

Standard Resume

FULL NAME: Carl Thomas Michael Haas

TITLE: Tier I Canada Research Chair in Construction and Management of Sustainable Infrastructure

DEPARTMENT: Civil and Environmental Engineering

EDUCATION:

University of Waterloo	Systems Design Engr	B.S.	April 1985
Carnegie Mellon University	Civil Engineering	M.S.	August 1986
Carnegie Mellon University	Civil Engineering	Ph.D.	September 1990

PROFESSIONAL REGISTRATION: Texas PE no. 72047
 Ontario PEng no. 100129656

CURRENT AND PREVIOUS ACADEMIC POSITIONS:

University of Waterloo (Canada)	Professor	June 2005 – present
Ecole Centrale de Lille (France)	Visiting Professor	May 2008
Ecole Centrale de Lille (France)	Visiting Professor	June 2005
University of Texas at Austin (USA)	Professor	Sept. 2002 – May 2005
Arizona State University (USA)	Visiting Eminent Scholar	July 2002
University of Texas at Austin (USA)	Associate Professor	Sept. 1996 – Aug. 2002
University of Texas at Austin (USA)	Assistant Professor	January 1991 – Aug. 1996

CURRENT AND PREVIOUS ADMINISTRATIVE POSITIONS:

University of Waterloo	Director of Center for Paving and Transportation Technologies	September 2005 on
University of Texas at Austin	Director of Center for Construction Industry Studies	Sept. 2004 to May 2005
University of Texas at Austin	Construction Engineering and Project Management Area Coordinator	Sept. 2002 – Aug. 2004

OTHER PROFESSIONAL EXPERIENCE:

Computing Devices Corporation	Defense Systems Engineer	Sep. 1986 - Dec. 1987
Ontario Ministry of Transportation and Communications	Project Engineer	May 1985 - Aug. 1985 May 1984 - Aug. 1984
Mitel Incorporated	Student Engineer	Sep. 1983 - Dec. 1983 Jan. 1983 - Apr. 1983
General Motors Incorporated	Student Engineer	May 1982 - Aug. 1982 Sep. 1981 - Dec. 1981
Estabrook Construction and CN Railways	Laborer and Equipment Operator	Jan. 1981 - Apr. 1981 Summers of 1979 and 1980

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:

- Canadian Academy of Engineering (CAE), 2009 onward
- Canadian Society of Civil Engineers (CSCE)
- American Society of Civil Engineers (ASCE)
- National Research Council's Transportation Research Board (TRB)
- International Association for Automation and Robotics in Construction - on Board of Directors
- American Society for Engineering Education (ASEE) (1995-2005)
- Institute of Electrical and Electronics Engineers (IEEE) Robotics Society (1991-2005)

HONORS AND AWARDS:

- Construction Industry Institute 2009 Annual Conference Best Poster Award to grad students under my supervision (Duncan Young, Saiedeh Razavi, Hassan Nasir)
- inducted into Canadian Academy of Engineering (CAE) in 2009
- Tucker-Hasegawa Award from IAARC, awarded at 26th Annual ISARC, 2009
- Invited to attend the Inaugural Meeting of the Texas Academy, 2004
- Construction Industry Institute Outstanding Researcher of the Year Award, 2002
- Outstanding Graduate Teaching Award, University of Texas at Austin, 2001
- Engineering Foundation Award, College of Engineering, University of Texas at Austin, 2000
- Appointed Visiting Eminent Scholar at Arizona State University's Del E. Webb School of Construction in July 2000
- 1998 National Research Council's Transportation Research Board D. Grant Mickle Award for "A Life Cycle Cost-Benefit Model for Road Weather Information Systems," published in 1999 in the Transportation Research Record
- 1995 American Society of Civil Engineers' Thomas Fitch Rowland Prize for "Computer Aided Planning of Heavy Lifts," published in 1993 in ASCE Construction Engineering and Management Journal
- Natural Sciences and Engineering Research Council of Canada, Scholarship (1988, '89, '90)
- Roads and Transportation Association of Canada (RTAC) Scholarship (1988, '89)
- 3rd Place Award at Ontario Engineering Design Competition (1985)

CONSULTING:

National Academies' National Research Council (USA)	2008
Software Innovation Inc.	2006
TU Denmark	2004
FIATECH	2004 - 2005
Korean Institute of Construction Technology	2004
Construction Industry Institute	2003 - 2004
Larry Laden Law Firm	2001
Dupont	1999
Rose Law Firm	1999
Malcolm Pirnie, Inc.	1998
Morrison & Foerster LLP Attorneys at Law	1997
Hilti Corporation	1995
National Taiwan Institute of Technology	1993

UNIVERSITY COMMITTEE ASSIGNMENTS:

University (UW)	Co-ordinator for Agreement of Academic Cooperation Between Intergroupe of Ecoles Centrale of Lille, Lyon, Nantes, Paris, France, The Ecole d'Ingénieurs Généraliste de Marseille (a member of the Intergroupe of Ecoles centrale) And University of Waterloo	2006 - now
Faculty (UW)	Co-ordinator for Faculty of Engineering Upper Year Scholarships and Undergraduate Research Assistantships	2006 – now
	Undergraduate Studies Committee	2008 – now
	Graduate Studies Committee	2007
	Environmental Studies Faculty Council	2005 – 2008
	Engineering Faculty Council	2005 – now
Department (UW)	Graduate Studies Committee	2007 – now
	Class Professor for 3 rd Years	2005
	Tenure and Promotion Committee	2009 – now
Department (UT)	Member, Committee to Organize “A Workshop for Women in Engineering: Negotiating the Ideal Faculty Position”	2004
	Member, Civil Engineering Budget Council	2003 - 2005
	Member, Non-Tenure Track Promotion Committee	2004 - 2005
	Member, Faculty Evaluation Committee	2003 - 2005
	Member, Computer Committee	1997 - 2003
	Member, CII Director Selection Committee	2002 - 2003
	Member, Building Committee	2002 - 2005
	Member, Ad Hoc Committee on Faculty Evaluation	2001 - 2002
	Advisor, Phi Alpha Epsilon student society	1995 - 2002
	Member, Graduate Fellowships, Financial Aid, and Recruiting	1997 - 2002
	Member, Department Chairman Selection Committee	2000 - 2001
	Member, Department Web Committee	1998 - 1999
	Member, ARE Curriculum Committee	1998 - 1999
	Member, Building Committee	1997 - 1999
	Chairman, Computer Committee	1992 - 1997
	Member, Department Chairman Selection Committee	1995 - 1996
	Member, Curriculum Committee	1992 - 1993
	Member, Committee to Review Retired Faculty Support	1998
College (UT)	Member, Technical Communications Committee	1996 - 1998
	Member, CTR Review Committee	1998 - 1999
University	Member, University Council (elected Spring '02)	2002 - 2004
	Member, Parking and Traffic Appeals Committee	2003 - 2004
	Member, University Library Committee	2002 - 2003
	Member, University Council (elected Spring '95)	1995 - 1997
	Member, UT's Compact Texas Initiative	1996 - 1997

PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES:

- Member of International Scientific Committee for the upcoming SB11 London – World Sustainable Building (SB) Conference, from 1st to 4th March 2011.
- Member of Construction Industry Institute Academic Committee - 2007 to present
- Co-Chair of the 1st Canadian Graduate Student Colloquium on Computer-assisted Construction Technologies (CCT), London, Ontario, Canada, June 18-19, 2009.
- Member of Board of Advisors on ASCE Journal of Construction Engineering and Management's Special Issue on Research Methodologies in Construction Engineering and Management, 2008-2009
- Member of Editorial Board of Automation in Construction – August 2007 to August 2010
- NSERC Civil Engineering Grant Selection Committee (GSC 1061) – July 2007 to June 2010
- Senior Specialty Editor of ASCE Journal of Construction Engineering and Management - 2007 to present

- Member, International Technical Committee for “ASCE 2007 IT-AIS Conference on Information Technology Support to Advance Infrastructure Systems Management”, Pittsburgh PA, July 25-28, 2007. – 2006 to present
- Member, Canadian Construction Innovation Council’s (CCIC) Construction Performance Measurement Study’s Steering Committee – 2006 to present
- Member of Planning Team for TRB “Radio Frequency Identification (RFID) in Transportation Conference,” Washington D.C., October 17-18, 2006.
- Member of Editorial Panel for Engineering Construction and Architectural Management, 2006-2009.
- Member, National Research Council’s Transportation Research Board’s Committee on Construction Management AFH10 – 2006 to present
- Member of International Program Committee for 21st, 22nd, and 23rd Annual ISARC’s
- Member of NCHRP Synthesis Oversight Panel on Technologies for Construction Delivery (NCHRP 20-05/Topic 37-06)
- Member of the International Scientific Committee of the ICSC-1 – First International Construction Specialty Conference of the Canadian Society for Civil Engineering to be held in Calgary, Canada from May 23 to 26th, 2006.
- Member of the International Scientific Committee of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering, to be held in Montreal, Canada, June 14-16, 2006.
- Corresponding Member of ASCE Committee on Sustainability
- International Association for Automation and Robotics in Construction – Member of Board of Directors, and International Organizing Committees of the ISARC’s - 1995 to present
- Member of Construction Industry Institute Breakthrough Committee - 1997 to present
- ASCE Construction Research Council - 1993 to present
- Member of review committee for ASCE conference on Computing in Civil Engineering in Cancun Mexico in July 2005
- Member of Science Advisory Board for the Contour Crafting Technology Center (USC) – 2004 to present
- Associate Editor of ASCE Journal of Construction Engineering and Management - 2003 to 2007
- Member, ASCE-TCCIT Database and Information Management (DIM) Committee – 2003 to 2005
- Member, National Research Council’s Transportation Research Board’s Group 2 Council on Design and Construction of Transportation Facilities – 2003 to 2006
- Chairman, National Research Council’s Transportation Research Board Committee on Applications of Emerging Technologies - A2F09 - 1996 to 2002 (member since 1989)
- Member of National Research Council Committee to Review the Federal Transportation R&D Strategic Planning Process - 1999
- Member of National Research Council Committee to Conduct a Workshop on Enabling Transportation Research - 1998
- Member of Construction Industry Institute Information Technologies Committee - 1998 to 1999
- Member of ITS America Task Force on Advanced Construction and Maintenance Systems – 1998 to 2000
- Member of CIB Task Group 27 – Human-Machine Technologies for Construction Sites – 1997 to 2002
- Associate Editor of ASCE Journal of Infrastructure Systems - 1994 to 1999
- ASCE Committee on Field Sensing and Robotics in Civil Engineering - 1990 to 2004
- Civil Engineering Research Foundation Robotics Task Force - 1994
- ASCE Committee on Imaging Technologies (corresponding member) - 1992 to 2004
- Regularly review articles for:
 - The Canadian Journal of Civil Engineering
 - ASCE Journal of Construction Engineering and Management
 - ASCE Journal of Infrastructure Systems
 - ASCE Journal of Transportation Engineering
 - ASCE Journal of Computing in Civil Engineering
 - ASCE Journal of Management in Engineering
 - National Research Council’s Transportation Research Record
 - Transportation Research Part C
 - Automation in Construction
 - Construction Management and Economics
 - Journal of Field Robotics
 - Engineering, Construction, and Architectural Management

