# John-Paul Ore

https://cse.unl.edu/~jore
NIMBUS Lab & ESQuaReD
Computer Science and Engineering
University of Nebraska—Lincoln

+1 (402) 646-8081
jore@cse.unl.edu
223 Schorr Center, 1101 T St
Lincoln, NE, USA 68588-0150

## Research Interests and Approach

My research interests span software engineering and field robotics, especially applying program analysis to robotics problems to make systems safer and more reliable while remaining practical and economically efficient.

## Education

University of Nebraska ..... Lincoln, NE, USA
- 2019 **Doctor of Philosophy in Computer Science** (Expected May '19)
  *"Abstract Type Inference for Robot Software"*
  Advisors: Sebastian Elbaum and Carrick Detweiler
- 2015 **Master of Science in Computer Science**
  *"Autonomous Aerial Water Sampling"* **Award: Outstanding Master's Thesis**
  Advisors: Carrick Detweiler and Sebastian Elbaum

University of Chicago ..... Chicago, IL, USA
- 1996 **Bachelor of Arts in Philosophy**

## Refereed Conference Publications

10. Sayali Kate, John-Paul Ore, Xiangyu Zhang, Sebastian Elbaum, and Zhaogui Xu. "Phys: Probabilistic Physical Unit Assignment and Inconsistency Detection". In: *Foundations of Software Engineering*. ESEC/FSE'18. 2018. (**Artifact:** https://zenodo.org/record/1310129)

9. John-Paul Ore, Sebastian Elbaum, Carrick Detweiler, and Lambros Karkazis. "Assessing the Type Annotation Burden". In: *Automated Software Engineering*. ASE'18. 2018 pp. 190—201. https://dl.acm.org/citation.cfm?doid=3238147.3238173

8. John-Paul Ore, Carrick Detweiler, and Sebastian Elbaum. "Dimensional Inconsistencies in Code and ROS Messages: a Study of 5.9M Lines of Code". In: *International Conference on Intelligent Robots and Systems*. IROS'17. 2017. pp.712—718. https://doi.acm.org/10.1145/3092703.3098219.

7. John-Paul Ore, Carrick Detweiler, and Sebastian Elbaum. "Lightweight Detection of Physical Unit Inconsistencies without Program Annotations". In: *International Symposium on Software Testing and Analysis*. ISSTA'17. 2017. pp.341–351. https://doi.acm.org/10.1145/3092703.3092722 **Award: Best Tool Demonstration**

6. John-Paul Ore, Carrick Detweiler, and Sebastian Elbaum. "Phriky-Units: a Lightweight, Annotation-Free Physical Unit Inconsistency Detection Tool (Tool Paper)". In: *International Symposium on Software Testing and Analysis*. ISSTA'17. 2017. pp.352–3554. https://doi.acm.org/10.1145/3092703.3098219

5. John-Paul Ore and Carrick Detweiler. "Sensing Water Properties at Precise Depths from the Air". In: *Field and Service Robotics*. FSR'17. 2017. pp.205–220. https://doi.org/10.1007/978-3-319-67361-5_14

4. David Anthony, Elizabeth Basha, Jared Ostdiek, John-Paul Ore, and Carrick Detweiler. "Surface Classification for Sensor Deployment from UAV Landings". In: *International Conference on Robotics and Automation*. ICRA'15. 2015. pp.3464–3470. https://doi.org/10.1109/ICRA.2015.7139678

3. Jacob Palmer, Nicholas Yuen, John-Paul Ore, Carrick Detweiler, and Elizabeth Basha. "On Air-to-Water Radio Communication between UAVs and Water Sensor Networks". In: *International Conference on Robotics and Automation*. ICRA'15 2015. pp.5311–5317. https://doi.org/10.1109/ICRA.2015.7139940

2. David Anthony, John-Paul Ore, Elizabeth Basha, and Carrick Detweiler. "Controlled Sensor Network Installation with Unmanned Aerial Vehicles.". In: *Embedded Networked Sensor Systems*. SenSys'14. 2014. pp.348–349. https://doi.org/10.1145/2668332.2668358

1. John-Paul Ore, Sebastian Elbaum, Amy Burgin, Baoliang Zhao, and Carrick Detweiler. "Autonomous Aerial Water Sampling". In: *Field and Service Robotics*. FSR'13. 2013. pp.137–151.

## Refereed Journal Publications

5. John-Paul Ore, Carrick Detweiler, and Sebastian Elbaum. "Assessing the Type Annotation Burden". In: *ACM Transactions of Software Engineering and Methodology*. (Preparing for Submission.)

4. John-Paul Ore and Carrick Detweiler. "Sensing Water Properties at Precise Depths from the Air". In: *Journal of Field Robotics*. 2018. pp.1–17. https://doi.org/10.1002/rob.21807

3. Michaella Chung, Carrick Detweiler, Michael Hamilton, Jim Higgins, John-Paul Ore, and Sally Thompson. "Obtaining the Thermal Structure of Lakes from the Air". In: *Water*. 2016. pp.6467–6778. https://www.mdpi.com/2073-4441/7/11/6467

2. Carrick Detweiler, John-Paul Ore, David Anthony, Sebastian Elbaum, Amy Burgin, and Aaron Lorenz. "Bringing Unmanned Aerial Systems Closer to the Environment.". In: *Cambridge Journal of Environmental Practice*. 2015. pp.188–200. https://doi.org/10.1017/S1466046615000174

1. John-Paul Ore, Carrick Detweiler, Amy Burgin, and Sebastian Elbaum. "Autonomous Aerial Water Sampling.". In: *Journal of Field Robotics*. 2015. pp.1095–1113.

