

DAN HUSSAIN

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EDUCATION

- 2010-pres. Carnegie Mellon University Pittsburgh, PA
Ph.D. Candidate, Civil and Environmental Engineering
- 2010 Carnegie Mellon University Pittsburgh, PA
M.S., Civil and Environmental Engineering
Thesis: "Comparative lifecycle inventory (LCI) of greenhouse gas (GHG) emissions of proposed alternative enhanced oil recovery (EOR) methods in the U.S."
- 2004 Massachusetts Institute of Technology Cambridge, MA
B.S., Electrical Science and Engineering, Minor in Biomedical Engineering
- 2001 NASA Academy Greenbelt, MD
Graduate of selective NASA Academy program – limited to approx. 20 students per year
- Active member of NASA Academy Alumni Association (NAAA)

PROFESSIONAL EXPERIENCE

- 2007-pres. **Pioneer Energy, Inc. – Consultant** Lakewood, CO
<http://www.pioneerenergy.com>
- Wrote and prosecuted 20 fundamental patents in the area of clean energy.
 - Assisted with securing financing for the company – \$3M in Class A stock (October 2008) and \$8M in Class B stock (March 2010).
 - Currently leading the grant writing and intellectual property efforts for the Company.
- 2007-pres. **KD Secure, LLC – Consultant** Cambridge, MA
- Co-authored and prosecuted 14 fundamental patents in the area of intelligent security and safety in the United States, Canada, and Europe; all 14 patents have been granted.
 - Developed the application of advanced digital video and data correlation technologies for applications in safety, security, and business productivity in the following vertical markets: crane safety, equestrian safety, hospitals, and university laboratories.
 - Researched and co-authored KD Secure White Paper that included business plan, product outline, and marketing strategy.
 - Lead initial technology and product development efforts. Developed the basic demonstrations of KD Secure's products.
- 2005 – 2007 **Frommer, Lawrence & Haug, LLP – Patent Agent** New York, NY
- Patent prosecution related to video processing systems, communication systems, e-commerce, injection molding, semiconductor processing, and reissue applications.

- Summer '03 **NASA Headquarters – Intern** Washington, D.C.
- Analyzed NASA's medical policy to assist the organization with making a major decision regarding financial coverage of assisted reproduction for the NASA Astronaut Corps, and delivered final recommendations to Chief Health and Medical Officer.
- Summer '02 **Institute of Theoretical Geophysics – Intern** Cambridge, UK
- Performed laboratory experimentation on binary alloy solidification using NH₄Cl model system; researched geophysical mathematical modeling and data analysis.
- Summer '01 **NASA Goddard Space Flight Center – Intern** Greenbelt, MD
- Created software and performed systems engineering with a team of four NASA engineers.
- Summer '00 **Siemens Corporate Research – Intern** Princeton, NJ
- Contributed to software engineering for 3D image sensor built in Germany.
- Summer '99 **Northwestern Dearborn Observatory – Intern** Evanston, IL
- Analyzed scientific data returned from the X-ray satellite ROSAT.

PUBLIC SERVICE

- 1998 – pres. **International Mars Society**
- Founding member of non-profit organization; exploring technologies for Mars exploration; former NASA Administrator is Board Member; founder of two chapters.
- 2005 – 2009 **Science and Innovation Competition**
- Established local science competition as a feeder to the regional Siemens Westinghouse Competition to increase interest in scientific and engineering professions in Johnstown, PA school district. MIT Public Service Center established a \$4,000 summer fellowship program to support the project.
- 2000 – 2002 **MIT Public Service Center**
- Developed curriculum and taught physics and astronomy to 9-12 grade science students in PA high school. Inspired students in scientific research and space exploration. Success led to MIT Public Service Center establishing an entire program – the Vector Fellowship – as a result.

AWARDS

- 2000 **Siemens Westinghouse Science and Technology Competition – National Team Winner**
\$120,000 scholarship for research project at intersection of theoretical biology and computer science
- 2005 MA Ignite Clean Energy Business Presentation Competition – *Semifinalist*
- 2003 Eta Kappa Nu (HKN) Honor Society – *outstanding GPA in EECS department*
- 2002 Burchard Humanities Scholar – *scholarly achievement in political science*

PEER-REVIEWED PUBLICATIONS

1. **Hussain, D.**; Dzombak, D.; Jaramillo, P.; Lowry, G., **2013**. Comparative lifecycle inventory (LCI) of greenhouse gas (GHG) emissions of enhanced oil recovery (EOR) methods using different CO₂ sources. *Int. J. Greenhouse Gas Control*, 16, 129-144.
2. Shinkazh, O.; Kanani, D.; Barth, M.; Long, M.; **Hussain, D.**; Zydney, A.L., **2011**. Countercurrent Tangential Chromatography for Large-Scale Protein Purification. *Biotechnology and Bioengineering*, 108, (3), 582-591.

