Kristopher J. Overholt

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Education

Ph.D. in Civil Engineering, The University of Texas at Austin, In Progress

M.S. in Fire Protection Engineering, Worcester Polytechnic Institute, 2010

B.S. in Fire Protection Engineering Technology, University of Houston–Downtown, 2008

Engineer in Training Certification

Texas Board of Professional Engineers Certified EIT #40629 - September 19, 2008

Completed NCEES Fundamentals of Engineering Exam - April 12, 2008

Research Experience

Graduate Research Assistant — January 2010–Present
Prof. Ofodike Ezekoye — *The University of Texas at Austin*
Fire modeling and simulation, inverse fire modeling problems, fire suppression systems in nuclear gloveboxes, firefighter line of duty injuries/deaths, wildland fire experiments and modeling, and positive pressure ventilation experiments and simulations.

Graduate Student Researcher — May 2011–August 2011
Dr. Marc Janssens — *Southwest Research Institute*
Project: Reducing Uncertainty of Quantifying the Burning Rate of Upholstered Furniture. Fire modeling and data analysis work for full-scale upholstered furniture fire experiments. Developed fire model predictions and guidance for the forensic investigation of fire incidents involving upholstered furniture.

Graduate Researcher — August 2008–December 2009
Prof. Ali Rangwala — *Worcester Polytechnic Institute*
Performed small-scale commodity tests in the cone calorimeter at WPI. Experimental determination of the B number (mass transfer number) to assess the flammability and suppression of storage commodities for warehouse fire protection. The goal was to better classify and protect commodity storage in warehouse facilities by utilizing a first-principles approach and predict upward flame spread rates in warehouse fires.

Summer Undergraduate Research Fellowship — May 2007–August 2007
Dr. Kevin McGrattan — *National Institute of Standards and Technology*
Performed fire model verification and validation study of intermediate–scale cable fire experiments, contributed to the verification suite cases and documentation, and contributed to the NIST Fire Dynamics Simulator User's Guide and Verification & Validation Guide.

Undergraduate Researcher — August 2007–May 2008
Dr. Alberto Gomez–Rivas — *University of Houston–Downtown*
Used fire models to validate small-scale experiments performed at UHD. The experiments involved measuring the mass loss rates of small–scale ethanol pools and usage of the FDS fuel droplet submodel to simulate the burning of liquid fuels. Additional work was performed on fire models of smoke spread, sprinkler activation, and structural integrity in large, open buildings.

Research Interests

Fire modeling/simulation and fire dynamics

Inverse fire modeling problems

NIST Fire Dynamics Simulator

Wildland fires: experiments and modeling

Scientific computing and the application of fire models

Employment

Graduate Research Assistant — January 2010–Present
The University of Texas at Austin — *Austin, TX*
Research assistant to Dr. Ofodike Ezekoye on burn structure experiments, fire modeling and simulation, wildland fire experiments and modeling, inverse fire modeling problems, firefighter line of duty injuries/deaths, and fire modeling visualization.

Graduate Student Researcher — May 2011–August 2011
Southwest Research Institute — *San Antonio, TX*
Fire modeling work under Dr. Marc Janssens for full-scale upholstered furniture fire experiments. Developed guidelines for the forensic investigation of fire incidents involving upholstered furniture.

Adjunct Faculty — August 2010–May 2011
University of Houston–Downtown — *Houston, TX*
Instructor for fire protection engineering courses including Fire Dynamics, Fire Modeling, Structural Fire Safety, and Advanced Problems in Fire and Safety in the Fire Protection Engineering Technology program.

Research Assistant and Teaching Assistant — August 2008–December 2009
Worcester Polytechnic Institute — *Worcester, MA*
Research assistant to Prof. Ali Rangwala in the fire science laboratory on small-scale commodity testing. Teaching assistant to graduate level courses in the Department of Fire Protection Engineering.

Fire Alarm Technician and IT Admin — May 2000–August 2006

OMNI Fire & Security Systems — *Houston, TX*

Field technician work including servicing, inspecting, and troubleshooting residential and commercial security alarms, fire alarm systems, remote camera systems, and access control systems. IT manager and web administrator for small business network. Developed various technical training courses.

Teaching and Tutor Experience

Adjunct Faculty — August 2010–May 2011

Department of Engineering Technology, University of Houston–Downtown

Courses: Fire Dynamics, Fire Modeling, Structural Fire Safety

Teaching Assistant — January 2010–May 2010

Department of Mechanical Engineering, The University of Texas at Austin

Teaching Assistant — August 2008–December 2009

Department of Fire Protection Engineering, Worcester Polytechnic Institute

Publications

1. K.J. Overholt, O.A. Ezekoye: Characterizing heat release rates using an inverse fire modeling technique. Fire Technology, In Press.
2. K.J. Overholt, M.J. Gollner, J. Perricone, A.S. Rangwala: Warehouse Commodity Classification from Fundamental Principles. Part II: Flame Heights and Flame Spread. Fire Safety Journal 46 (6) (2011) 317-329. (Link)
3. M.J. Gollner, K.J. Overholt, F.A. Williams, A.S. Rangwala, J. Perricone: Warehouse Commodity Classification from Fundamental Principles. Part I: Commodity & Burning Rates. Fire Safety Journal 46 (6) (2011) 305-316. (Link)
4. K.J. Overholt. Characterizing the Flammability of Storage Commodities Using an Experimentally Determined B-number. Master's Thesis, Worcester Polytechnic Institute (2009). (Link)

Conference Proceedings

1. K.J. Overholt, O.A. Ezekoye: Inverse fire modeling for heat release rate characterization. 7th U.S. National Combustion Meeting, Atlanta, GA, March 2011.
2. K.J. Overholt, M. Gollner, A. Rangwala: Characterizing the flammability of corrugated cardboard using a cone calorimeter. 6th U.S. National Combustion Meeting, Ann Arbor, MI, May 2009.