## Refereed Workshop

3. John-Paul Ore, Carrick Detweiler, and Sebastian Elbaum. "Towards Code-Aware Robotic Simulation". In: *Proceedings of the 1st International Workshop on Robotics Software Engineering*, RoSE'18. 2018. pp.40–43. https://doi.org/10.1145/3196558.3196566

2. John-Paul Ore, Amy Burgin, Valerie Schoepfer, Carrick Detweiler. "Towards Monitoring Saline Wetlands with Micro UAVs.". In: *Robot Science and Systems Workshop on Robotic Monitoring*, RSS'14. 2014.

1. John-Paul Ore, Sebastian Elbaum, Baoliang Zhao, and Carrick Detweiler. "Towards Autonomous Aerial Water Sampling". In: *Robot Science and Systems Workshop on Robotic Monitoring*, RSS'13. 2013.

## Patents

2017 Aerial Water Sampler *#US9606028B2*

## Tools

PHRIKY https://github.com/unl-nimbus-lab/phriky-units
PHYS https://zenodo.org/record/1310129

## Honors and Awards

| | |
|---|---|
| 2018 | ACM SIGSOFT Travel Grant ($300) |
| 2017 | **Best Tool Demonstration** *Phriky-Units* (ISSTA'17) |
| 2015 | **Outstanding Master's Thesis Award** UNL Computer Science and Engineering |
| 2014–18 | Othmer Fellowship ($8000 per annum) |
| 2013 | RSS'13 Travel Grant ($500) |

## Mentoring and Teaching

Graduate Teaching Assistant ..... Lincoln, NE, USA

2018 *Software Engineering II*

Direct weekly lab for 48 students. Grade homework assignments and provide one-on-one tutoring. Manage five undergraduate teaching assistants.

Mentor ..... Lincoln, NE, USA

2018 **Mentor for undergraduate Lambros Karkazis.**

Direct undergraduate research experience leading to co-authorship of conference paper at *Automated Software Engineering '18*.

## Industrial Employment

Current Rutledge ..... Seattle, WA, USA

2005 **Video Production Assistant, Grip, and Webmaster**

Samadhi Yoga Center ..... Seattle, WA, USA

2003 **Webmaster**

Electronic Data Discovery ..... Seattle, WA, USA

2002 **Manager** Technical Analysis Group

2000 **Analyst** Technical Analysis Group

Deloitte Consulting ..... Chicago, IL, USA

1998 **Consultant** Requirements Gathering and Testing.

1997 **Analyst** UI Development for a claims processing system.

## Talks

| | |
|---|---|
| 2018 | *"Phys: Probabilistic Physical Unit Assignment and Inconsistency Detection"*. (FSE) |
| 2018 | *"Assessing the Type Annotation Burden"*. (ASE) |
| 2018 | *"Towards Code-Aware Robotic Simulation"*. at Workshop on Robotic Software Engineering (RoSE, part of ICSE) |
| 2017 | *"Sensing Water Properties at Precise Depths from the Air"*. (FSR) |
| 2017 | *"Detecting Bugs in Robotic Systems"* at Workshop on Testing Embedded and Cyber-Physical Systems (TECPS, part of ISSTA) |
| 2017 | *"Lightweight Detection of Physical Unit Inconsistencies without Program Annotations"* (ISSTA) |
| 2017 | *"Phriky-Units: a Lightweight, Annotation-Free Phys- ical Unit Inconsistency Detection Tool (Tool Paper)"* (ISSTA Tool-Track) |
| 2017 | *"Dimensional Inconsistencies in Code and ROS Messages: a Study of 5.9M Lines of Code"* (IROS) |
| 2016 | *"Flying Robots"* Bright Lights Summer Camp. |
| 2015 | *"Bringing Aerial Robots Closer:Sensing, Sampling, and Safety"* Nebraska Agricultural Technologies Association Conference. (NEATA) |
| 2014 | *"Towards Monitoring Saline Wetlands with Micro UAVs"*. (RSS'14 Workshop on Environmental Monitoring) |

2013 *"Autonomous Aerial Water Sampling"*. (FSR)
2013 *"Toward Autonomous Aerial Water Sampling"*. (RSS'13 Workshop on Environmental Monitoring)

## Service

2018–19 Program Committee for *Workshop on Robotic Software Engineering* (RoSE, part of ICSE)
2018 *Reviewer:* IEEE Robotics and Automation Letters
2018 *Reviewer:* International Conference on Formal Methods and Models for System Design (MEMCODE)
2015–18 *Reviewer:* Journal of Field Robotics
2014–18 *Reviewer:* International Conference on Robotics and Automation
2018 *Reviewer:* International Journal of Mining Reclamation and Environment
2017 *Reviewer:* Field and Service Robotics
2017 *Reviewer:* Limnology and Oceanography: Methods
2016 Faculty Search Committee Graduate Student Representative - UNL CSE
2015 Bright Lights Robotics Summer Camp Counsellor

## MEMBERSHIPS

ACM-W, ACM, ACM-SIGSOFT, IEEE

## CERTIFICATIONS

Certified Remote UAS Drone Pilot under FAA Part 107.