Berkeley B. Almand-Hunter

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Skills

Languages: Python, MATLAB, HTML, CSS, JavaScript, LaTeX
Tools: NumPy, SciPy, Pandas, Scikit-learn, Matplotlib, Bootstrap, jQuery, D3.js, dimple.js
Specialties: Regression analysis, statistics

Experience

Graduate Research Assistant, *Dept. of Mechanical Engineering, Univ. of Colorado, Boulder, CO* 2010 – 2015

- Developed and tested five dynamic flux chambers that accurately measure gas-phase dry deposition
- Operated and maintained custom and commercial air quality instruments
- Processed and performed statistical analysis on more than 10 GB of data
- Used Scikit-learn to perform regressions using linear regression, feature transformation, feature extraction (subset selection and shrinking methods) with custom error functions, random forests, and support vector machines
- Supervised undergraduate and postgraduate student researchers

Ambassador, *American Geophysical Union Thriving Earth Exchange, San Francisco, CA* 2015

- Invited to represent AGU as a science ambassador to the public
- Partnered with I-SEEED, a non-profit social and environmental justice organization
- Acted as an expert advisor on air quality measurements and data collection in vulnerable communities

NSF Graduate STEM Fellow in K-12 Education, *Univ. of Colorado, Boulder, CO* 2011-2012, 2014

- Spent two days each week teaching engineering to K-12 students
- Developed new age-appropriate engineering curriculum for students on a monthly basis
- Published hands-on activities in the Teach Engineering Digital Library

Graduate Research Assistant, *Dept. of Mech. Engineering, Colo. School of Mines, Golden, CO* 2008-2010

- Designed, built, and tested four generations of ceramic microchannel heat exchangers for high-temperature energy applications
- Designed and built a testing station for the heat exchangers, which was capable of delivering air at a flow rate of 100 L min^{-1} and 800 °C

Heat Transfer Teaching Assistant, *Dept. of Mech. Engineering, Colo. School of Mines, Golden, CO* 2009

- Led recitations, held office hours, and taught lectures

Technical Sales, *AC Systems, Denver, CO* 2007-2008

- Designed appropriate environmental control and power distribution systems for data centers

Ski and Snowboard Instructor, *Keystone Resort, CO* 2002-2004

Education

Ph.D., Mechanical Engineering, *University of Colorado, Boulder, CO* — Dec 2015 *(expected)*
Thesis: "Development of Low-Cost Sensing Tools for Dry Deposition Measurements"
Advisors: Michael P. Hannigan and John T. Walker

M.S., Mechanical Engineering, *Colorado School of Mines, Golden, CO* — May 2010
Thesis: "Development and Testing of Ceramic Microchannel Heat Exchangers"

B.S., Mechanical Engineering, *Colorado School of Mines, Golden, CO* — May 2007
Minor: McBride Honors Program in Public Affairs

Honors, Leadership, & Service

Recipient, *Univ. of Colorado Mechanical Engineering Department* Outstanding Service Award — 2014, 2015
Recipient, *Univ. of Colorado Mechanical Engineering Department* GEAR^{2}S Best Demo Award — 2013
Recipient, *Univ. of Colorado Mechanical Engineering Department* Student of the Month Award — 2014
Recipient, *Colorado School of Mines Society of Women Engineers* Outstanding Dedication Award — 2007
Recipient, Four Travel Grants from Different Organizations and One Summer Research Grant — 2013-2014
Student Representative *Mech. Engineering* Graduate Committee (one of two invited students) — 2013-2015
Volunteer Mentor, *GirlVentures* Girls Climb On Program — 2015

Publications & Presentations

Journal articles

- **B. B. Almand-Hunter**, J. T. Walker, N. P. Masson, L. Hafford, and M. P. Hannigan, "Development and validation of inexpensive, automated, dynamic flux chambers." *Atmospheric Measurement Techniques* **8** (1), 267-280 (2015).
- R. Kee, **B. B. Almand**, J. Blasi, B. Rosen, M. Hartmann, N. Sullivan, H. Zhu, A. Manerbino, S. Menzer, W. Coors, and J. Martin, "The design, fabrication, and evaluation of a ceramic counter-flow microchannel heat exchanger." *Applied Thermal Engineering* **31** (11) 2005-2012 (2011).
- **B. B. Almand-Hunter**, A. M. Collier, R. A. Piedrahita, N. P. Masson and M. P. Hannigan, "Improving Low-Cost Metal-Oxide Sensor Results with Statistics and Machine Learning" (In Progress)
- **B. B. Almand-Hunter**, A. M. Collier, R. A. Piedrahita, A. Kaushik, D. Noone, J. T. Walker and M. P. Hannigan, "Spatial Variability in O_3 and CO_2 Flux During the Front Range Air Pollution and Photochemistry Experiment" (In Progress)

Education Publications

- **B. B. Almand**, and M. P. Hannigan, "Hands-on Activity: Sensing Air Pollution," *Teach Engineering Digital Library.* Retrieved from http://tinyurl.com/mrxgdf9 (2011)
- K. Brown, **B. B. Almand**, S. Perez-Suarez, M. Straten, M. Zarske, J. Yowell, & C. Samson. "Hands-on Activity: Oil in the Ocean." *Teach Engineering Digital Library.* Retrieved from http://tinyurl.com/k2rp8qq (2012)

Select Conference Presentations

- B. B. Almand et al. "Continued Development and Validation of Inexpensive Flux-Measurement Tools," National Atmospheric Deposition Program Fall Meeting (2013)
- B. B. Almand et al., "Dust Exposure in Indoor Climbing Facilities," Indoor Air Conference (2014)
- B. B. Almand-Hunter et al."Spatial Variability in O_3 and CO_2 Flux During the Front Range Air Pollution and Photochemistry Experiment," American Geophysical Union Fall Meeting (2014)