- Advanced Engineering Informatics
- Journal of Civil Engineering and Management
- and other miscellaneous journals such as Optics and Lasers.
- Paper reviews for Construction Research Congress in San Diego 2005, ASCE Conference on Computing in Civil Engineering in Cancun Mexico 2005, IEEE Intelligent Transportation Systems Council Conference (2004), International CIB Congress in Toronto (2004), Annual International Symposia on Automation and Robotics in Construction (ISARC) after 1992, ICCCBE-X in Germany (2004), ASCE 2004 Specialty Conference on Leadership and Management in Construction in Hilton Head, SC, and similarly prior to 2004.

COURSES TAUGHT IN CIVIL ENGINEERING AT WATERLOO:

- Sensing in Civil Engineering
- Construction Methods
- Civil Engineering Systems

COURSES TAUGHT IN CIVIL ENGINEERING AT UT AUSTIN:

- Sensing in Civil Engineering
- Engineering Economics and Construction Project Management
- Heavy Construction Methods, Equipment, Modeling, and Simulation
- Introduction to Construction Automation
- Design of Automated Construction Systems
- Robotics, Machine Vision, and Spatial Reasoning in Civil Engineering
- Graduate Seminar in Teaching and Research Skills

SHORT COURSES TAUGHT TO INDUSTRY:

- Sensing and Detection for Building Security (UT Austin, Feb. 19, 2005)
- Prefabrication, Preassembly, Modularization, and Offsite Fabrication (Houston, Oct. 29, 2004)
- Innovative Construction Workforce Management Strategies (DTU in Denmark, October 19-21, 2004)
- Construction Safety: Zero Accidents (1996-2005 biannually)
- Project Schedule Optimization (1997-2001 biannually)
- Modularization and Preassembly (c. 1994-8 biannually)
- Project Time Management (c. 1994-7 biannually)

PATENTS:

Haas, C., Sreenivasan, S.V., Traver, A.E., Saidi, K.S., Seo, J., and Greer, R.L., "Pole Inserting Robotic Mechanism for Accessing the Interior of a Harsh Enclosure," Patent Number 5,979,340, Nov. 9, 1999.

SIGNIFICANT INVITATIONS TO SPEAK:

- Plenary Panel participant and presenter on June 27th for the joint 26th Annual International Symposium for Automation and Robotics in Construction (ISARC) and the ASCE Computing in Civil Engineering Conference in Austin Texas, June 24-27, 2009.
- Plenary Speaker for ExxonMobil Refining & Supply Worldwide Planning and Project Execution Leadership Team Meeting; talk entitled, "Improving Construction Productivity: What Role Does Technology Play?," Washington, DC, February 5, 2009.
- Plenary Speaker for the US National Research Council Workshop on Advancing the Competitiveness and Productivity of the US Construction Industry; talk entitled, "An International Perspective on Construction Productivity and Competitiveness," Washington, D.C., November 19, 2008.
- Plenary Speaker for 25th International Symposium on Automation and Robotics in Construction (ISARC), Vilnius, Lithuania, June 27, 2008.
- Plenary Speaker for 21st International Symposium on Automation and Robotics in Construction (ISARC), Jeju, Korea, September 21-25, 2004.

- CERF Corporate Advisory Board Annual Meeting, plenary presentation on construction productivity, Washington, D.C., May 1, 2003.
- AIChE's 34th Annual Engineering and Construction Contracting Conference, plenary presentation on skilled workforce shortage, San Francisco, CA, Oct. 2002.
- Dupont's Annual Internal International Construction and Engineering Meeting, plenary presentation, Wilmington DE, Fall 2000 .
- Gas Research Institute's Robotics Workshop, Tarrytown NY, Nov. 4, 1997 .
- Waseda University Construction Robot Research International Workshop, Tokyo, June 10, 1996.

REVIEW PANELS:

- NSERC CRD and IRC site visit committee, April 27-29, University of Alberta
- College of Reviewers for proposals to Leaders Opportunity Fund (LOF) of Canada Foundation for Innovation (CFI).
- Alfred P. Sloan Foundation proposal reviews, periodically, 2002-2005.
- Canadian NSERC proposal reviews on Strategic Projects, Steacie Fellowship, etc., periodically
- National Science Foundation Review Panel in Washington, D.C., January 30, 2006.
- National Science Foundation Review Panel in Washington, D.C., May 27-28, 2004.
- National Science Foundation Review Panel in Washington, D.C., May 31, 2002.
- National Science Foundation Review Panels prior to 2002 (~3, including SBIR program).

PUBLICATIONS:

Refereed Archival Journal Publications

in progress

1. Razavi, S., Haas, C., Duflos, E., and Vanheeghe, P., "Detecting Multi-handling in Construction," to be submitted to Automation in Construction, July, 2009.
2. Zhang, D., Haas, C., Goodrum, P., and Caldas, C., "Construction Rework Reduction in a Nuclear Energy Facility," to be submitted to the CSCE Civil Engineering Journal, August, 2009.
3. Wang?, Goodrum, Haas, and Caldas, "Impact of Management Practices on Craft Productivity," to be submitted to the ASCE Journal of Construction Engineering and Management, August, 2009.
4. Vaziri, S., Jiang, X., Haas, C., and Rothenburg, L., "Evaluation of Weigh-in-Motion (WIM) Systems Performance in Asphalt Concrete Pavement in a Cold Environment," to be submitted to the CSCE Civil Engineering Journal, August, 2009.
5. Vaziri, S., Jiang, X., Haas, C., and Rothenburg, L., "Auto-Compensation Methods for Weigh-in-Motion (WIM) Systems in Asphalt Concrete Pavement in a Cold Environment," to be submitted to the National Research Council's Transportation Research Record, July, 2009.
6. Rehan, R., Knight, M., Unger, A., and Haas, C., "Water and Wastewater Infrastructure Management: Need for a Comprehensive Decision Framework," to be submitted to the ASCE Journal of Infrastructure Management, August, 2009.
7. Turkan, Y., Golparvar-Fard, M., Bosche, F., Haas, R., Pena-Mora, F., and Haas, C. "Comparison of Photogrammetric and 3D Imaging Techniques for Automated Object Retrieval from Construction Scenes," to be submitted to the ASCE Journal of Computing in Civil Engineering, December, 2009.

8. Turkan, Y., Bosche, F., Haas, R., and Haas, C., “Automated Construction Progress Tracking Using 3D Imaging,” to be submitted to the ASCE Journal of Computing in Civil Engineering, May, 2010.
9. Turkan, Y., Bosche, F., Haas, R., and Haas, C., “Automated Identification of Concrete Construction Temporary objects,” to be submitted to Automation in Construction, August, 2010.
10. Sherbini, K., Hegazy, T., and Haas, C., “Automated BIM Based Submittal Analysis,” to be submitted to Automation in Construction, August, 2010.
11. Berbash, K., Hegazy, T., and Haas, C., “An Airport Security Infrastructure Management Decision Support Framework,” to be submitted to the ASCE Journal of Infrastructure Management, August, 2010.
12. Ahmed, M., and Haas, C., “The Potential of Low Cost Close Range Photogrammetry towards Unified Automatic Pavement Distress Surveying,” 2010.

submitted

1. Goodrum, P., Haas, C., Caldas, C., Zhai, D., Yeiser, J., and Homm, D., “The Development and Validation of a Model to Predict a Technology’s Impact on Construction Productivity,” submitted to ASCE JCEM, December, 2009.
2. Young, D., Haas, C., Caldas, C., and Goodrum, P., “Modeling the Impact of Automated Materials Locating and Tracking Technology on the Construction Supply Network,” submitted to the ASCE Journal of Construction Engineering and Management, December, 2009.
3. Wang, Goodrum, Haas, Glover, and Vaziri, “A Benefit Cost Analysis of Construction Craft Training,” submitted to Construction Management and Economics, December, 2009.
4. Pradhan, A., Akinci, B., and Haas, C., “Query Capture and Data Source Identification Formalisms to Support Data Fusion for Construction Productivity Monitoring,” submitted to Construction Automation, December, 2009.
5. Razavi, S., Haas, C., “Multi-sensor Data Fusion for On-Site Material Tracking in Construction,” submitted to Automation in Construction, November, 2009.
6. Razavi, S., Haas, C., “A Reliability Based Hybrid Data Fusion Method for Adaptive Location Estimation in Construction,” submitted to the ASCE Journal of Computing in Civil Engineering, November, 2009.

