Synthesis of Best Practices in Right-of-Way Valuations and Negotiations." TxDOT Research Report 0-5379-P1, August 2006.

- Caldas, C., Zhang, Z., Kockelman, K., Persad, K., Medina, D., and Chung, E. (2006). "TxDOT Guidebook for Right-of-Way Valuations and Negotiations." TxDOT Research Report 0-5379-P2, August 2006.
- O'Connor, J. T., Caldas, C. H., Goldman, G., and Chou, C. (2005). "Combined Transportation and Utility Construction: Analysis of Approach." TxDOT Research Report 0-4997-P1, October 2005.
- Caldas, C. H., Haas, C. T., Grau Torrent, D., Wood, C. R., and Porter, R. (2004). "Field Trials of GPS Technology for Locating Fabricated Pipe in Laydown Yards." FIATECH, College of Engineering, University of Texas at Austin, October 2004.
- Song, J., Haas, C., Caldas, C., Ergen, E., Akinci, B., Wood, C. R., and Wadepuhl, J. (2004). "Field Trials of RFID Technology for Tracking Fabricated Pipe – Phase II." FIATECH, College of Engineering, University of Texas at Austin, August 2004.
- Akinci, B., Ergen, E., Haas, C., Caldas, C., Song, J., Wood, C. R., and Wadepuhl, J. (2004). "Field Trials of RFID Technology for Tracking Fabricated Pipe." FIATECH, College of Engineering, University of Texas at Austin, February 2004.

ORAL PRESENTATIONS:

- Caldas, C. H. (2008). "Leveraging Technology to Improve Construction Productivity." FIATECH Member Meeting, Boston, MA, October 29, 2008. (INVITED – PLENARY SPEAKER)
- Caldas, C. H., Haas, C. T., and Goodrum, P. (2008). "Craft Productivity Performance Update." Performance Improvement Workshop, Chicago, IL, October 28, 2008. (INVITED – PLENARY SPEAKER)
- Caldas, C. H. (2008) "Parceria entre a Indústria e a Universidade para a Realização de Pesquisas Aplicadas: O Caso do Construction Industry Institute (CII)." Workshop do Centro de Excelencia em EPC, Rio de Janeiro, Brazil, October 1, 2008. (INVITED – PLENARY SPEAKER)
- Caldas, C. H. (2008) "Global Procurement and Materials Management." Procurement Executives Group (PEG) Meeting, Houston, TX, September 25, 2008. (INVITED)
- Construction Industry Institute (CII) Research Team 240 (2008). "RT 240 Leveraging Technology to Improve Construction Productivity." 2009 CII Annual Conference, Implementation Session, Keystone, CO, August 6, 2008 (PANELIST).
- Grau Torrent, D., Caldas, C. H., Haas, C. T., and Goodrum, P. (2008). "Field Trials of Materials Tracking Technologies on Construction Job Sites." Workshop on Using Information Technologies to Support Better Construction Management IV, 2008 87th Transportation Research Board Annual Meeting, Washington, DC, January 13, 2008. (INVITED)
- Caldas, C. H. (2007). "Optimizing the Identification of Right-of-Way Requirements during the Project Development Process." Texas Department of Transportation RMC Meeting, San Antonio, TX, November 6, 2007.
- Construction Industry Institute (CII) Research Team 230 (2007). "Implementing Lessons Learned Programs." 2008 CII Annual Conference, Implementation Session, Orlando, FL, August 2, 2007 (PANELIST).

