



Eric C. Larson

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1. RESEARCH OVERVIEW

"The research students that I have had the privilege to advise are the reason my work has been successful. I am privileged to have been able to contribute in some small way to their success. Their dedication and commitment to their study, research, and search of new knowledge is what allows science to impact the lives of so many others."

Dr. Larson is the Bobby B. Lyle Endowed Professor in Engineering Innovation and Altshuler Distinguished Teaching Professor. He is an Associate Professor in the Department of Computer Science at SMU with courtesy appointment in the Department of Operations Research and Engineering Management. He joined SMU in August 2013 after he received his PhD from the University of Washington. He is a member of the Darwin Deason Institute for Cyber-security, Center for Global Health, and SMU AT&T Center for Virtualization. He is also a fellow of the Hunt Institute for Engineering Humanity. His research explores the interdisciplinary relationship of machine learning and signal/image processing with the fields of security, mobile health, education, chemistry, psycho-visual psychology, human-computer interaction, and ubiquitous computing. Like most academics, he has a passion for teaching and mentoring, and views research as an ideal opportunity to instruct the next generation of computer scientists and engineers. He has positioned himself (*with plenty of help from others*) in a unique role, supporting different research applications via the integration of machine learning and ubiquitous sensing. He has become increasingly interested in sensing markers of health and context awareness using commonplace sensors. His research supports many healthcare, educational, and security initiatives by creating applications that (1) manage and diagnose chronic/infectious ailments, (2) help learners master educational topics, and (3) investigate security and privacy through the lens of machine learning, especially side channels, information leakage, and anomaly detection.

Dr. Larson has published numerous papers at top journals and conferences, one textbook, and two book chapters, garnering over 5,800 citations (**Google Scholar H-index of 31, ranked in the top 50 of researchers at SMU**). He has established grant funding for projects as PI and Co-PI with funding from a variety of sources including **private contracts and government agencies, in excess of \$10M**. Dr. Larson has received federal grant funding from the National Science Foundation, National Institutes of Health, Department of Education, Institute for Education Sciences, Department of Homeland Security, Office of Naval Research, and United States Air Force.

2. EDUCATION

- 2013 **Ph.D. in Electrical Engineering**, University of Washington, Seattle
Area: Signal Processing and Ubiquitous Computing;
Advisor: Dr. Shwetak Patel (*MacArthur Genius Fellow, ACM Prize in Computing*)
Co-Advisor: Dr. Les Atlas (*Amazon Catalyst Fellow*)
Committee: Dr. Mari Ostendorf, Dr. Xiaofeng Ren, Dr. James Fogarty, Dr. Karen Clark
Topic: *Semi-Supervised Training for Infrastructure Mediated Sensing: Disaggregated Hot- and Cold-Water Sensing with Minimal Calibration*
- 2008 **Master of Science in Electrical Engineering**, Oklahoma State University, Stillwater
Area: Image Processing and Digital Signal Processing
Advisor: Dr. Damon Chandler
Committee: Dr. Keith Teague, Dr. Gary Yen, Dr. Qi Cheng
MS Thesis: *Predictive Image Quality: The Most Apparent Distortion*
- 2006 **Bachelor of Science in Electrical Engineering**, Oklahoma State University, Stillwater
Area: Communications, Signals, and Controls
Summa Cum Laude

3. PROFESSIONAL EXPERIENCE

- 2019-present **Southern Methodist University**, Dallas, TX
Associate Professor, Department of Computer Science
- 2013-2019 **Southern Methodist University**, Dallas, TX
Assistant Professor, Department of Computer Science and Engineering
- 2012-2015 **Belkin Conserve Unit**, Los Angeles, CA
Systems Consultant: Machine Learning, Cloud Architecture, Firmware Design

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- 2012-2013 **Intel Science and Technology Center**, Seattle WA
Student Research Assistant
 - 2009-2013 **University of Washington**, Electrical Engineering, Seattle, WA
Student Research Assistant
 - 2010 Summer **Intel Research**, Seattle, WA
Research Intern with Dr. Beverly Harrison
 - 2007-2008 **Oklahoma State University**, Stillwater, OK
Student Research Assistant with Dr. Damon Chandler
 - 2006 Summer **Garmin International**, Olathe, Kansas
Design Engineer Intern for Consumer Electronics
 - 2005 Summer **Oklahoma State University**, Stillwater, OK
Undergraduate Researcher (REU) with Dr. Keith Teague