Accepted

1. Nassir, H., Haas, C., Caldas, C., and Goodrum, P., “An Implementation Model for Automated Materials Tracking and Locating,” accepted by CSCE Civil Engineering Journal, November 2009.

published

1. Wang, Y., Goodrum, P., Haas, C., and Glover, R., “Construction Skills Affinity Analysis,” ASCE Journal of Construction Engineering and Management, Vol. 135, no. 10, pp. 999-1008, October, 2009.
2. Chong, W.K., Kumar, S., Haas, C.T., Beheiry, S.M., Coplen, L., and Oey, M., “Understanding and interpreting baseline perceptions of sustainability in construction among civil engineers in the United States,” ASCE Journal of Management in Engineering, Vol., 25, no. 23, pp. 143-154, July, 2009.
3. Zhai, D., Goodrum, P., Haas, C., and Caldas, C., “The Relationship between Automation and Integration of Construction Information Systems and Labor Productivity,” ASCE JCEM, Vol. 135, no. 8, August, 2009.

4. Bosche, F., Haas, C., and Akinci, B., "Experimental Results for Automated Object Retrieval from 3D Images," *ASCE Journal of Computing in Civil Engineering*, Vol. ?, pp. ???-???, November, 2009.
5. Grau, D., Caldas, C., Haas, C., Goodrum, P., and Gong, J., "Assessing the Impact of Materials Tracking Technologies on Construction Craft Productivity," *Automation in Construction* Vol. 18, pp. 903-911, 2009.
6. Hwang, B., Thomas, S., Haas, C., and Caldas, C., "Measuring the Impacts of Rework on Construction Cost Performance," *ASCE Journal of Construction Engineering and Management*, Vol. 135, No. 3, pp. 187-198, 2009.
7. Baiz, S., Tighe, S.L., Haas, C., Mills, B., and Perchanok, M., "Development of Frost and Thaw Depth Predictors for Decision Making About Variable Load Restrictions," National Research Council's Transportation Research Record, TRR 2053, pp.1-8, 2008.
8. Wang, Y., Goodrum, P., Haas, C., and Glover, R., "Craft Training Issues in American Industrial and Commercial Construction," *Journal of Construction Engineering and Management* 134 (10), pp. 795-803, 2008.
9. Rankin, J., Fayek, A., Meade, G., Haas, C., and Manseau, A., "Initial Metrics and Pilot Program Results for Measuring the Performance of the Canadian Construction Industry," *Canadian Journal of Civil Engineering*, vol. 35, no. 9, Sept., 2008.
10. Bosche, F., and Haas, C., "Rapid Automated Three-dimensional CAD Model Object Retrieval and Quality Control," *ITCon*, March, 2008.
11. Bosche, F., Haas, C.T., "Automated Retrieval of 3D CAD Model Objects in Construction 3D Images", *Journal of Automation in Construction*, Elsevier, New-York, USA, Volume 17, Issue 4, pp 499-512, 2008.
12. Teizer, J., Caldas, C.H., and Haas, C.T., "Real-time Three-Dimensional Modeling for Detection and Tracking of Construction Resources," *ASCE Journal of Construction Engineering and Management*, November 2007.
13. Song, J., Haas, C., and Caldas, C., "A Proximity-based Method for Locating RFID Tagged Objects," *Journal of Advanced Engineering Informatics*, (21), October, 2007, pp. 367-376.
14. Haas, C., Waugh, L., and Froese, T., "The History and Renaissance of Construction Engineering and Management in Canada," *ASCE Journal of Construction Engineering and Management*, September 2007.
15. Caron, F., Duflos, E., Haas, C., and Vanheeghe, P., "Application du TBM pour la localisation de noeuds de communication a partir de mesures de proximite - Application of the TBM to the communication nodes localization using proximity measurements," *Revue Traitement du Signal*, Vol. 24, pp. 153-164, 2007.
16. Seo J.W. , Haas C., and Saidi K., "Graphical modeling and simulation for design and control of a tele-operated clinker clearing robot," *Automation in Construction*, Volume: 16, Issue: 1, January, 2007, pp. 96-106.
17. Haas, C., "A Model for Data Fusion in Civil Engineering," [Intelligent Computing in Engineering and Architecture](#), Volume 4200/2006, ISBN 978-3-540-46246-0, 2006, pp. 315-319. (note: this is described as a chapter in a book, but it is really more a short journal article and was refereed in that fashion.)
18. Song, J., Haas, C., and Caldas, C., "Tracking the Location of Materials on Construction Job Sites," *Journal of Construction Engineering and Management*, Volume 132, Number 9 (September 2006), pp. 911-918.
19. Srour, I., Haas, C., and Morton, D., "Optimizing Investment in Construction Skills," *ASCE Journal of Construction Engineering and Management*, Vol. 132, No. 11, November 2006, pp. 1158-1166.

20. White, R., Song, J., and Haas, C., "An Evaluation of Quartz Piezo Electric Weigh-in-Motion Sensors," National Research Council's Transportation Research Record, no. 1945, pp. 109-117, November, 2006.
21. Srour, I., Haas, C., and Borcharding, J., "What Does the Construction Industry Value in its Workers?" ASCE Journal of Construction Engineering and Management, Vol. 132, No. 10, October, 2006, pp. 1053-1058.
22. Caron, F., Razavi, S., Song, J., Vanheeghe, P., Duflos, E., Caldas, C., and Haas, C., "Locating Sensor Nodes on Construction Projects," Autonomous Robots, 10.1007/s10514-006-9720-1, September, 2006.
23. Grau, D., Caldas, C., and Haas, C., "Using Global Positioning System to Improve Materials-Locating Processes on Industrial Projects," ASCE J. of Construction Engineering and Management Volume 132, Issue 7, July 2006, pp. 741-749.
24. Brandenburg, S., Haas, C., and Byrom, K., "Strategic Management of Human Resources in Construction," ASCE Journal of Construction Engineering and Management, Vol. 22, Issue 2, April 2006, pp. 89-96.
25. Beheiry, Salwa M., Chong, Wai Kiong and Haas, Carl T., "Examining Business Impact of Owner Commitment to Sustainability," ASCE J. of Construction Engineering and Management Volume 132, Issue 4, April 2006, pp. 384-392.
26. Kim, C., Haas, C., Liapi, K., and Caldas, C., "Human-Assisted Obstacle Avoidance System Using 3D Workspace Modeling for Construction Equipment Operation," ASCE J. Comp. in Civ. Engrg., Volume 20, Issue 3, (May/June 2006), pp. 177-186.
27. Song, J., Haas, C., Caldas, C., Ergen, E., and Akinci, B., "Automating The Task of Tracking the Delivery and Receipt of Fabricated Pipe Spools in Industrial Projects," Automation in Construction, Vol. 15/2, March 2006, pp 166-177.
28. Teizer, J., Kim, C., Haas, C.T., Liapi, K.A., and Caldas, C.H. (2005), "A Framework for Real-time 3D Modeling of Infrastructure," National Research Council's Transportation Research Board's *Transportation Research Record*, No. 1913, Washington D.C., 2005, pp. 177-186.
29. Kim, C., Haas, C., and Liapi, K., "Rapid, On-Site Spatial Information Acquisition and its Use for Infrastructure Operation and Maintenance," Automation in Construction, Vol 14/5, Oct. 2005, pp.666-684.
30. Castenada, J., Tucker, R.L., and Haas, C., "Workers' Skills and Receptiveness to Operate Under the Tier II Construction Management Strategy," ASCE Journal of Construction Engineering and Management. Vol. 131, no. 7, July 2005, pp. 799-807.
31. Song, J., Fagerlund, W., Haas, C., Vanegas, J., and Tatum, C., "Considering Pework on Industrial Projects," ASCE Journal of Construction Engineering and Management, Vol. 131, no. 6, June 2005, pp. 723-733.
32. Kim, C., Haas, C., Caldas, C., and Liapi, K., "Erfassung raumlicher Daten, Integration und Modellierung fur Echtzeit-Projektlebenszyklus Anwendungen", Thesis, Wissenschaftliche Zeitschrift der Bauhaus-Universitat Weimar, 1. Heft 2004 50. Jahrgang, pp. 30-37.
33. Cho, Y., Haas, C., Sreenivasan, S., and Liapi, K., "Position Error Modeling for Automated Construction Manipulators," ASCE Journal of Construction Engineering and Management, vol. 130, no. 1, Jan/Feb 2004, pp. 50-58.
34. Goodrum, P., and Haas, C., "The Long Term Impact of Equipment Technology on Labor Productivity in the U.S. Construction Industry at the Activity Level," ASCE Journal of Construction Engineering and Management, vol. 130, no. 1, Jan/Feb 2004, pp. 124-133.