U.S. PATENTS

1. **U.S. Patent No. 8,354,926**, *Systems and methods for business process monitoring*, U.S. Serial No. 13/411,602, issued on January 15, 2013 and filed on March 4, 2012.
2. **U.S. Patent No. 8,130,098**, *Systems and methods for safety and business productivity*, U.S. Serial No. 13/225,550, issued on March 6, 2012 and filed on September 6, 2011.
3. **U.S. Patent No. 8,013,738**, *Hierarchical storage manager (HSM) for intelligent storage of large volumes of data*, issued September 6, 2011.
4. **U.S. Patent No. 7,999,847**, *Audio-video tip analysis, storage, and alerting system for safety, security, and business productivity*, issued August 16, 2011.
5. **U.S. Patent No. 7,876,351**, *Methods and systems for alerting by weighing data based on the source, time received, and frequency received*, issued January 25, 2011.
6. **U.S. Patent No. 7,737,837**, *Hierarchical data storage manager, anonymous top processing engine, and a vehicle information processing engine for security and safety applications*, issued June 15, 2010.
7. **U.S. Patent 7,595,815**, *Apparatus, methods, and systems for intelligent security and safety*, issued Sept. 29, 2009.
8. **U.S. Patent 7,460,149**, *Video data storage, search, and retrieval using meta-data and attribute data in a video surveillance system*, issued Dec. 2, 2008.
9. **U.S. Patent 7,382,244**, *A video surveillance, storage, and alerting system having network management, hierarchical data storage, video tip processing, and vehicle plate analysis*, issued June 3, 2008.
10. **U.S. Patent No. 7,793,850**, *System and method used for configuration of an inspection compliance tool with machine readable tags and their associations to inspected components*, issued September 14, 2010.
11. **U.S. Patent No. 7,971,140**, *System and method for generating quotations from a reference document on a touch sensitive display device*, issued June 28, 2011.
12. **U.S. Patent No. 8,032,830**, *System and method for generating quotations from a reference document on a touch sensitive display device*, issued October 4, 2011

FOREIGN PATENTS

13. **Canadian Patent No. 2,638,621**, *Video surveillance, storage, and alerting system having network management, hierarchical data storage, video tip processing, and vehicle plate analysis*, issued March 8, 2011.
14. **European Patent No. EP08/165,058**, *An alerting system and method for safety, security, and business productivity*, allowed and to be issued.

PRESS COVERAGE

Silverstein, Ken. *The radioactive boy scout: The true story of a boy and his backyard nuclear reactor*. Random House, March 2004, p 136.

Helmuth, Laura. *Science education: Science fair pump up the rewards of talent*. Science 1999, vol 286: p 2056.

Heinzmann, David. *A scholarship won, thanks to computer*. Chicago Tribune. Dec. 7, 1999, pp 2-3.

Research by undergraduate mathematics students featured at Rose-Hulman conference. The Rose Thorn, vol. 36, no. 19. Terre Haute, IN: March 16, 2001.

Spice, Byron. *Siemens resurrects Westinghouse name in new science competition*. Pittsburgh Post Gazette. Oct. 31, 1999, vol. 73, no. 91, p A8.

CONFERENCE PRESENTATIONS

1. **Hussain, D.**; Dzombak, D.; Jaramillo, P.; Lowry, G., **2012**. Comparative lifecycle inventory (LCI) of greenhouse gas (GHG) emissions of enhanced oil recovery (EOR) methods using different CO₂ sources, *11th Annual Conference on Carbon Capture, Utilization & Sequestration*, Pittsburgh, PA, May 2012.
2. **Hussain, D.**; Werner, A.; Desai, N., **2002**. *The personal internetworked notary and guardian (PING): The policy implications of a patient-controlled electronic medical record*. Published in MIT OpenCourseWare,
3. **Hussain, D.**, **2001**. *Prototype for next generation mobile access to satellite data, on Earth and Mars*. Fourth Mars Society Convention, Stanford University, CA: August 26, 2001.
4. **Hussain, D.**; Malliaris, S., **2000**. *Evolutionary techniques applied to hashing*. Genetic and Evolutionary Computation Conference Proceedings. Las Vegas, NV: July 2000.

CERTIFICATIONS

Registered to practice before the U.S. Patent and Trademark Office (Registration No. 59,026)

LANGUAGES AND INTERETS

Conversational Russian; Sailing; Swimming; Ice Skating; Biking; Philanthropy; Travel