4. POST-DOCTORAL RESEARCHERS

- Feb. 2017- **Pavel Klimovich**, *Cheminformatics tools for Ligand Fingerprinting*
- Feb. 2018 *Publications: [J.07]*

5. DOCTORAL STUDENTS SUPERVISED

- 2027 **Zhongjie Wu**, Thesis: *Robotic Surgery Assessment with Deep Visual Attention Models*
expected Publications: [C.46], [J.28]
Timeline: [Start: 2022], [Quals: TBD], [Proposal: TBD], [Defense: TBD]
 - 2026 **Matthew Lee**, Topic: *Modeling and Simulation in Machine Learning*
expected Publications: [C.41], [C.43], [C.59], [C.60], [C.61]
Timeline: [Start: 2022], [Quals: TBD], [Proposal: TBD], [Defense: TBD]
 - 2026 **Joshua Sylvester**, Topic: *Deep Granger Time Series Analysis*
expected Publications: [C.41], [C.43], [C.59], [C.60]
Timeline: [Start: 2022], [Quals: TBD], [Proposal: TBD], [Defense: TBD]
 - 2025 **Charles Sayre**, Topic: *Deep Anomaly Detection with Radiative Sensing*
expected Publications: [C.58]
Timeline: [Start: 2022], [Quals: TBD], [Proposal: TBD], [Defense: TBD]
 - 2025 **Ishna Satyarth**, (Co-advised with Dr. D. Matthews), (Ph.D.) Topic: *Forthcoming*
expected Publications: 1 Conference Paper with Dr. Matthews
Timeline: [Start: 2022], [Quals: Feb. 2023], [Proposal: TBD], [Defense: TBD]
 - 2025 **Zhongdi (Ultron) Wu**, Topic: *Large Language Models in the Application of Vocabulary Acquisition*
expected Publications: [C.46], [C.56], [J.26], [C.62]
Timeline: [Start: 2022], [Quals/Proposal: TBD], [Defense: TBD]
 - 2025 **Yihao Wang**, Topic: *Deep Learning Attention Methods for Video and Audio Processing*
expected Publications: [J.20], [C.46], [J.22], [C.50], [J.28], [C.62]
Timeline: [Start: 2021], [Quals/Proposal: TBD], [Defense: TBD]
 - 2024 **Clayton Harper**, (ABD) Topic: *Differentiable Deep Model Parameterization*
expected Publications: [C.33],[C.39],[C.60],[C.61],J.29],[C.63],[C.64]
Timeline: [Start: 2021], [Quals/Proposal: December 2023], [Defense: TBD]
 - 2024 **Yasamin Fouzani**, (ABD, Part Time) Topic: *CMOS-Based Rotational Spectroscopy: Massive Spectral Fingerprint Generation for Enabling Automated Molecular Detection*
expected Publications: [J.27],
Current Position: Senior Scientific Programmer for Ops Research Modeling, FedEx
Timeline: [Start: 2019], [Quals/Proposal: 2022], [Defense: Feb. 2024]
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- Aug. 2021 **Raghuram Srinivas**, (Ph.D.) Topic: *CFGenNets: Collaborative Filtering Based Generative Networks.*
Publications: [J.07], [J.18],
Current Position: Lead Data Scientist at JPM Chase
Timeline: [Start: 2017], [Quals: 2021], [Proposal: Mar. 2021], [Defense: Aug. 2021]
 - Dec. 2020 **Xinyi Ding**, (Ph.D.) Topic: *Deep Neural Network based Student Response Modeling with Uncertainty, Multimodality, and Attention*
Publications: [J.06], [J.08], [J.10], [J.13], [J.14], [C.30], [C.31], [OP.09], [J.23], [J.24]
Current Position: Assistant Professor (Tenure Track) at Gongshang University, China
Timeline: [Start: 2017], [Quals: 2020], [Proposal: Mar. 2020], [Defense: Dec. 2020]