35. Kwon, Bosche, Kim, Haas, and Liapi, "Fitting Range Data to Primitives for Rapid Local 3D Modeling Using Sparse Range Point Clouds," *Automation in Construction* 13, January 2004, pp. 67-81.
36. Kim, H., Rauch, A.F., and Haas, C., "Automated Quality Assessment of Stone Aggregates Based on Laser Imaging and a Neural Network," *ASCE Journal of Computing in Civil Engineering*, vol. 18, issue 1, January 2004, pp. 58-64.
37. Carley, L., Goodrum, P., Haas, C., and Borcharding, J., "Experiences with multiskilling among non-union craft workers in U.S. industrial construction projects," *Engineering, Construction, and Architectural Management*, Loughborough Univ., U.K., vol. 10, no. 6, Dec., 2003, pp. 374-381.
38. Browne, C., Rauch, A. F., Haas, C. T., and Kim, H. (2003). "Performance evaluation of automated machines for measuring gradation of aggregates." *Geotechnical Testing J.*, ASTM, Vol. 26, No. 4, December, pp. 373-381.
39. McLaughlin, J, Sreenivasan, S.V., Haas, C., and Liapi, K., "Rapid Human-Assisted Creation of Bounding Models for Obstacle Avoidance in Construction," *Journal of Computer-Aided Civil and Infrastructure Engineering*, vol. 19, pp. 3-15, 2004.
40. Brandenburg, S., Byrom, K., and Haas, C., "The Shortage of Skilled Craft Workers in the US," *Construction Industry Institute, Research Summary 182-1*, November 2003.
41. Khoury, J., Haas, C., Mahmassani, H., Logman, H., and Rioux, T., "Performance Comparison of Automated Vehicle Identification and Inductive Loop Traffic Detectors for Incident Detection," *ASCE Journal of Transportation Engineering*, Vol. 129, no. 6, pp. 600-607, Nov/Dec 2003.
42. Cho, Y.K., and Haas C.T., "Rapid Geometric Modeling for Unstructured Construction Workspaces," *Computer-Aided Civil and Infrastructure Engineering*, pp. 242-253, no. 18, 2003.
43. Kim, H., Haas C.T., Rauch, A., and Browne, C., "3D Image Segmentation of Aggregates from Laser Profiling," *Computer-Aided Civil and Infrastructure Engineering*, pp. 254-263, Vol. 18, No. 4, July 2003.
44. Kim, H., Haas, C.T., Rauch, A.F., and Browne, C., "Wavelet-based 3D Descriptors of Aggregate Particles," *National Research Council's Transportation Research Board's Transportation Research Record 1787*, pp. 109-116, 2002.
45. Haas, C., and Kim, Y., "Automation in Infrastructure Construction," *Construction Innovation*, Vol. 2, Issue 3, pp. 191-210, 2002.
46. Goodrum, P., and Haas, C., "Partial Factor Productivity and Equipment Technology Change at the Activity Level in the U.S. Construction Industry," *ASCE Journal of Construction Engineering and Management*, Vol. 128, no.6, pp 463-472, Nov/Dec, 2002.
47. Haas, C., et al., "Prefabrication, Preassembly, Modularization, and Offsite Fabrication in Industrial Construction: A Framework for Decision-Making," *Construction Industry Institute, Research Summary 171-1*, August 2002.
48. Kim, H., Haas, C., Rauch, A., and Browne, C., "Dimensional Ratios for Stone Aggregates from Three-Dimensional Laser Scans," *ASCE Journal of Computing in Civil Engineering*, Vol. 16, no. 3, pp. 175-183, July 2002.
49. Cho, Y., Haas, C., Liapi, K., and Sreenivasan, S., "A framework for rapid local area modeling for construction automation." *Journal of Automation in Construction*, 11(6), pp. 629-641, 2002.

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62. Kim, H., Haas, C., Rauch, A., and Browne, C., "Wavelet-based 3D Descriptors of Aggregate Particles," Session 444, Transportation Research Board Meeting, Washington DC, Jan. 15, 2002.
63. Haas, C., "A Two-Tier Workforce Strategy," ASCE Annual Conference, Houston, TX, October 13, 2001.
64. Kim, H., and Haas, C. "A Prototype Laser Scanner for Characterizing Size and Shape Parameters in Aggregates," Proceedings, 9th Annual Symposium, International Center for Aggregates Research, Austin TX, Apr. 22, 2001.
65. Haas, C., "Implementation of an Automated Road Maintenance Machine," 26th Annual Rocky Mountain Asphalt Conference and Equipment Show, Denver CO., Feb. 22, 2001.
66. Haas, C., "Bridge Prioritization for Scour Evaluation and Monitoring," Session 45, Transportation Research Board Meeting, Washington DC, Jan. 8, 2001.
67. Haas, C., "Research Results on Computer Use by Construction Foremen," Session 91, Transportation Research Board Meeting, Washington DC, Jan. 8, 2001.
68. Haas, C., "Implementation of an Automated Road Maintenance Machine," Session 206, Transportation Research Board Meeting, Washington DC, Jan. 9, 2001.
69. Haas, C., "Study of Foreman-level Task Automation in the US Construction Industry," the 17th International Symposium on Automation and Robotics in Construction, Taipei Taiwan, Sept. 18-20, 2000.
70. Haas, C., "Innovation Testing System of Construction Aggregate Using Laser Profiling," the 17th International Symposium on Automation and Robotics in Construction, Taipei, Taiwan, Sept. 18-20, 2000.
71. Haas, C., "Schedule Reduction Through Construction Prework," for the Arizona State University Clean Room Construction Forum, Phoenix, AZ, July 25, 2000.
72. Haas, C., "Workforce of the Future," for the Arizona State University Alliance for Construction Excellence, Phoenix AZ, July 10, 2000.
73. Haas, C., "Evaluation of Automatic Vehicle Identification System Implementation in San Antonio," for the TxDOT RMC Meeting, Houston TX, June 5, 2000.
74. Goodrum, P., and Haas, C., "Factors Affecting Innovation Performance in the U.S. Construction Industry," for the ASCE Construction Congress VI Proceedings in 2000.
75. Goodrum, P., and Haas, C., "U.S. Construction Labor Productivity Trends, 1970-1998," for the ASCE Construction Congress VI Proceedings in 2000.
76. Haas, C., "Demonstration and Presentation of the Automated Road Maintenance Machine," to the TxDOT, Corpus Christi TX, Jan. 27, 2000.
77. Haas, C., "Demonstration and Presentation of the Automated Road Maintenance Machine," to the TxDOT, Dallas TX, Dec. 1999.
78. Haas, C., "Construction Workforce of the Future," Dupont, Wilmington DE, fall 2000.

79. Seo, J., Haas, C.T., and Sreenivasan, S.V., "A Tele-Robotic System with Dynamic Graphical Interfacing for Electrical Power Plant Maintenance," Field Service and Robotics Conference, Carnegie Mellon University, Pittsburgh PA, Aug. 30, 1999.
80. Haas, C., et al., "Demonstration and Presentation of the Automated Road Maintenance Machine," to the AZ DOT, Tucson AZ, July 7, 1999.
81. Haas, C., et al., "Demonstration and Presentation of the Automated Road Maintenance Machine," to the CO DOT, Denver CO, June 21, 1999.
82. Haas, C., et al., "Demonstration and Presentation of the Automated Road Maintenance Machine," to the OK DOT, Oklahoma City OK, June 2, 1999.
83. Haas, C., et al., "Demonstration and Presentation of the Automated Road Maintenance Machine," at the PA DOT's Maintenance Executive Development Program, Pittsburgh, PA, May 5, 1999.
84. Haas, C., "Research Results from the CCIS Program's Research on the Construction Workforce," CII Board of Advisors Meeting, Dayton OH, Apr. 22, 1999.
85. Rauch, A., and Haas, C.T "State of the Art in Aggregate Classification: Review of Aggregate Gradation Technologies," 7th Annual Symposium, International Center for Aggregates Research, University of Texas at Austin, Austin TX, Apr. 19, 1999.
86. Haas, C., "Research Results from the CCIS Program's Research on the Construction Workforce," Sloan Foundation Industry Centers Meeting, Minneapolis-St. Paul MN, Apr. 8, 1999.
87. Haas, C., "Implementing an Automated Road Maintenance Machine: Lessons from the Field," Session 302, Transportation Research Board Meeting, Washington DC, Jan. 12, 1999.
88. Tavana, H., Mahmassani, M., and Haas, C., "Effectiveness of Wireless Phones in Incident Detection: Probabilistic Analysis," Session 38, Transportation Research Board Meeting, Washington DC, Jan. 11, 1999.
89. Haas, C., and Kim, Y.S., "Demonstration and Presentation of the Automated Road Maintenance Machine," at the 12th Equipment Management Workshop, sponsored by TRB and TxDOT, Austin TX, Aug. 2, 1998.
90. Haas, C., "Implementation Results of the Automated Road Maintenance Machine," report to Western Association of State Highway and Transportation Officials (WASHTO), Cheyenne WY, June 23, 1998.
91. Haas, C., "Man-Machine Balanced Crack Sealing Process for UT Automated Road Maintenance Machine," ASCE 5th International Conference on Applications of Advanced Technologies in Transportation Engineering, Newport Beach CA, Apr. 26-29, 1998.
92. Haas, C., "Breakout Session on Results from the Sloan Program's Research on the Construction Workforce," CII Board of Advisors Meeting, Dallas TX, Apr. 22, 1998.
93. Haas, C., "Automated Crack Sealing Machine," report to Western Association of State Highway and Transportation Officials (WASHTO), Galveston TX, Mar. 3, 1997.
94. Haas, C., "Progress on Implementation of the Automated Road Maintenance Machine (ARMM)," TxDOT RMC Meeting, Austin TX, Nov. 6, 1997.
95. Haas, C., "Robotics for Human Augmentation in Construction and Maintenance," the Gas Research Institute's Robotics Workshop, Tarrytown NY, Nov. 4, 1997.
96. Haas, C., "Evaluation of Positioning Technologies for Levelling Work in Building Construction," ASCE Construction Congress V in Minneapolis MN, Oct. 7, 1997.

