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Davis Rempe

INTERESTS Computer Graphics, Physically-Based Simulation/Animation, Computer Vision, Machine Learning

EDUCATION **Stanford University, Stanford, CA**

Ph.D. in Computer Science

September, 2017 – Present

- Selected Coursework: Machine Learning (CS229, Fall 2017)

University of Nebraska (UNL), Lincoln, NE

B.S. in Computer Science and Mathematics (Minor: Physics) with Highest Distinction

August, 2012 – December, 2016

- Thesis: Effectiveness of Global, Low-Degree Polynomial Transformations for GC x GC Data Alignment
 - Selected Coursework: Numerical Analysis, Numerical Linear Algebra, Intro to Partial Differential Equations, Computer Graphics, Introduction to Data Mining, Digital Motion Graphics, Digital Visual Effects, Digital Animation.
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RESEARCH **Research Assistant** advised by Dr. Ron Fedkiw, Stanford University

EXPERIENCE *September, 2017 – Present*

- Fall quarter rotation project: improving cloth simulation via machine learning.

Research and Development Intern, GC Image, Lincoln, NE

August, 2016 – July, 2017

- Algorithms for peak detection and deconvolution in gas chromatography data.

Smart Spaces REU Site Research Intern advised by Dr. Brian Chen, Lehigh University

May, 2016 – July, 2016

- Inexpensive augmented reality for 3D bone model visualization during surgery.

Undergraduate Researcher advised by Dr. Stephen Reichenbach, UNL

June, 2015 – May, 2016

- Data alignment algorithms for comprehensive two-dimensional gas chromatography.

Undergraduate Researcher advised by Dr. Aaron Dominguez, UNL High Energy Physics

January, 2013 – May, 2014

- Characterization and construction of particle detectors.

Undergraduate Researcher advised by Dr. Timothy Gay, UNL Polarized Electron Physics

June, 2012 – September, 2012

- Researched and refurbished vacuum pump system. Polarized light optics project.

JOURNAL
PUBLICATIONS

- **D. Rempe**, S. Reichenbach, Q. Tao, C. Cordero, C. A. Zini, [*Effectiveness of Global, Low-Degree Polynomial Transformations for GC x GC Data Alignment*](#), Analytical Chemistry, 88(20), pp. 10028-10035, 2016.
- S. Reichenbach, **D. Rempe**, Q. Tao, D. Bressanello, E. Liberto, C. Bicchi, S. Balducci, and C. Cordero, [*Alignment for Comprehensive Two-Dimensional Gas Chromatography with Dual Secondary Columns and Detectors*](#), Analytical Chemistry, 87(19), pp. 10056-10063, 2015.

CONFERENCE
PUBLICATIONS

- **D. Rempe**, M. Snyder, A. Pracht, T. Nguyen, M. Vostrez, Z. Zhao, and M.C. Vuran. [*Cognitive Radio TV Prototype for Effective TV Spectrum Sharing*](#), 2017 IEEE International Symposium on Dynamic Spectrum Access Network (DySPAN), Baltimore, MD, USA, March 6-9, 2017.
- S. Reichenbach, **D. Rempe**, Q. Tao, C. Cordero, *Simple models for second-column retention-time variability across peaks from GCxGC*, 8th Multidimensional Chromatography Workshop, Toronto, ON, Canada, January 5-6, 2017.
- **D. Rempe**, S. Reichenbach, and S. Scott, *Alignment for Comprehensive Two-Dimensional Gas Chromatography (GCxGC) with Global, Low-Order Polynomial Transformations*, UNL Spring Research Fair Poster Session, Lincoln, NE, USA, April, 2016.

ACHIEVEMENTS
AND AWARDS

Lehigh Smart Spaces REU Site Outstanding Project (2016)
Chosen by a faculty panel at culmination of summer REU.

Undergraduate Creative Activities and Research Experience (UCARE)
2015 – 2016: Funding for individual computer science research for the academic year.
2013 – 2014: Funding for group physics research for the academic year.

Eunice Stout Scholarship (2016)

D & F Eastman Scholarship (2013 – 2016)

Regents Scholarship (2012 – 2016)

Honors Program Book Scholarship (2012 – 2016)

Hixon-Lied College of Fine and Performing Arts Dean's List
Spring/Fall 2013, Spring/Fall 2014, Spring/Fall 2015, Spring 2016

College of Arts and Sciences Dean's List
Fall 2012, Spring/Fall 2013, Spring/Fall 2014, Spring/Fall 2015, Spring/Fall 2016

UNL High Scholar
2013, 2014, 2015, 2016

College of Arts and Sciences Celebration of Excellence for Academic Achievement
Spring 2013

PROFESSIONAL
EXPERIENCE

Software Development Intern, GC Image, Lincoln, NE
August, 2014 – August, 2015

- Worked on scientific software for visualizing and analyzing comprehensive two-dimensional gas and liquid chromatography data. Required programming (largely in Java), software development, software testing, and technical documentation.

TEACHING EXPERIENCE **Teaching Assistant** for CSCE 310H – Honors Data Structures and Algorithms
Spring 2016

Coding Seminar Teacher for Society of Physics Students
Fall 2014 – Spring 2016

- Lead a weekly class that taught undergraduates from the Society of Physics Students introductory programming concepts by learning C++.

PROJECTS **Independent Study in Advanced Computer Graphics**
Fall 2016

- Designed and implemented a 2D, grid-based fluid simulation (in C++).

Senior Design Project
Spring/Fall 2016

- Group project on dynamic usage of white-space broadcast TV bands (in Python). Served as Development Manager.

SKILLS **Programming Languages**

- (Proficient) Java; (Familiar) C/C++, Python, MATLAB

Selected Software/Frameworks

- OpenGL, Git, Eclipse, Visual Studio, Android Studio, After Effects, Maya.

Operating Systems

- Microsoft Windows, Linux (Ubuntu).

MEMBERSHIP **UNL Honors Program**
2012 – 2016

- Required extra academic achievements to be fulfilled throughout undergraduate education, including 24 hours of honors classes and completion of senior thesis.

UNL Society of Physics Students
2012 – 2016

- Secretary (2014 – 2016). Coding seminar teacher.
- Group of students passionate about physics and exploring the discipline further. Participated in many volunteering and scientific outreach opportunities.

UNL Math Club
2012 – 2016

Upsilon Pi Epsilon, International Computer Science Honor Society

Pi Mu Epsilon, National Mathematics Honor Society

Phi Eta Sigma, National Freshmen Honor Society

REFERENCES **Dr. Stephen Reichenbach**, Research Advisor

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Dr. Brian Y. Chen, Research Advisor

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Dr. Hongfeng Yu, Computer Graphics/Independent Study Professor

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