

Erol Unal

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EDUCATION

Georgia Institute of Technology, Atlanta, GA **August 2016 – Present**
M.S. in Computational Science and Engineering (CSE) Expected Graduation: December 2018
August 2016 – Present

- Awarded President's Fellowship
- Inter-disciplinary coursework completed in AE, CEE, CSE, ME, and Math departments

Purdue University, West Lafayette, IN **May 2016**
B.S. in Civil Engineering, Structural Emphasis
March 2012 – May 2016
December 2013 – May 2016

- Awarded full-ride Steven C. Beering Scholarship and Fellowship
- Awarded Dean's List and Semester Honors

EXPERIENCE

Graduate Research Assistant August 2016 – Present
Computational Mechanics Group (Adv: Dr. Glaucio Paulino), Georgia Institute of Technology

- Research aims to develop techniques in structural topology optimization and numerical methods
- Designed and 3D-printed models of research work for demonstration and pedagogical purposes
- Assisted in the creation of an upcoming USACM (Computational Mechanics) Conference
- Participated and presented in technical conferences and workshops in the United States and Europe

Undergraduate Research Assistant August 2014 – May 2016
Pankow Material Laboratories, Purdue University

- Quantified salt formation in cement with pozzolans due to exposure to deicing salts
- Created automated models to estimate parameters of concrete reaction given experimental data
- Co-authored and published four journal papers in peer-reviewed journals
- Responsible for training students and coordinating research efforts with Oregon State University

Teaching Assistant August 2014 – December 2014
ENGR 131: Transforming Ideas to Innovation 1, Purdue University

- First-year engineering class introducing general engineering concepts and data analysis software
- Formulated lesson plans, staffed office hours, and graded assignments and exams as part of a team

Freelance Web Developer Fall 2013 – Present

- Created responsive front-end features for websites exceeding 100,000 registered members
- Optimized and designed new MySQL database systems to store and retrieve user data efficiently
- Utilized version-control software to maintain website uptime and debug proposed code additions
- Designed personal portfolios and content management systems for academic faculty

PROFESSIONAL DEVELOPMENT

- Workshop on Polytopal Element Methods in Mathematics and Engineering (POEMS)** July 2017
- University of Milano-Bicocca, Milan, Italy
- Topology Optimization Workshop** June 2017
- University of Wisconsin-Madison, WI, USA
 - Presented technical presentation, "Introduction to the Virtual Element Method and Applications to Topology Optimization"
- Ph.D. Advanced Course – Topology Optimization Theory, Methods, and Applications** June 2017
- Technical University of Denmark, Lyngby, Denmark
 - Presented technical poster, "Multi-Material Topology Optimization Using the ZPR Update Scheme and Virtual Element Method"
- Topology Optimization Roundtable hosted by Sandia National Laboratories** March 2017
- Atlanta, GA, USA
- Engineering Mechanics Institute (EMI) Conference** May 2016
- Vanderbilt University, Nashville, TN, USA

PUBLICATIONS

- Suraneni P., Monical J., **Unal E.**, Farnam Y., and Weiss W. J. (2017). Calcium Oxychloride Formation Potential in Cementitious Pastes Exposed to Blends of Deicing Salt. *ACI Materials Journal*, American Concrete Institute, Vol. 114, No. 4, pp. 631-641, doi:10.14359/51689607.
- Ghantous, R. M., Farnam, Y., **Unal, E.**, & Weiss, J. (2016). The influence of carbonation on the formation of calcium oxychloride. *Cement and Concrete Composites*, 73, 185-191.
- Monical, J., **Unal, E.**, Barrett, T., Farnam, Y., & Weiss, J. (2016). Reducing Joint Damage in Concrete Pavements: Quantifying Calcium Oxychloride Formation for Concrete Made with Portland Cement, Portland Limestone Cement, Supplementary Cementitious Materials, and Sealers. In *Transportation Research Board 95th Annual Meeting* (No. 16-4652).
- Monical J., Villani C., Farnam Y., **Unal E.**, and Weiss W. (2016), Using Low-Temperature Differential Scanning Calorimetry to Quantify Calcium Oxychloride Formation for Cementitious Materials in the Presence of CaCl₂, *Journal of Advances in Civil Engineering Materials*, ASTM, Vol. 5, No. 1, pp. 1-15, doi:10.1520/ACEM20150024.

ORGANIZATIONS

- Georgia Tech CEE Graduate Student Advisory Council August 2017 – Present
- American Society of Civil Engineers (ASCE), Purdue Chapter August 2014 – May 2016
- Concrete Canoe, Mixture Design Team
- Habitat for Humanity, Purdue Chapter August 2012 – May 2014

RELEVANT SKILLS

Engineering Software: Abaqus, ANSYS, AutoCAD, MATLAB, R, Revit, TA Universal Instrument Software
Technologies: C, C++, HTML, Java, Python, HTML, CSS, JavaScript, MySQL, PHP, Unix/Linux platforms