97. Haas, C., "Teleoperation for Construction Equipment," ASCE Construction Congress V in Minneapolis MN, Oct. 7, 1997.
98. Haas, C., et al., "Multiskilling Implementation," CII CPI Conference, Austin TX, Sept. 30, 1997.
99. Haas, C., et al., "Multiskilling Implementation," CII Conference, Minneapolis MN, Aug. 7, 1997.
100. Haas, C., "A Productivity Model for Performance Evaluation of the UT Automated Road Maintenance Machine," 14th International Symposium on Automation and Robotics in Construction, The Robotics Institute, Carnegie Mellon University, Pittsburgh PA, June 8-11, 1997.
101. Haas, C., "Development of a Remote Automatic Monitoring and Public Information System for Hazardous Conditions," TxDOT Research Management Committee Meetings, Arlington TX, June 6, 1997.
102. Haas, C., "Testing, Evaluation, and Implementation of Automated Pavement Crack Sealing Technology," TxDOT Research Management Committee Meetings, Arlington TX, June 2, 1997.
103. Haas, C., "A Model for Imaging Assisted Automation of Infrastructure Maintenance," Imaging Technologies: Techniques and Civil Engineering Applications, Davos Switzerland, May 26, 1997.
104. Haas, C., "Technology for Human Augmentation in Construction," Rice University's Dept. of Civil Engineering, Apr. 9, 1997.
105. Greer, R., Kim, Y., and Haas, C., "Telerobotic Control for Automated Construction and Maintenance," presentation in session 121 at the 76th Annual National Research Council's Transportation Research Board Meeting, Washington DC, Jan. 13, 1997.
106. Haas, C., "Automated Pavement Crack Sealing Technology," presentation in A3C13 Committee Meeting at the 76th Annual National Research Council's Transportation Research Board Meeting, Washington DC, Jan. 15, 1997.
107. Haas, C., Seo, J., Stone, R., and Traver, A., "Design Review for an Automated Clinker Clearer, and Construction Automation Laboratory Demonstration," presentation to Houston Lighting & Power industry group, July 25, 1996.
108. Haas, C., "Field Demonstration of an Automated Pavement Crack Sealer," presentation to group invited to demonstration of the crack sealer and the large scale hydraulic manipulator, J.J. Pickle Research Center, July 2, 1996.
109. Haas, C., Greer, R., Gibson, G., Traver, A., and Tucker, R., "Advances in Control Systems for Construction Manipulators," the 13th International Symposium on Automation and Robotics in Construction, Tokyo, June 13, 1996.
110. Haas, C., "Development of Construction Robots," technical session chair, the 13th International Symposium on Automation and Robotics in Construction, Tokyo, June 12, 1996.
111. Haas, C., "Construction Rationalization and Activities of the Construction Industry Institute," invited speaker to the Waseda University Construction Robot Research International Workshop, Tokyo, June 10, 1996.
112. Haas, C., Greer, R., Boehme, K., and Graff, J., "Technology for Automating Highway Maintenance Joint Sealing Operations in Texas," presentation in session 227 at the 75th Annual National Research Council's Transportation Research Board Meeting, Washington DC, Jan. 10, 1996.
113. Haas, C., Thompson, T., Dailey, C., and Traver, A., "An Assessment of Automated Surface Finishing Technologies," presented at the ASCE Construction Congress IV, San Diego CA, Oct. 23, 1995.

114. Haas, C., "University of Texas Construction Automation Laboratory," poster presentation at the ASCE Construction Congress IV, San Diego, CA, Oct. 24, 1995.
115. Haas, C., "Advanced Control Systems for Construction Equipment," presented at the ASCE Construction Congress IV, San Diego CA, Oct. 25, 1995.
116. Haas, C., "Robotics and Automation," Center for Transportation Research 15th Annual Symposium, The Commons Building, J.J. Pickle Research Center, July 11, 1995.
117. Haas, C., and Fowler, D., "Evaluation of Sewer Spot Repair Technologies," presentation to City of Austin Engineer and his staff at the Municipal Building, 8th and Colorado, June 29, 1995.
118. Haas, C., "Progress in the Implementation of an Automated Pavement Crack Sealer," presentation to group invited to demonstration of the crack sealer and the large scale hydraulic manipulator, J.J. Pickle Research Center, June 16, 1995.
119. Haas, C., and Lin, K., "An Interactive Database System with Graphical Linkage for Computer Aided Critical Lift Planning," paper presentation at 12th International Symposium on Automation and Robotics in Construction, Warsaw, Poland, May 30, 1995.
120. Haas, C., Fowler, D., Wright, C., and Bauhan, T., "Evaluation of Sewer Spot Repair Technologies," paper presentation at North American No-Dig '95, Toronto Ontario Canada, May 2, 1995.
121. Haas, C., "Construction Robotics," presentation at Hilti Corp.'s SCFT-Meeting, University of Texas at Austin, Apr. 25, 1995.
122. Haas, C., Hinze, J., Goodrum, P., and Gambatese, J., "Multimedia Design for Safety Tool for Road Construction," presentation in session 88B at the 74th Annual National Research Council's Transportation Research Board Meeting, Washington DC, Jan. 24, 1995.
123. Haas, C., "Infrastructure Robotics," presentation at the 14th Annual CTR Symposium, Austin TX, July 1994.
124. Haas, C., "Automation in Underground Renewal in the City of Austin, Texas," invited seminar presentation at the University of Waterloo, Canada, June 1994.
125. Ochoa-Franco, L., Haas, C., and Dailey, C., "Construction Automation Research Database," paper presentation at the 11th International Symposium on Automation and Robotics in Construction, Brighton UK, May 1994.
126. Griffith, A., Haas, C., and Tucker, R., "Feasibility of Automated Material Handling in Hazardous Environments," paper presentation at the Conference on Robotics for Challenging Environments, Albuquerque NM, Mar. 1994.
127. Haas, C., "Comparison of Multi-sensing Methods for the Detection of Cracks in Pavement Surfaces," presentation at 73rd Annual Transportation Research Board Meeting, Washington, DC, Jan. 1994.
128. Haas, C., "Overview of the 10th International Symposium on Automation and Robotics in Construction: Part B," presentation at 73rd Annual Transportation Research Board Meeting, Washington, DC, Jan. 1994.
129. Haas, C., and Dailey, C., "UT Construction Automation Group," poster presentation for a Transportation Symposium, hosted by UT at the LBJ Library, for Transportation Secretary Federico Pena, Nov. 1993.
130. Haas, C., and Dailey, C., "Automated Crack Sealer Demonstration and Presentation," Balcones Research Center, University of Texas at Austin, Sept. 3, 1993.

131. Gharpuray, D., and Haas, C., "Comparison of Multi-sensing Methods for the Detection of Cracks in Pavement Surfaces," paper presentation at ASCE Pacific Rim TransTech Conference, Seattle WA, July 1993.
132. Haas, C., and Dailey, C., "Automated Surface Finishing System Demonstration and Presentation," Balcones Research Center, University of Texas at Austin, May 14 & 17, 1993.
133. Hsieh, T., and Haas, C., "Applications of Large Scale Manipulators in the Construction Environment," paper presentation at 10th International Symposium on Automation and Robotics in Construction, Houston, May 1993.
134. Haas, C., Hendrickson, C., McNeil, S., and Bullock D., "A Field Prototype of a Robotic Pavement Crack Sealing System," paper presentation at International Symposium on Automation and Robotics in Construction, Tokyo, June 1992.
135. Haas, C., "Tutorial on Sensing and Perception," American Society of Civil Engineers Construction Congress, Cambridge, Apr. 1991.
136. Haas, C., "Tutorial on Machine Vision and Applications in Transportation," 2nd International Conference on Applications of Advanced Technologies in Transportation Engineering, St. Paul MI, Aug. 1991.
137. Hendrickson, C., McNeil, S., Bullock, D., Haas, C. Peters, D., Grove, D., Kenneally, K., and Wichman, S., "Perception and Control for Automated Pavement Crack Filling," paper presentation at 2nd International Conference on Applications of Advanced Technologies in Transportation Engineering, St. Paul MI, Aug. 1991.
138. Haas, C., Hendrickson, C., and McNeil, S., "A Design for Automated Pavement Crack Filling," paper presentation at Construction Congress, Cambridge MA, Apr. 1991.
139. Haas, C., and Hendrickson, C., "Integration of Diverse Technologies for Pavement Sensing," paper presentation at 70th Annual Transportation Research Board Meeting, Washington DC, Jan. 1991.
140. Haas, C., Shen, H., "PRESERVER: A Knowledge Based Pavement Maintenance Consulting Program," paper presentation at 2nd North American Pavement Management Conference, Toronto, Nov. 1987.
141. Haas, C., Shen, H., and Haas, R., "An Expert System for Automation of Pavement Condition Inventory Data," paper presentation at North American Pavement Management Conference, Toronto, Mar. 1985.
142. Haas, C., Shen, H., Phang, B., and Haas, R., "Application of Image Analysis Technology to Automation of Pavement Condition Surveys," paper presentation at International Transport Congress, Montreal, Sept. 1984.

INVITED WORKSHOPS (from 2001 on):

1. CERN, Washington DC, November 13-14, 2008.
2. National Academies BICE Workshop, Washington DC, November 18-19, 2008.
3. International Workshop on Setting an Academic Research Agenda for the FIATECH Capital Projects Technology Roadmap Initiative, under the auspices of NSF and FIATECH, Houston, TX, October 13-15, 2004.
4. National Workshop on Future Sensing Systems, under the auspices of NSF, DARPA, NIH, DOE, NIST, NASA, ONR, etc., Lake Tahoe, CA, August 26-28, 2002.

5. Construction Engineering and Management Research Program Workshop, under the auspices of the National Research Council's (NRC) National Cooperative Highway Research Program (NCHRP), at the Beckman Center, Irvine CA, Mar. 5-6, 2001.
6. Information Technology and Infrastructure Workshop, under the auspices of the National Science Foundation (NSF), Arlington VA, June 25-27, 2001.

MEDIA MENTIONS

1. "CII Reveals Productivity Gains for Mechanical Trades" by Scott Blair, *Engineering News Record*, McGraw-Hill, August 12, 2009.
2. "Test Projects Show Great Potential for Tracking Technology" by Tom Sawyer, *Engineering News Record*, McGraw-Hill, August 27, 2008.
3. "CII Study Shows Craft Training Can Generate Big Cost Impact" by Debra Rubin, *Engineering News Record*, McGraw-Hill, August 20, 2007.
4. "Productivity Benchmarking Effort Produces Results" by Janice Tuchman, *Engineering News Record*, McGraw-Hill, August 7, 2006.
5. "Measuring Productivity: An Industry Challenge" by Harvey M. Bernstein, *Civil Engineering*, ASCE December 2003.