- Caldas, C. H. (2007). "Field Experiments of an Automated Materials Identification and Localization Model." 2007 ASCE International Workshop on Computing in Civil Engineering, Pittsburgh, PA, July 27, 2007.
- Caldas, C. H. (2007). "Processing of High Frequency Local Area Laser Scans for Construction Site Resource Management." ASCE International Workshop on Computing in Civil Engineering, Pittsburgh, PA, July 25, 2007.
- Caldas, C. H. (2007). "Optimizing the Identification of Right-of-Way Requirements during the Project Development Process." Texas Department of Transportation RMC Meeting, San Antonio, TX, June 5, 2007.
- Grau Torrent, D. and Caldas, C. H. (2007). "A Framework for Automated Localization of On-Site Construction Components." 2007 Construction Research Congress, Freeport, Bahamas, May 7, 2007.
- Le, T. and Caldas, C. H. (2007). "Critical Risk Elements During the Advance Planning Phase of Transportation Infrastructure Projects." 2007 Construction Research Congress, Freeport, Bahamas, May 7, 2007.
- Chuo, C. and Caldas, C. H. (2007). "Decision Support System for the Combined Transportation and Utility Construction Strategy." 86th Transportation Research Board Annual Meeting, Washington, DC, January 23, 2007.
- Caldas, C. H. (2006). "Combined Transportation and Utility Construction Strategy." Texas Department of Transportation Short Courses, College Station, TX, October 11, 2006. (INVITED)
- Caldas, C. H. (2006). "The Construction Industry Institute Research Model." Petrobras/Prominp Workshop -- Centro de Excelência em Gerência de EPC, Rio de Janeiro, Brazil, October 9, 2006. (INVITED)
- Caldas, C. H. (2006). "Construction Industry Institute: An Overview." Petrobras/Prominp Meeting, Rio de Janeiro, Brazil, August 1, 2006. (INVITED)
- Caldas, C. H. (2006). "Intelligent Computing and Sensing for Active Safety on Construction Sites." Proceedings of the 13th Workshop of the European Group for Intelligent Computing in Engineering, Ascona, Switzerland, June 26, 2006.
- Caldas, C. H. (2006). "Effectiveness of Combined Utility Relocation and Construction." Texas Department of Transportation RMC Meeting, Austin, TX, June 6, 2006.
- Caldas, C. and Zhang, Z. (2006). "Electronic Appraisal Pool Fund Project." AASHTO Right-of-Way and Utilities Subcommittee Conference, Baltimore, MD, May 3, 2006. (INVITED)
- Caldas, C. H. (2006). "Real-Time Laser Scanning for Construction Safety." Center for Transportation Research Annual Symposium, Austin, TX, April 4, 2006. (INVITED)
- Caldas, C. (2006). "Real-Time Spatial Information Acquisition and Use for Infrastructure Construction and Maintenance." Workshop on Using Information Technologies to Support Better Construction Management II, 2006 85th Transportation Research Board Annual Meeting, Washington, DC, January 22, 2006. (INVITED)

- Caldas, C. (2005). "GPS Technology for Locating Fabricated Pipes on Industrial Projects." ASCE 2005 International Conference on Computing in Civil Engineering, Cancun, Mexico, July 12, 2005. (INVITED)
- Caldas, C. and Zhang, Z. (2005). "Electronic Appraisal Pool Fund Project." AASHTO Right-of-Way and Utilities Subcommittee Conference, Austin, TX, May 18, 2005. (INVITED)
- Caldas, C. (2005). "FIATECH Field Trials of GPS and RFID Technology for Tracking Fabricated Pipe on Industrial Projects." University of Texas at El Paso, April 21, 2005. (INVITED)
- Caldas, C. (2005). "Integration of Project Documents in Model-Based Information Systems." University of Texas at El Paso, April 21, 2005. (INVITED)
- Caldas, C., (2004). "Integration of Automated Data Collection Technologies for Real-Time Field Materials Management." 21st International Symposium on Automation and Robotics in Construction, Jeju, Korea, September 25, 2004.
- Caldas, C., (2004). "3D Site Modeling for Real-Time Applications." CII Construction Project Improvement Conference, Austin, TX, September 20, 2004. (INVITED)
- Caldas, C. (2004). "Spatial data acquisition, integration, and modeling for real-time project life-cycle applications." Xth International Conference on Computing in Civil and Building Engineering, Weimar, Germany, June 4, 2004.
- Caldas, C., (2004). "Panel on Electronic File Sharing." Central Texas Infrastructure Design and Construction Symposium, April 28, 2004. (INVITED)

INVITED WORKSHOPS:

- NSF-CII Workshop on Placement of Manufactured Components, Gaithersburg, MD, September 26-27, 2007.
- NSF-NIST Workshop on Advanced Building Infrastructure Testbeds (NABIT), Gaithersburg, MD, September 24-26, 2006
- NSF/FIATECH An Interdisciplinary Charrette: Setting an Academic Research Agenda for the FIATECH Capital Projects Technology Roadmap Initiative, Houston, TX, October 13-15, 2004
- 2004 ASCE Excellence in Engineering Education (ExcEEd) Teaching Workshop, Fayetteville, AR, July 11-16, 2004.
- FIATECH Intelligent and Automated Construction Job Site Workshop, Houston, TX, December 6, 2003.
- Economic, Financial, and Legal Aspects of Construction Center for Construction Industry Studies (CCIS), Austin, TX, September 5, 2003.

PATENTS:

None

GRANTS AND CONTRACTS:

Investigators	Title	Agency	Grant Total	My Share	Grant Period
Co-PI with Mulva and Jablonowski	Development of a Benchmarking System for Upstream Oil and Gas Projects	FEC/ UFF/ Petrobras	\$598,617	\$199,539	11/01/08 – 06/30/10
Co-PI with Zhang	Complete Implementation of Electronic Appraisal System	TxDOT	\$208,000	\$104,000	3/31/08 – 8/31/09
PI at UT with Haas (PI at UW) and Goodrum (PI at UK)	Craft Productivity Research Program	CII	\$907,833	\$302,218	9/1/07 – 12/31/13
PI with Menches and Reyes (from Baylor)	Global Procurement and Materials Management	CII	\$254,962	\$88,070	9/1/07 – 8/31/09
Co-PI with Menches and O'Connor	Synthesis Study of Programs Used to Reduce the Need for Inspection Personnel	TxDOT	\$113,413	\$37,804	9/1/07 – 8/31/08
PI of Task 9 (Part of the CTR/TxDOT Austin District IAC)	Technical Assistance on Analyzing ROW Risks, Improving the Accuracy and Completeness of ROW Schedules, and Investigating Methods to Enhance ROW Tracking	TxDOT	\$92,000	\$92,000	9/1/07 – 8/31/09
PI at UT with Haas (PI at UW) and Goodrum (PI at UK)	Leveraging Technology to Improve Construction Productivity	CII	\$199,747	\$66,667	9/1/06 – 8/31/08
Co-PI with Zhang	Implementation of the Electronic Appraisal System	TxDOT	\$135,000	\$67,500	9/1/06 – 8/31/07
PI	Performance Test Methods for Automated Structural Steel Pick-and-Place	NIST	\$444,762	\$444,762	4/1/06 – 3/31/09
PI at UT with Gibson (PI at UA)	Effective Management Practices and Technologies for Lessons Learned Programs	CII	\$125,687	\$96,545	9/1/05 – 8/31/07
PI with Zhang, Persad, and Kockelman	Best Practices in ROW Valuations and Negotiations	TxDOT	\$84,943	\$33,977	9/1/05 – 8/31/06
PI with Gibson at UA (subcontract)	Optimizing the Identification of Right-of-Way Requirements during the Project Development Process	TxDOT	\$208,510	\$132,256	9/1/05 – 8/31/07
Co-PI with Prozzi	Tracking the Performance of HMA Mixtures in Texas	TxDOT	\$229,162	\$8,200	9/1/05 – 8/31/08

Co-PI with Kockelman and Zhang	Implementation of a Right-of-Way (ROW) Acquisition Cost Estimating Planning Tool	TxDOT	\$162,000	\$54,000	3/16/05 – 8/31/06
PI	Real-Time Spatial Information Acquisition and Use for Infrastructure Construction and Maintenance	NSF	\$364,682	\$364,682	9/1/04 – 8/31/07
PI	Development of Obstacle Detection Algorithms for Construction Machinery using a High Frame-rate Flash LADAR Sensor	NIST	\$50,640	\$50,640	9/21/04 – 9/20/06
PI	IPA – Kamel Saidi	NIST	\$98,431	\$98,431	9/1/04 – 3/31/06
Co-PI with O'Connor	Effectiveness of Combined Utility Relocation/Highway Construction Projects	TxDOT	\$248,916	\$124,458	9/1/04 – 8/31/06
Co-PI with Zhang	Electronic Appraisal Development Study	TxDOT	\$227,646	\$113,823	9/1/04 – 8/31/06
PI	Field Systems and Construction Automation Laboratory - Special Equipment Allocation	UT-CoE	\$140,000	\$140,000	9/1/04 –
PI	Research Initiation	UT-CoE	\$5,000	\$5,000	9/1/04 –
		TOTAL	\$4,899,951	\$2,624,572	

