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DAVIS REMPE

INTERESTS

Computer Graphics, Physically-Based Simulation/Animation, Data Visualization, Computer Vision

EDUCATION

B.S. in Computer Science and Mathematics, Minor in Physics

with Highest Distinction

University of Nebraska – Lincoln (UNL)

2012 - Present

- Expected date of graduation: December, 2016
- GPA: 3.932, Computer Science/Math GPA: 4.0
- Thesis: Effectiveness of Global, Low-Degree Polynomial Transformations for GC x GC Data Alignment
- Completed 24 credit hours in Johnny Carson School of Theatre & Film

Education Abroad

Anglo-American University - Prague, Czech Republic

Summer 2014

- Lived in Prague for two months while taking three classes.

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) Recipient

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 Recipient

2016

D & F Eastman Scholarship Recipient

2013 – 2016

Regents Scholarship Recipient

2012 – 2016

Honors Program Book Scholarship Recipient

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, Fall/Spring 2015, Spring 2016

UNL High Scholar

2013, 2014, 2015

College of Arts and Sciences Celebration of Excellence for Academic Achievement

Spring 2013

RESEARCH EXPERIENCE

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

May, 2016 – July, 2016

- Researched effectiveness of using Google Cardboard as an inexpensive augmented reality platform. Developed a library on Android for creating augmented reality applications with the Cardboard, implemented application for 3D bone model visualization based on marker tracking using this library.
- Awarded Outstanding Project by faculty panel.

Undergraduate Researcher under Dr. Stephen Reichenbach, UNL

June, 2015 – June, 2016

- Researched data alignment algorithms for comprehensive two-dimensional gas chromatography.
- Awarded UCARE funding for 15-16 academic year.

Undergraduate Researcher under Dr. Aaron Dominguez, High Energy Physics Lab, UNL

January, 2013 – May, 2014

- Characterization and construction of silicon pixel detectors for CMS experiment at CERN. Programmed gantry system for detector construction. Minor data analysis using ROOT framework.
- Awarded UCARE funding for 13-14 academic year.

Undergraduate Researcher under Dr. Timothy Gay, Polarized Electron Physics Lab, UNL

June, 2012 – September, 2012

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

PUBLICATIONS

- **D. Rempe**, J. Smith, B. Chen, *Mobile Augmented Reality Platform for Inexpensive Head-Mounted Display*, In Preparation.
- **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 PRESENTATIONS

- 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 (*Upcoming)*.

- **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.

PROFESSIONAL EXPERIENCE

Research and Development Intern, GC Image, Lincoln, NE

August, 2016 – Present

- Researching, designing, and implementing algorithms for the analysis and visualization of gas chromatography data, specifically ion blob detection.

Software Development Intern, GC Image, Lincoln, NE

August, 2014 – August, 2015

- Worked on large-scale scientific software for visualizing and analyzing comprehensive two-dimensional gas and liquid chromatography data. Required computer 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 teaches undergraduates from the Society of Physics Students introductory programming concepts by learning C++.

MEMBERSHIP

University Honors Program

2012 – Present

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

Society of Physics Students

2012 – Present

- 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.

Math Club

2012 – Present

Upsilon Pi Epsilon, International Computer Science Honor Society

Pi Mu Epsilon, National Mathematics Honor Society

Phi Eta Sigma, National Freshmen Honor Society

Alpha Lambda Delta, National Freshmen Honor Society

SKILLS

Selected Coursework

- Matrix Theory, Numerical Linear Algebra, Differential Equations, Intro to Partial Differential Equations, Numerical Analysis, Computer Graphics, Introduction to Data Mining, Digital Motion Graphics, Digital Visual Effects, Digital Animation.

- **Independent Study in Advanced Computer Graphics (Fall 2016)**: focused on implementing a 3D, grid-based fluid simulation.
- **Senior Design Project (Spring/Fall 2016)**: year-long group project dealing with dynamic usage of white-space broadcast TV bands. Served as Development Manager.

Programming Languages (* indicates substantial experience)

- Java*, C/C++, Python, MATLAB, OpenGL, OpenGL ES, WebGL.

Operating Systems

- Microsoft Windows, Linux (Ubuntu).

Selected Software

- Git, Atom, Eclipse, Visual Studio, Android Studio, Adobe After Effects, Autodesk Maya.

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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Dr. Sebastian Elbaum, Senior Design Project Professor

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