GRANTS AND CONTRACTS:

PI's	Project Title	Funding Source	Total Amount Funded	My Share of Amount Funded	Period of Award
PI	Advances in 3D Imaging for Automated Remote Deployment of Construction Expertise	NSERC CRD program	\$120,000	\$120,000	6/1/09 – 5/31/12
PI (in partnership with Rankin at UNB, Fayek at UA, and Russell at UBC)	Canadian Construction Industry Benchmarking and Metrics	Construction Sector Council (CSC) via UNB	\$85,000	\$85,000	9/1/08 – 5/30/10
Co-PI; Leo Rothenburg	Analysis of Pile Driving Data – part II	Ministry of Transportation of Ontario (MTO)	\$27,500 CDN	\$10,000 CDN	6/1/08 – 5/30/09
Co-PIs; Susan Tighe, Carolyn Hansson, Ralph Haas,	Collaborative Research Agreement	MTO	\$50,000	\$12,500	4/01/08 – 3/30/09
Co-PI; Susan Tighe Investigators: Ralph Haas, Gerhard Kennepohl, and Joseph Ponniah	Long Life Pavements for a Sustainable Infrastructure	NSERC CRD program	\$139,600 + in-kind and matching for total of \$509,800	\$70,000 CDN	9/01/07 – 8/31/09
PI	Automated Construction Materials Tracking	NSERC CRD program	\$85,000 + in-kind and matching for total of \$170,000	\$85,000 CDN	9/01/07 – 8/31/09
PI (in partnership with Goodrum at UK and Caldas at UT under separate contracts)	Construction Craft Productivity Improvement Research Program	CII (Construction Industry Institute)	\$284,950 USD Of project total of \$907,833	\$284,950 USD	9/01/07 – 12/01/13
Co-PI; Leo Rothenburg	Analysis of Pile Driving Data	Ministry of Transportation of Ontario (MTO)	\$27,500 CDN	\$10,000 CDN	6/1/07 – 5/30/08
PI (in partnership with Goodrum at UK and Caldas at UT under separate contracts)	Leveraging Technology to Improve Productivity	CII (Construction Industry Institute)	\$66,520 USD	\$66,520 USD	9/01/06 – 12/01/08
PI	Sub-grant to original proposal for Real-Time Spatial Information Acquisition and Use for Infrastructure Construction and Maintenance	NSF	\$30,000 USD	\$30,000 USD	9/1/05 – 8/31/07
PI (in partnership with Paul Goodrum at Kentucky under separate contract)	Construction Industry Craft Training	CII (Construction Industry Institute)	\$75,000 USD	\$75,000 USD	9/01/05 – 12/01/07

Co-PI; Susan Tighe	Canada Foundation for Innovation (CFI-CRC) equipment grant	CFI, Ontario Innovation Trust, and partners	\$625,000 CDN	\$312,500 CDN	7/01/05 – 12/01/07
Co-PI; Susan Tighe	Remote Weather Information Systems Deployment in Ontario	Ministry of Transportation of Ontario (MTO)	\$25,000 ? CDN	\$5,000 ? CDN	6/1/05 – 5/30/06
PI	start-up grant	UW	\$45,000 CDN	\$45,000 CDN	6/1/05 – 5/30/08
holder	Tier I Canada Research Chair (before salary deduction)	CRC program	\$200,000/yr CDN	\$200,000/yr CDN	ongoing
PI	Discovery Grant	NSERC	\$180,000 CDN	\$180,000 CDN	6/1/05 – 5/30/10
Co-PI; Caldas	Development of Efficient Algorithms for Processing Flash LADAR Data for Obstacle Detection	NIST	\$50,000 US	\$25,000 US	10/1/04 – 9/30/06
Co-PI; O'Connor, Caldas, and Persad	Effectiveness of Combined Utility Relocation/Highway Construction Projects	TxDOT	\$248,916 US	\$75,000 US	9/1/04 – 8/31/06
Co-PI; Liapi and Caldas	Real-Time Spatial Information Acquisition and Use for Infrastructure Construction and Maintenance	NSF	\$364,682 US	\$121,500 US	9/1/04 – 8/31/07
PI	Construction Industry Institute Breakthrough Committee Research	Construction Industry Institute	\$35,000/yr US	\$35,000/yr US	1/1/98 – to date
Co-PI with TTI at TAMU	Develop and Implement Traffic Monitoring Equipment Evaluation Facility	TxDOT	\$170,001 US	\$85,000 US	9/1/03 – 2/28/05
Co-PI; Liapi	Collaborative Site Modeling Research	NIST	\$24,999 US	\$12,500 US	4/1/03 – 3/31/04
PI	IPA for Kamel Saidi	NIST	\$167,500 US	\$167,500 US	4/1/03 – 3/31/04
co-PI; O'Connor and Gibson	Center for Construction Industry Studies – Phase III funding	Sloan Foundation	\$913,500	\$304,000	5/15/03- 8/31/06
PI	Cost-Effective Strategies for Communicating with Remote Surveillance Stations	TxDOT	\$45,000	\$45,000	9/1/02- 8/31/03
Co-PI; Liapi and Sreenivasan	Collaborative Site Modeling Research	NIST	\$24,999	\$8,333	4/1/02 – 3/31/03
PI	IPA for Kamel Saidi	NIST	\$78,630	\$78,630	4/1/02 – 3/31/03
co-PI; O'Connor, Gibson, and Zhang	Expediting Highway Construction While Retaining Quality	TxDOT	\$204,660	\$60,000	9/1/01- 8/31/03
PI	Addressing the Shortage of Skilled Construction Craft Workers in the U.S.	CII	\$128,000	\$128,000	8/1/01- 12/31/03
co-PI; Mahmassani	Integration of Point-Based and Link-Based Vehicle Detection Data	TxDOT	\$197,500	\$98,750	9/1/00- 8/31/02

PI	Prefabrication, Pre-assembly, Modularization, and Off-site Fabrication	CII	\$126,075	\$126,075	6/1/00-8/31/02
co-PI; Tucker, O'Connor, Gibson, and others	Center for Construction Industry Studies – Phase II funding	Sloan Foundation	\$1,500,000	\$375,000	5/15/00-8/31/03
co-PI; Liapi and Sreenivasan	Human-Assisted Rapid Environmental Modeling for Construction Equipment Operation	NSF	\$275,000	\$92,000	7/1/00-6/30/03
co-PI; Mahmassani	Evaluation of Automated Vehicle Identification Systems in San Antonio	TxDOT	\$85,000	\$42,500	9/1/99-8/31/00
co-PI; Rauch	Rapid Test to Establish Grading of Unbound Aggregate Products	ICAR	\$200,000	\$100,000	9/1/99-8/31/01
co-PI; Sreenivasan	Feasibility of Remote, Tele-operated, Inspection and Repair in Fossil Fuel Power Plants	Electrical Power Research Institute	\$15,000	\$7,500	1/1/00-6/30/00
co-PI; Sreenivasan	Tele-Operated Clinker Clearing Robot	Houston Lighting and Power	\$5,000	\$2,500	1/1/99-12/31/99
PI	Automated Pavement Crack Sealing Technology Transfer	FHWA, TxDOT, and Crafcoc Inc.	\$188,011	\$188,011	9/21/98-8/31/99
co-PI; Weissmann	Infrastructure for a Statewide Scour and Road-Submergence Warning System	TxDOT	\$188,000	\$94,000	9/1/97-8/31/99
co-PI; Mahmassani	Evaluation of Incident Detection Methodologies	TxDOT	\$200,000	\$100,000	9/1/97-8/31/99
co-PIs; Tucker, O'Connor, Gibson, and others	Center for Construction Industry Studies – Phase I Funding	Sloan Foundation	\$2,000,000	\$500,000	8/1/97-5/14/00
PI	Testing, Evaluation, and Implementation of Automated Pavement Crack Sealing Technology	Federal Highway Administration's PTP (Priority Technologies Program) via TxDOT	\$75,550	\$75,550	11/15/96-8/31/97
co-PIs; Sreenivasan, and Traver	Development of Tele-operated Robotic Maintenance Equipment with Dynamic Graphical Interfacing for Electrical Power Facilities	Electrical Power Research Institute, and Houston Lighting & Power	\$460,000	\$230,000	3/15/96-12/31/98
co-PI; Tucker	A Study of Multiskilled Craft Capabilities in Construction	Construction Industry Institute	\$105,000	\$100,000	4/1/96-12/31/97
PI	Trenchless Technology Study Trip to Germany	National Science Foundation (reimb. through Indiana U.)	\$2,000	\$2,000	9/16/95-9/24/95
co-PI; Weissmann	Develop a Remote Automatic Monitoring and Public Information System for Hazardous Conditions	Texas Department of Transportation	\$210,553	\$106,000	9/1/95-8/31/97

PI	Feasibility Study of Alternative Clinker Clearing Solutions	Electrical Power Research Institute and Houston Lighting & Power	\$20,000	\$20,000	1/1/95-6/30/95
PI	Implementation of an Automated Pavement Crack Sealer	Federal Highway Administration, Crafcoc Inc., and Texas Department of Transportation	\$289,000	\$289,000	6/1/94-8/31/96
PI	Development of a Multi-Media Design for Safety Review System	Construction Industry Institute	\$50,000	\$50,000	1/1/94-9/31/96
co-PI's; Gibson, Tucker, and Traver	Development of Large Scale Manipulator Technology for Construction	National Science Foundation	\$210,000	\$105,000	3/1/94-2/28/97
co-PI; Fowler	Evaluation of Wastewater Line Spot Repair Methods	City of Austin	\$50,000	\$25,000	9/1/93-8/31/94
co-PI's; Tucker and Traver	Automated Surface Finishing for Large Storage Tanks	Texas Advanced Research Program	\$198,000	\$99,000	4/1/92-8/31/94
co-PI; Gibson	Investigation of the Large Scale Manipulator in a Pipe Lay Down Yard	Head and Guild Equipment Company	\$8,531	\$4,000	11/1/92-1/31/93
co-PI; Gibson	Automated Construction Machinery Design	Fluor Daniel Technical Education Funding Program	\$8,000	\$4,000	1/16/92-3/31/92
co-PI; Hudson	Automated Maintenance Technology to Reduce Fuel Consumption by Minimizing Lane Closure Time	SW Region University Transportation Center	\$52,500	\$26,000	1/1/92-8/31/93
PI	Computer Aided Critical Lift Planning	National Science Foundation	\$100,000	\$100,000	10/1/92-9/30/95
PI	Computer Aided Heavy Lift Planning	UT University Research Institute	\$10,767	\$10,767	7/1/92-8/31/92
PI	Investigation of a Pavement Crack Sealing Robot	NRC Strategic Highway Research Program via subcontract to CMU PI Dr. C. Hendrickson	\$25,600	\$25,600	2/1/91-2/29/92

