

# Davis Rempe

825 Menlo Ave., Apt. J  
Menlo Park, CA 94025  
☎ (402) 450-9402  
✉ [drempe@stanford.edu](mailto:drempe@stanford.edu)  
📄 [davrempe.github.io](https://github.com/davrempe)

---

## Interests

**Computer Vision, Machine Learning, Physical Scene Understanding, Computer Graphics, Physical Simulation.**

---

## Education

2017–Present **Ph.D. Computer Science**, *Stanford University*, Stanford, CA.

- Advisor: Prof. Leonidas Guibas
- Selected Coursework: Machine Learning, Computer Vision, Deep Generative Models, Convex Optimization

2012–2016 **B.S. Computer Science, Mathematics**, *University of Nebraska*, Lincoln, NE.

with Highest Distinction

- Minor: Physics
- Thesis: Effectiveness of Global, Low-Degree Polynomial Transformations for GCxGC Data Alignment
- Selected Coursework: Numerical Analysis, Numerical Linear Algebra, Partial Differential Equations, Computer Graphics, Digital Motion Graphics, Digital Visual Effects, Digital Animation

---

## Research Experience

Sep. 2017– **Research Assistant**, *Stanford University*, Stanford, CA.

Present ○ Advisor: Prof. Leonidas Guibas

- Generally work on problems in physical understanding of 3D objects and humans in a scene based on images or videos. Past and current projects include predicting future dynamics of objects from point clouds, inferring physical object properties from visual input, improving 3D human motion estimation using physics, and multiview shape reconstruction.

June 2019– **Computer Vision Research Intern**, *Adobe*, San Jose, CA.

- Nov. 2019 ○ Improved recovery of dynamic 3D human motion from video by learning to detect foot contacts from video which are then used in a physics-based optimization pipeline to refine an initial noisy 3D pose estimate.

June 2018– **Research Intern**, *Snap Inc.*, Venice, CA.

- Sep. 2018 ○ Implemented deformable simulation methods, improved cloth simulation with machine learning

Aug. 2016– **Research and Development Intern**, *GC Image*, Lincoln, NE.

- July 2017 ○ Algorithms for peak detection and deconvolution in gas chromatography data

May 2016– **Smart Spaces REU Intern**, *Lehigh University*, Bethlehem, PA.

- July 2016 ○ Advisor: Prof. Brian Chen

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

June 2015– **Undergraduate Researcher**, *University of Nebraska*, Lincoln, NE.

- May 2016 ○ Advisor: Prof. Stephen Reichenbach

- Data alignment algorithms for comprehensive two-dimensional gas chromatography

---

## Publications

## Peer-reviewed Papers

- [1] **Davis Rempe**, S. Sridhar, H. Wang, and L. Guibas. Predicting the Physical Dynamics of Unseen 3D Objects. *Winter Conference on Applications of Computer Vision (WACV)*, 2020.
- [2] S. Sridhar, **Davis Rempe**, J. Valentin, S. Bouaziz, and L. Guibas. Multiview Aggregation for Learning Category-Specific Shape Reconstruction. *Advances in Neural Information Processing Systems (NeurIPS)*, 2019.
- [3] **Davis Rempe**, S. Sridhar, H. Wang, and L. Guibas. Learning Generalizable Final-State Dynamics of 3D Rigid Objects. *CVPR Workshop on 3D Scene Understanding for Vision, Graphics, and Robotics*, 2019.
- [4] **Davis Rempe**, S.E. Reichenbach, Q. Tao, C. Cordero W.E. Rathbun, and C.A. Zini. Effectiveness of Global, Low-Degree Polynomial Transformations for GCxGC Data Alignment. *Analytical Chemistry*, 2016.
- [5] S.E. Reichenbach, **Davis 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*, 2015.

## Other Presentations

- [6] **Davis Rempe**, M. Snyder, A. Pracht, T. Nguyen, M. Vostrez, Z. Zhao, and M.C. Vuran. A Cognitive Radio TV Prototype for Effective TV Spectrum Sharing. *IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN) Demo Session, Baltimore, MD, USA*, March 2017.
- [7] S.E. Reichenbach, **Davis Rempe**, Q. Tao, and C. Cordero. Simple models for second-column retention-time variability across peaks from GCxGC. *8th Multidimensional Chromatography Workshop, Toronto, ON, Canada*, January 2017.

---

## Achievements and Awards

- 2019 **NSF Graduate Research Fellowship Program Honorable Mention.**
- 2016 **Lehigh Smart Spaces REU Outstanding Project.**
- 2015–2016 **Undergraduate Creative Activities and Research Experience (UCARE).**
- 2013–2014 Funding for computer science (2015/16) and physics (2013/14) research for an academic year
- 2016 **Eunice Stout Scholarship.**
- 2013–2016 **D&F Eastman Scholarship.**
- 2012–2016 **Regents Scholarship.**
- 2012–2016 **Honors Program Book Scholarship.**
- 2013–2016 **College of Fine and Performing Arts Dean's List.**
- 2012–2016 **College of Arts and Sciences Dean's List.**
- 2013–2016 **University of Nebraska High Scholar.**
- Spring 2013 **Arts and Sciences Celebration of Excellence for Academic Achievement.**

---

## Professional Experience

- Aug. 2014– **Software Development Intern, GC Image, Lincoln, NE.**
- Aug. 2015
  - Scientific software for visualizing and analyzing comprehensive two-dimensional gas and liquid chromatography data

---

## Teaching Experience

Spring 2016 **Teaching Assistant**, *University of Nebraska, Lincoln, NE.*

- CSCE 310H - Honors Data Structures and Algorithms

Fall 2014– **Coding Seminar Teacher**, *Society of Physics Students, Lincoln, NE.*

Spring 2016 ◦ Led a weekly class for undergraduate physics majors to learn introductory programming concepts through C++

---

## Technical Skills

Languages *Experienced:* Python, C++ *Familiar:* Java, C#, C, MATLAB

Libraries: PyTorch, TensorFlow, Bullet Physics, OpenGL

Software vim, Git, Blender, Unity, Autodesk Maya, Adobe After Effects, Adobe Premiere Pro

OS Microsoft Windows, Linux (Ubuntu), macOS

---

## Membership

2012–2016 **Honors Program**, *University of Nebraska.*

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

2012–2016 **Society of Physics Students**, *University of Nebraska.*

- 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.

2012–2016 **Math Club**, *University of Nebraska.*

2015– **Upsilon Pi Epsilon**, *International Computer Science Honor Society.*

2014– **Pi Mu Epsilon**, *National Mathematics Honor Society.*

2013– **Phi Eta Sigma**, *National Freshmen Honor Society.*

2013– **Alpha Lambda Delta**, *National Freshmen Honor Society.*

---

## References

*Available upon request.*