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- Aug. 2020 **Justin (Chill) Wilson**, (Co-advised with Suku Nair), (Ph.D.) Topic: *Cognitive and Context Aware Computing: Towards a Situation-aware System with a Case Study in Aviation*
 Publications: [C.32] (*best paper*), [J.15], [J.16]
 Current Position: ACCR Research Director, Assistant Professor in Department of Computer and Cyber Sciences at United States Air Force Academy, Colorado
 Timeline: [Start: 2017], [Quals: 2019], [Proposal: Dec. 2019], [Defense: Aug. 2020]
- Dec. 2017 **Chatchai (Mark) Wangwiwattanna**, (Ph.D.) Dissertation: *RGB Image-based Pupillary Diameter Tracking with Deep Convolutional Neural Networks*
 Publications: [J.06], [C.24], [C.25], [OP.10]
 Current Position: Professor in School of Science and Technology and Associate Vice President of Information Technology at UTCC, Thailand
 Timeline: [Start: 2014], [Quals: 2016], [Proposal: Aug. 2016], [Defense: Dec. 2017]
- May 2015 **Sohail Rafiqi**, (Ph.D.) Dissertation: *PupilWare: Towards Cognitive and Context Aware Computing*
 Publications: [C.24], [C.25],
 Current Position: Analyst at Google Cloud, Specializing in Healthcare Applications
 Timeline: [Start: 2010], [Quals: 2014], [Proposal: Mar. 2014], [Defense: Apr. 2015]

6. MASTERS' STUDENTS SUPERVISED WITH THESIS

- Dec. 2021 **Joshua Sylvester**, (Co-advised with Dr. M. Hornbach) Thesis: *Developing IoT-based Geophysical Micro-observatories Utilizing Cloud Computing*
 Publications: [C.41], [C.43] Current Position: PhD Student with Dr. Larson
- Dec. 2021 **Zhongdi (Ultron) Wu**, (Co-advised with Dr. G. Alford) Thesis: *Exploring Neural Networks for Predicting Sentinel-C Backscatter between Image Acquisitions*
 Publications: [C.46], [C.56], [J.26] Current Position: PhD Student with Dr. Larson
- May 2018 **Travis Siems**, Thesis: *Understanding Natural Keyboard Typing Using Convolutional Neural Networks on Mobile Sensor Data*
 Publications: [J.09],[P.08], Current Position: Analyst at Toyota Connected
- August 2016 **Spencer Kaiser**, Thesis: *Open Spirometry: portable, low-cost spirometry utilizing 3D-printed vortex whistles and smartphones*
 Publications: [B.03], [C.27],[P.07], Current Position: Analyst at American Airlines

7. UNDERGRADUATE RESEARCH STUDENTS ADVISED (THESIS/ENGAGED LEARNING)

- May 2024 **Gabriel Mongaras**, Honors Thesis, "*Replacing Transformer Attention with Efficient Recurrent Operations*"
 Expected
- May 2024 **Trevor Dohm**, Honors Thesis, "*Using Transformer Attention with Cosine Distance*"
 Expected
- May 2024 **Vedant Nilabh**, Honors Thesis, "*Simplicial Graph Message Passing in 3D Point Clouds*"
 Expected
- May 2023 **Elias Mann**, Honors Thesis, (Co-Advised with Dr. Michael Hahsler) "*Context Aware Music Recommendation and Playlist Generation*"
- May 2021 **Sisi Kang**, Engaged Learning, Topic: *Child Computer Interaction Techniques in Audio-based Interfaces for English Language Learners in STEM*
 Publications: [OP.13], Current Position: Developer in AT&T Leadership Program
- May 2016 **Ashley Parks**, Engaged Learning, Topic: *Calibration of Vortex Whistles for Ultra Low Cost Spirometry*
 Publications: [C.26],[P.07] Current Position: Analyst at Toyota Connected
- May 2015 **Amanda Doyle**, Engaged Learning and Undergraduate Honors Thesis
 Honors Thesis: *Overcoming Barriers to Cervical Cancer Screening: Mobile Development*
 Publications: [J.10], Current Position: Leadership Program at GE
- May 2015 **Kevin Donahoo**, Engaged Learning and Undergraduate Honors Thesis
 Honors Thesis: *Overcoming Barriers to Cervical Cancer Screening: Gesture Analytics*
 Publications: [J.10], Current Position: Analyst at AT&T
- May 2015 **Nathan Hillis**, Engaged Learning and Undergraduate Honors Thesis
 Honors Thesis: *Overcoming Barriers to Cervical Cancer Screening: Image Analytics*
 Publications: [J.10]