TOTAL HAAS SHARE approximately \$6,000,000 CDN

PH.D. SUPERVISIONS COMPLETED:

1. Frederic Bosche	2008	Civil Engineering	Univ. of Waterloo
2. Teizer, Jochen (co-ad.)	2006	Civil Engineering	Univ. of Texas at Austin
3. Song, Jongchul	2005	Civil Engineering	Univ. of Texas at Austin
4. Sylvie, Jon (co-ad.)	2005	Civil Engineering	Univ. of Texas at Austin
5. Beheiry, Salwa	2005	Civil Engineering	Univ. of Texas at Austin
6. Srour, Issam	2005	Civil Engineering	Univ. of Texas at Austin
7. Pappas, Mike (co-ad.)	2004	Civil Engineering	Univ. of Texas at Austin
8. Kim, Changwan	2004	Civil Engineering	Univ. of Texas at Austin
9. Brandenburg, Stephanie	2004	Civil Engineering	Univ. of Texas at Austin

10. Jaramillo, Nelson (co-ad.)	2004	Mechanical Engineering	Univ. of Texas at Austin
11. Logman, Haitham	2003	Civil Engineering	Univ. of Texas at Austin
12. Kwon, SoonWook (co-ad.)	2003	Civil Engineering	Univ. of Texas at Austin
13. Kim, Hyoungkwan	2002	Civil Engineering	Univ. of Texas at Austin
14. Saidi, Kamel	2002	Civil Engineering	Univ. of Texas at Austin
15. Goodrum, Paul	2001	Civil Engineering	Univ. of Texas at Austin
16. Cho, Yong-Kwon	2000	Civil Engineering	Univ. of Texas at Austin
17. Zhou, Dingshan	2000	Civil Engineering	Univ. of Texas at Austin
18. Seo, Jongwon	1998	Civil Engineering	Univ. of Texas at Austin
19. Kim, Young Suk	1997	Civil Engineering	Univ. of Texas at Austin
20. Burleson, Rebecca	1996	Civil Engineering	Univ. of Texas at Austin
21. Lin, Kuo-Liang	1995	Civil Engineering	Univ. of Texas at Austin
22. Hsieh, Ting-ya	1993	Civil Engineering	Univ. of Texas at Austin

PH.D. COMMITTEES COMPLETED:

1. Anu Pradhan	S 09	Civil Engineering	Carnegie Mellon University
2. Alireza Bayat	Sp 09	Civil Engineering	Univ. of Waterloo
3. Shipra Singh	Fall 08	Civil Engineering	Univ. of Waterloo
4. El-Omari, Samir	August 25	Civil, Building, and Environmental Engrg.	Concordia University, Montreal
5. Hegazy's student	Fall 05	Civil Engineering	Univ. of Waterloo
6. Panthaworn, Pun	2005	Civil Engineering	Univ. of Texas at Austin
7. Turner, Cameron	2005	Civil Engineering	Univ. of Texas at Austin
8. Li, Zheng	2005	Civil Engineering	Univ. of Texas at Austin
9. Chong, Wai Kiong	2005	Civil Engineering	Univ. of Texas at Austin
10. Kim, Jinman	2004	Civil Engineering	Univ. of Texas at Austin
11. Kuo, Yao-Chen	2004	Civil Engineering	Univ. of Texas at Austin
12. Huh, Youngki	2004	Civil Engineering	Univ. of Texas at Austin
13. Yang, LiRen	2003	Civil Engineering	Univ. of Texas at Austin
14. Shields, David	2002	Civil Engineering	Univ. of Texas at Austin
15. Castenada-Maza, Jorge	2002	Civil Engineering	Univ. of Texas at Austin
16. Park, Hee-Sung	2002	Civil Engineering	Univ. of Texas at Austin
17. Kim, SangBum	2002	Civil Engineering	Univ. of Texas at Austin
18. Won, Seungwon	2002	Civil Engineering	Univ. of Texas at Austin
19. Chang, Soon-Woong	2002	Civil Engineering	Univ. of Texas at Austin
20. Sun, Lu	2001	Civil Engineering	Univ. of Texas at Austin
21. Tavana, Hossein	2001	Civil Engineering	Univ. of Texas at Austin
22. Arachchige, Janaka	2001	Civil Engineering	Univ. of Alberta, Canada
23. Park, Jaihun	2001	Mechanical Engineering	Univ. of Texas at Austin
24. Sinha, S. K.	2000	Civil Engineering	Univ. of Waterloo, Canada
25. Winter, Robert	2000	Civil Engineering	Univ. of N. S. W., Australia
26. Beg, Muhammad Arif	1999	Civil Engineering	Univ. of Texas at Austin
27. Efatpenah, Keyanoush	1999	Mechanical Engineering	Univ. of Texas at Austin
28. Acha Daza, Jorge	1998	Civil Engineering	Univ. of Texas at Austin
29. Etcheverry, Leonard	1998	Civil Engineering	Univ. of Texas at Austin
30. Lee, Chungwon	1998	Civil Engineering	Univ. of Texas at Austin
31. Otis, Stephanie	1998	Civil Engineering	Univ. of Texas at Austin
32. Owen, Franklin	1998	Mechanical Engineering	Univ. of Texas at Austin
33. El-Diraby, Tamer	1997	Civil Engineering	Univ. of Texas at Austin
34. Jung, Youngsoo	1997	Civil Engineering	Univ. of Texas at Austin
35. Kim, Kyong Ju	1997	Civil Engineering	Univ. of Texas at Austin
36. Kou, Cheng-Chen	1997	Civil Engineering	Univ. of Texas at Austin

37. Liao, Tsai-Yun	1997	Civil Engineering	Univ. of Texas at Austin
38. Saeed, Athar	1996	Civil Engineering	Univ. of Texas at Austin
39. Zhang, Zhanmin	1996	Civil Engineering	Univ. of Texas at Austin
40. Kim, Kyungrai	1995	Civil Engineering	Univ. of Texas at Austin
41. Jou, Rong-Chang	1994	Civil Engineering	Univ. of Texas at Austin
42. Lee, Yong-II	1994	Civil Engineering	Univ. of Texas at Austin
43. Charoenngam, Chotchai	1993	Civil Engineering	Univ. of Texas at Austin
44. Guo, Sy-Jye	1993	Civil Engineering	Univ. of Texas at Austin
45. Kim, Yea-Sang	1993	Civil Engineering	Univ. of Texas at Austin
46. Cheng, Min-Yuan	1992	Civil Engineering	Univ. of Texas at Austin

M.S. SUPERVISIONS COMPLETED:

1. Di Zhang	2009	Civil Engineering	Univ. of Waterloo
2. Duncan Young	2009	Civil Engineering	Univ. of Waterloo
3. Hassan Nasir	2008	Civil Engineering	Univ. of Waterloo
4. Baiz, Sarah (co-adv.)	2007	Civil Engineering	Univ. of Waterloo
5. Zhang, Lixin (co-adv.)	2007	Civil Engineering	Univ. of Waterloo
6. Ryu, Yonchoon (co-adv.)	2004	Civil Engineering	Univ. of Texas at Austin
7. Grau, David (co-adv.)	2004	Civil Engineering	Univ. of Texas at Austin
8. Sotelo, Aldo	2004	Civil Engineering	Univ. of Texas at Austin
9. Bosche, Frederic (co-adv.)	2003	Civil Engineering	Univ. of Texas at Austin
10. Hyatt, Brad	2003	Civil Engineering	Univ. of Texas at Austin
11. Hickock, Neil	2003	Civil Engineering	Univ. of Texas at Austin
12. Hwang, Bongang	2003	Civil Engineering	Univ. of Texas at Austin
13. Somali, Berkay	2003	Civil Engineering	Univ. of Texas at Austin
14. Song, Jongchul	2002	Civil Engineering	Univ. of Texas at Austin
15. Garcia, Carlos	2002	Civil Engineering	Univ. of Texas at Austin
16. Balli, Nicole	2002	Civil Engineering	Univ. of Texas at Austin
17. Edward, Derek	2001	Civil Engineering	Univ. of Texas at Austin
18. Fagerlund, Walter	2001	Civil Engineering	Univ. of Texas at Austin
19. Terrien, Kevin	2000	Civil Engineering	Univ. of Texas at Austin
20. Houry, Joseph	2000	Civil Engineering	Univ. of Texas at Austin
21. Eickmann, Jason	1999	Civil Engineering	Univ. of Texas at Austin
22. Gomar, Jorge	1999	Civil Engineering	Univ. of Texas at Austin
23. Alemany, Christine	1999	Civil Engineering	Univ. of Texas at Austin
24. Groll, Tom	1999	Civil Engineering	Univ. of Texas at Austin
25. Mai, Tinh	1999	Civil Engineering	Univ. of Texas at Austin
26. Carley, Lynn Ann	1999	Civil Engineering	Univ. of Texas at Austin
27. Rodriguez, Ana Maria	1998	Civil Engineering	Univ. of Texas at Austin
28. Abanto, Daniel	1998	Civil Engineering	Univ. of Texas at Austin
29. Wunz, Chris	1997	Civil Engineering	Univ. of Texas at Austin
30. Sen, Ashok	1997	Civil Engineering	Univ. of Texas at Austin
31. McKeever, Benjamin	1997	Civil Engineering	Univ. of Texas at Austin
32. Stanley, Al	1997	Civil Engineering	Univ. of Texas at Austin
33. Villalobos, Javier	1997	Civil Engineering	Univ. of Texas at Austin
34. Ueki, Masashi	1997	Civil Engineering	Univ. of Texas at Austin
35. Husbands, Jason	1997	Civil Engineering	Univ. of Texas at Austin
36. Chun, Dae Am	1997	Civil Engineering	Univ. of Texas at Austin
37. Ma, Ling	1996	Civil Engineering	Univ. of Texas at Austin
38. Thaker, Vinay	1996	Civil Engineering	Univ. of Texas at Austin
39. Leavitt, Jason	1996	Civil Engineering	Univ. of Texas at Austin
40. Crowell, Greg	1996	Civil Engineering	Univ. of Texas at Austin
41. DeSarkar, Sandip	1996	Civil Engineering	Univ. of Texas at Austin
42. Wiersma, M. (co-advised)	1995	Mechanical Engr.	Univ. of Texas at Austin
43. Kim, Young Suk	1995	Civil Engineering	Univ. of Texas at Austin
44. Hajjar, M. Ayman	1995	Civil Engineering	Univ. of Texas at Austin