PH.D. SUPERVISIONS COMPLETED:

Name	Completed	Dissertation
Grau Torrent, David <i>(Passed the Ph.D. final exam on 05/02/08; will graduate in summer 2008)</i>	Summer 2008	Development of a Methodology for Automating the Identification and Localization of Engineered Components and Assessment of its Impact on Construction Craft Productivity
Chou, Chien-Cheng	Spring 2007	Decision Support Model for the Combined Transportation and Utility Construction Strategy
Hwang, Bon Gang (co-adv. with Thomas)	Fall 2006	Development of a Performance Measurement System for the Delivery of Pharmaceutical Capital Facility Projects
Teizer, Jochen (co-adv. with Haas)	Summer 2006	Real-Time Spatial Modeling to Detect and Track Resources on Construction Sites

M.S. SUPERVISIONS COMPLETED:

Name	Effort	Completion	Research Topic
Escatel, Raquel	Thesis	Fall 2006	Cost Estimating Models for Right-of-Way Acquisition
Yohe, Angie (co-adv. with Gibson)	Thesis	Fall 2006	An Analysis of Lessons Learned Programs in the Construction Industry
Thole, Michael (co-adv. with Gibson)	Thesis	Fall 2006	Advance Planning in Highway Project Development Processes
Chung, Eugene	Thesis	Summer 2006	A Synthesis of Best Practices in Right-of-Way Negotiations
Moulvi, Nadeem (co-adv. with Zhang)	Thesis	Summer 2006	Development of an Electronic Appraisal System for Right-of-Way Acquisition
Do, Hyung Rok	Thesis	Spring 2006	A Preliminary Impact Analysis of Parcel Characteristics on Condemnation Rates in Right-of-Way Acquisition in Texas
Spears, Kemit	Thesis	Spring 2006	Benefits and Challenges in Using CBCM Construction Management Software for the United States Navy Seabees
Chi, Seokho	Thesis	Fall 2005	A Preliminary Study on Path Planning and Obstacle Avoidance for Construction Equipment Based on Real-Time Spatial Models
Yeh, Shan-Pin	Report	Fall 2005	Analysis of Laser Scanning Systems for Construction
Goel, Sachin (co-adv. with Siegel)	Report	Spring 2004	Automating the Procedure of Planning the Site Layout of a Construction Project
Torrent, David G. (co-adv. with Haas)	Thesis	Summer 2004	Analysis of Automated Data Collection Technologies for Field Materials Management

PH.D. SUPERVISIONS IN PROGRESS:

Students that passed the Ph.D. comprehensive exam (Ph.D. Candidates):

Name	Period	Research Topic
Chanmeka, Arpamart (co-adv. with Thomas)	2004 – present	Managing Large Energy and Mineral Resources Projects in Challenging Environments
Chi, Seokho	2005 – present	Construction Work Zone Safety Monitoring Using 3D Vision Cameras
Gong, Jie	2005 – present	Video Computing for Construction Productivity Analysis

Students that passed the Ph.D. qualifying exam (Ph.D. Candidates):

Name	Period	Research Topic
Le, Tiendung (co-adv. with Gibson)	2005 – present	A Methodology for Assessing Scope and Managing Risks during the Project Development Process of Transportation Infrastructure Projects
Suk, Soon-Jung (co-adv. with Mulva)	2007 – present	Benchmarking and Metrics Dashboard for Pharmaceutical Projects

M.S. SUPERVISIONS IN PROGRESS:

Name	Effort	Period	Research Topic
Weerasooriya, Runi	Thesis	2007 – present	Information Technologies for Lessons Learned Programs
Navarro, Laure	Thesis	2007 – present	Global Procurement and Materials Management
Malisiovas, Andreas	Report	2007 – present	Productivity Measurement Techniques

POSTDOCTORAL FELLOWS SUPERVISION:

Name	Period	Research Area
Song, Jongchul	May 06 – May 07	RFID Localization

RESEARCH ENGINEER/SCIENTIST ASSOCIATE SUPERVISION:

Name	Period	Research Area
Saidi, Kamel	Sep 2004 – present	Construction Metrology and Automation

PH.D. COMMITTEES:**Completed:**

Name	Completion	Curriculum	Supervisor
Sanders, Mark	2008	Civil Engineering	Dr. Siegel
Unnikrishnan, Avinash	2008	Civil Engineering	Dr. Waller
Siddiqui, Mohsin K.	2008	Civil Engineering	Dr. O'Brien
Jarrah, Ra'ed Tahseen	2007	Civil Engineering	Dr. O'Connor
Lownes, Nicholas Earl	2007	Civil Engineering	Dr. Machemehl
Hur, Kyeon	2007	Electrical Engineering	Dr. Santoso
Gebken, Richard	2006	Civil Engineering	Dr. Gibson
Peng, Min	2006	Civil Engineering	Dr. O'Connor
Beheiry, Salwa	2005	Civil Engineering	Dr. Haas
Song, Jongchul	2005	Civil Engineering	Dr. Haas
Sylvie, Jonathan	2005	Civil Engineering	Dr. Haas/Dr. Thomas
Chou, Jui-Sheng	2005	Civil Engineering	Dr. O'Connor

In Progress:

Name	Period	Curriculum	Supervisor
Gao, Lu	2007 – present	Civil Engineering	Dr. Zhang
Kumar, Deepak	2007 – present	Civil Engineering	Dr. Waller
Nguyen, Thuy	2006 – present	Civil Engineering	Dr. O'Brien
Ruiz, Natalia	2006 – present	Civil Engineering	Dr. Waller
Azambuja, Marcelo	2005 – present	Civil Engineering	Dr. O'Brien
Kwan, TingKwei	2005 – present	Civil Engineering	Dr. O'Brien

M.S. COMMITTEES:***Completed:***

Name	Completion	Curriculum	Supervisor
Gao, Lu	2007	Civil Engineering	Dr. Zhang
Medina, Doris	2006	Civil Engineering	Dr. Zhang
Sroka, Adam	2006	Civil Engineering	Dr. O'Connor
Couri, Guilherme	2006	Civil Engineering	Dr. Longo; Universidade Federal Fluminense - Brazil.
Kim, Dae Young	2006	Civil Engineering	Dr. O'Brien
Goldman, Grant	2005	Civil Engineering	Dr. O'Connor
Mcmillan, Lauren Ashley	2005	Civil Engineering	Dr. O'Brien
Lo, Liangchung	2005	Civil Engineering	Dr. Siegel

VITA:

Dr. Carlos Caldas is an Assistant Professor at The University of Texas at Austin Department of Civil, Architectural, and Environmental Engineering. He has a Ph.D. in Civil Engineering from The University of Illinois at Urbana-Champaign and has more than fifteen years of experience in construction engineering and management. In his doctoral research, he specialized in Construction Engineering and Management & Computational Science and Engineering. His current research interests are in the areas of information technologies and sensors for construction engineering and project management, advanced data analysis techniques, and infrastructure systems. He teaches courses on the subjects of information systems, data mining, project management, engineering economic analysis, and building construction. He is a Past Chair of the American Society of Civil Engineers (ASCE) Technical Committee on Database and Information Management and a member of the ASCE Construction Research Council, the ASCE Technical Committee on Intelligent Computing, and the CII Academic Committee. Dr. Caldas is a member of the Board of the International Association for Automation and Robotics in Construction. He is also a Specialty Editor for the ASCE *Journal of Construction Engineering and Management* and a member of the Editorial Board of the *Automation in Construction* journal.