Conferences

SFPE Annual Conference — October 24–25, 2011
Portland, OR
Presented "An Inverse Fire Modeling Technique to Characterize Heat Release Rates"

7th U.S. National Combustion Meeting — March 20–23, 2011
Atlanta, GA
Presented "Inverse fire modeling for heat release rate characterization"

SciPy 2010 Scientific Computing Conference — June 28–July 3, 2010
Austin, TX
Presented "Numerical Pyromaniacs: The use of Python in fire research"

SFPE Annual Conference — October 19–21, 2009
Scottsdale, AZ
Presented "Characterizing the Flammability of Storage Commodities Using a Cone Calorimeter"

6th U.S. National Combustion Meeting, CSSCI — May 17–20, 2009
Ann Arbor, MI
Presented "Characterizing the Flammability of Corrugated Cardboard Using a Cone Calorimeter" at the 6th U.S. National Combustion Meeting.

NIST Annual Fire Conference — April 28–April 30, 2009
Gaithersburg, MD
Presented "Characterizing the Flammability of Corrugated Cardboard Using a Cone Calorimeter"

SFPE Annual Conference — October 15–16, 2007
Las Vegas, NV
Received "Hat's Off" Award for effort in creating the SFPE Student Chapter at UHD

Presentations

"The Role of Fire Modeling in Building Fire Safety,"
WPI graduate course in Building Fire Safety, September, 2009.

"Thermal Response of Sprinklers,"
WPI graduate course in Fire Protection Systems, 2008, 2009.

"From Research to Engineering: Fire Modeling and the California Wildfires,"
SFPE Houston Chapter meeting, November 13, 2007.

"Verification and Validation of Fire Models,"
NIST Summer Undergraduate Research Fellowship presentation, August 8, 2007.

"Fire modeling with the new Fire Dynamics Simulator v5,"
UHD Engineering Technology Department Seminar, April 17, 2007.

Memberships

President, UT Austin SFPE Student Chapter, 2010–Present

Student Member, Society of Fire Protection Engineers, 2004–Present

Student Member, International Association for Fire Safety Science, 2011–Present

Student Member, International Association of Wildland Fire, 2011–Present

President, SFPE WPI Student Chapter, 2009

Founding President, SFPE UHD Student Chapter, 2007

Coursework and Skills

NIST Fire Dynamics Simulator
CFAST / BRANZFIRE Zone Models
Performance-Based Design
Thermodynamics
Fire Dynamics
Fire Alarm Signaling Systems
Structural Design for Fire Safety
Fire Safety and Hazard Recognition
Engineering Mechanics
Differential Equations
Incompressible Flow
Numerical Methods
Fluid Mechanics
Labview
LaTeX
Google Code / Issue Tracker Support
Indoor Air Quality: Transport and Control
Fire Modeling
Computational Fluid Dynamics
Fire Experiments
Heat Transfer
Combustion
Building Fire Safety
Automatic Fire Suppression
Mac OS X / Linux / Windows
MS Word / Excel / PowerPoint / Access
Python / NumPy / SciPy / matplotlib
MATLAB
Wordpress / HTML / Website Editing
Human Factors in Fire Safety
Scientific / Technical Copy Editing
Scientific / High-Performance Computing
Scientific Visualization & Data Analysis
Industrial Safety

Honors and Awards

Honorable Mention, NSF Graduate Research Fellowship, 2009 & 2010

2nd place, Combustion Art Competition, 6th U.S. National Combustion Meeting, 2009

Gerald M. Maatman Fellowship, Kemper Foundation; Fire Science Laboratory, WPI, 2009

Outstanding Graduate – Safety and Fire Engineering Technology, UHD, 2008

LS-AMP Outstanding Scholar Award – Highest GPA in Engineering Technology Dept., UHD, 2008

Brown Foundation Leadership Award – Scholars Academy, UHD, 2007 & 2008

Hat's Off Award, Society of Fire Protection Engineers Annual Conference, 2007

Outstanding Student – Safety and Fire Engineering Technology, UHD, 2006 & 2007

Louis Stokes Alliance Minority Participation Scholarship, National Science Foundation, 2006

Red Rose Scholarship, UHD, 2006

Rookie of the Year, Klein Fire Department, 2002

Volunteerism

Webmaster, North Austin Civic Association; Austin, TX, 2010–Present

Orphanage work, Casa Hogar Douglas; Monterrey, Mexico, January 2007

Community Involvement Day; UHD, September 2006

Ed's Bayou Cleanup; UHD, Spring 2006

Emergency Disaster Preplanning; Loving and Caring Arms Adult Care Facility, March 2006

Tactical Suppression Firefighter, Klein Fire Dept. Station 32; Houston, TX, 2002–2005

Fire alarm system upgrades, Sweetwater Christian School; Houston, TX, 2005