45. Thomas, Geoff	1995	Civil Engineering	Univ. of Texas at Austin
46. Goodrum, Paul M.	1994	Civil Engineering	Univ. of Texas at Austin
47. Ochoa-Franco, Luis A.	1994	Civil Engineering	Univ. of Texas at Austin
48. Chen, Liang	1994	Civil Engineering	Univ. of Texas at Austin
49. Warne, Kathy (co-advised)	1994	Mechanical Engr.	Univ. of Texas at Austin
50. Thompson, Terry W.	1994	Civil Engineering	Univ. of Texas at Austin
51. Gharpuray, M. Deepak	1993	Civil Engineering	Univ. of Texas at Austin
52. Malek, Gary J.	1993	Civil Engineering	Univ. of Texas at Austin
53. Griffith, Andrew F.	1993	Civil Engineering	Univ. of Texas at Austin
54. Wen, Jin	1993	Civil Engineering	Univ. of Texas at Austin
55. Lin, Kuo-Liang	1993	Civil Engineering	Univ. of Texas at Austin
56. Fulton, Craig A.	1992	Civil Engineering	Univ. of Texas at Austin
57. Taraporevala, Zubin	1992	Civil Engineering	Univ. of Texas at Austin
58. Hornaday, Walter C.	1992	Civil Engineering	Univ. of Texas at Austin
59. Sanyal, Dhruba	1991	Civil Engineering	Univ. of Texas at Austin

MS COMMITTEES COMPLETED:

1. Said, Mohamed	2009	Civil Engineering	Univ. of Waterloo
1. Behjat, Yashar	2009	Civil Engineering	Univ. of Waterloo
2. El-Hakim, Mohab	2009	Civil Engineering	Univ. of Waterloo
3. Shaik, Imtiaz	2008	Civil Engineering	Univ. of Waterloo
4. Cascante's student	Fall 05?	Civil Engineering	Univ. of Waterloo
5. Sotelo, Aldo	2004	Civil Engineering	Univ. of Texas at Austin
6. Yanez, Hector	2004	Civil Engineering	Univ. of Texas at Austin
7. Lu, Hsin-Yang	2004	Civil Engineering	Univ. of Texas at Austin
8. El Chartouni, Nisrine	2004	Civil Engineering	Univ. of Texas at Austin
9. Kapoor, Karan	2004	Civil Engineering	Univ. of Texas at Austin
10. Moritz, Alex	2001	Civil Engineering	Univ. of Texas at Austin
11. Ballard, Brad	2001	Civil Engineering	Univ. of Texas at Austin
12. Howard, Lizabeth	2001	Civil Engineering	Univ. of Texas at Austin
13. Cannon, Erin	2001	Civil Engineering	Univ. of Texas at Austin
14. Browne, Craig	2001	Civil Engineering	Univ. of Texas at Austin
15. Oey, Alexander	2001	Civil Engineering	Univ. of Texas at Austin
16. Saillad, Julien	2001	Civil Engineering	Univ. of Texas at Austin
17. Syed, Umair	2001	Civil Engineering	Univ. of Texas at Austin
18. Ballast, Leaf	2000	Civil Engineering	Univ. of Texas at Austin
19. Haynes, Michael	2000	Civil Engineering	Univ. of Texas at Austin
20. Khwaja, Nabeel	2000	Civil Engineering	Univ. of Texas at Austin
21. Reath, Jessica	2000	Civil Engineering	Univ. of Texas at Austin
22. Peterman, Joshua	1999	Civil Engineering	Univ. of Texas at Austin
23. Yuksel, Ibrahim	1999	Civil Engineering	Univ. of Texas at Austin
24. Kim, Sang Bum	1998	Civil Engineering	Univ. of Texas at Austin
25. Welch, Keith	1998	Civil Engineering	Univ. of Texas at Austin
26. LeBlond, David	1997	Civil Engineering	Univ. of Texas at Austin
27. Brown, M.A.	1996	Civil Engineering	Univ. of Texas at Austin
28. Lo, Kuang	1996	Arch.Engineering	Univ. of Texas at Austin
29. Mekapati, Vikram	1996	Civil Engineering	Univ. of Texas at Austin
30. Sidhu, S.S.	1995	Civil Engineering	Univ. of Texas at Austin
31. Madhavan, V.T.	1995	Civil Engineering	Univ. of Texas at Austin
32. Kanayama, Yusuke	1995	Civil Engineering	Univ. of Texas at Austin
33. Bauhan, Thomas	1994	Arch. Engineering	Univ. of Texas at Austin
34. Lee, Hojung	1994	Arch. Engineering	Univ. of Texas at Austin
35. Osmani, Arif	1994	Civil Engineering	Univ. of Texas at Austin
36. Du Toit, Pieter	1993	Arch.Engineering	Univ. of Texas at Austin
37. Jung, Youngsoo	1993	Civil Engineering	Univ. of Texas at Austin

38. Said, Claudia	1993	Civil Engineering	Univ. of Texas at Austin
39. Zhang, Zhanmin	1993	Civil Engineering	Univ. of Texas at Austin
40. Beaudry, Mark	1992	Civil Engineering	Univ. of Texas at Austin
41. Hamilton, Michele	1992	Civil Engineering	Univ. of Texas at Austin
42. Kumar, Doraiswamy	1992	Civil Engineering	Univ. of Texas at Austin
43. Park, Hungjoo	1992	Arch. Engineering	Univ. of Texas at Austin

POST DOCS UNDER SUPERVISION AT WATERLOO:

Mahmoud Ahmed	2009 to present
Jiang Xiao-hua (Edward)	2007-2009

PH.D. STUDENTS IN PROGRESS:

A. Students admitted to candidacy

Saiedeh Razavi
Khaled Berbash (co-advise with Tarek Hegazy)
Shahram Vaziri (co-advise with Leo Rothenburg)
Khaled Sherbini (co-advise with Tarek Hegazy)
Rashid Rehan (co-advise with Mark Knight)
Yelda Turkan (co-advise with Ralph Haas)

B. Post M.S. students preparing to take Ph.D. qualifying exam at Waterloo

Hassan Nasir
Mahdi Safa
Arash Shahi (co-advise with Jeff West)
Samin Shokri (co-advise with Ralph Haas)

PH.D. COMMITTEES IN PROGRESS:

Chamorro, Alondra
Menisi, Wail
Abdy, Zeeshan
Younis, Rizwan
Riyaz, Sayyid Hasan
Pedram Izadpanah

M.S. STUDENTS IN PROGRESS:

Awais Rauf (co-advising with Leo Rothenburg)
Hani Eissa Ahmed
Michael Chris Gouett
Abdullatif Alwasel

M.S. COMMITTEES IN PROGRESS:

Need to keep better track of these

UNDERGRADUATE RESEARCH ASSISTANTS

Mari Kawamoto (Summer 2009)
Raymond Haffar (Summer 2009)
Victor Lam (summer 2008 co-op at Portlands – hired by me and paid by SNC Lavalin)
Esteban Campion (winter 2008 co-op at Portlands – hired by me and paid by SNC Lavalin)
Richard To (Fall 2007)
Laura Games (2007 and 2008 from Ryerson)
Duncan Young (Spring and Fall 2007 as a co-op, Winter of 2008)
Simon Marchand (Fall 2005 as a co-op, Winter 2006 as a co-op)
Ellen Choi (Winter 2006 as a co-op)
Phillip Kim (Fall 2005)
Jeremy Taylor (Fall 2005)
Chris Pieneman (Fall 2005)

SHORT VITA:

Carl Haas, PhD, PE, is the Tier I Canada Research Chair in Construction and Management of Sustainable Infrastructure and a Professor at the University of Waterloo. His research, teaching and consulting are in the areas of advanced construction and transportation technology, sustainability, and construction workforce issues. He teaches courses in Sensing in Civil Engineering, Heavy Construction, Optimization, Engineering Economics, Construction Automation, Scheduling, and Project Management. He has received several research and teaching awards. He consults in the area of construction and transportation technology issues. He has well over 200 publications including over 80 refereed journal articles and serves on a number of professional committees such as the Construction Industry Institute Breakthrough Committee. At the University of Texas, he directed the Center for Construction Industry Studies (CCIS) and the Field Systems and Construction Automation Research Laboratory (FSCAL). At Waterloo, he currently serves as Director of the Center for Paving and Transportation Technology (CPATT). In 2009, he was elected to the Canadian Academy of Engineering.

SUMMARY OF RECENT RESEARCH ACTIVITY:

My activity with my colleagues currently falls into roughly three research thrusts. We work to make advances in construction project state estimating and real time 3D modeling via new sensing, data fusion and modeling methods. These tools will ultimately facilitate improved safety, effortless productivity tracking, real-time decision support, and advanced project knowledge management capabilities. In simple terms, they will help to get better information faster so constructors can make better decisions faster. This will improve productivity, quality and safety.

A second research thrust involves sustainability. Data indicates that planning for sustainability positively impacts infrastructure capital project performance. CPATT is also involved in a major study of long life sustainable pavements, for which I am contributing sensing network and life cycle economics knowledge. In a study of Remote Weather Information System (RWIS) sensor data we are determining when roads are vulnerable to damage or when conditions are dangerous for drivers. At our field test site here in Waterloo we are also studying “weigh-in-motion” technologies that will provide sensor data input to pavement design and life cycle models. Again, getting better information faster is allowing better decisions to be made. This will result in a more sustainable infrastructure.

A third research thrust involves the sustainability of the human capital that underpins our infrastructure systems. A critical skilled construction labour shortage exists in Canada and in the US. To respond, we are developing strategies such as multi-skilling, more complete human resource management systems, and optimization for return on investment in training.