8. HONORS AND AWARDS

- 2024 Appointed Bobby B. Lyle Endowed Professor in Engineering Innovation
- 2023 Inducted as Member into the **SMU Academy of Distinguished Teachers**
Altshuler Distinguished Teaching Award (*among all Tenured Faculty at University*)
- 2022 Courtesy Appointment in Department of Operations Research and Engineering Management
- 2021 Nominated for President's Associates Teaching Award (*among all Tenured Faculty*)
- 2020 IITSEC 2020 Platinum Overall **Best Paper** Award (*Senior Author, as Professor*)
- 2018 Senior Research Investigator, Darwin Deason Institute for Cybersecurity
- 2017 Fellow, Hunt Institute for Engineering and Humanity
- 2016 CHI 2016 **Best Paper** Award Nomination (*Supporting Author, as Professor*)
- 2015 SMU HOPE Professor of the Year, Honoring Our Professors of Excellence (HOPE)
- 2014 UbiComp 2014 **Best Paper** Award Nomination, Seattle, WA (*Senior Author, as Professor*)
- 2012 UW College of Engineering Student Research Innovator
UbiComp 2012 **Best Paper** Award Nomination (*First Author, as Student*)
Madrona Prize for Research Excellence and Commercial Appeal, UW CSE Affiliates 2012
CHI 2012 **Best Paper** Award Nomination (*Supporting Author, as Student*)
Intel Science and Technology Fellowship
- 2011 CHI 2011 **Best Paper** Award Nomination (*First Author, as Student*)
- 2010 Yang Research Award Finalist
Chair's Award for Outstanding Teaching Assistant
Madrona Prize for Research Excellence and Commercial Appeal, UW CSE Affiliates 2010
- 2009 UbiComp 2009 **Best Paper** Award Nomination (*Supporting Author, as Student*)
- 2008 OSU Distinguished Regents Scholarship
- 2006 President of Eta Kappa Nu Omega Chapter, Electrical Engineering Honor Society
- 2004 Inducted into Eta Kappa Nu, Electrical Engineering Honor Society
Naeter and Dowty-Carlson Scholarship Recipient

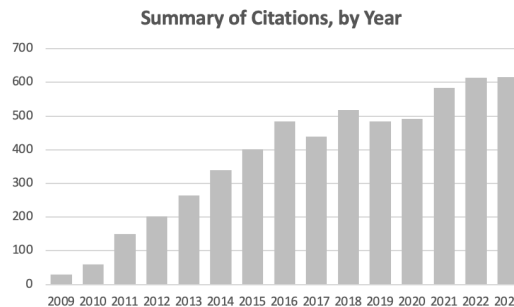
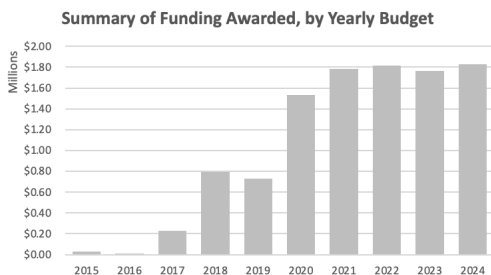
9. SCHOLARLY PRODUCTIVITY SUMMARY

Funding Summary (Details in section 10):

- Total Number of Awarded Projects:** 45 (Median \$90k, Avg: \$236k, Range: \$25k-\$1.5M)
- Associate Professor** (2019, June-pres.): \$8.5M (10 Fed. agencies incl. NSF, ONR, IES, DHS, NIH, USAFA, DoEd)
- Assistant Professor** (2013-2019, May): \$2.8M (6 Federal agencies including DND, NIH)

Publications Summary (Details in sections 11-13):

- Total Peer Reviewed Publications:** 93 (29 Journal Papers, 64 Conference Papers)
- Other Research Publications:** 18 (Workshop and ArXiv Papers)
- Google H-Index:** (*All Time:* 31, *Past Five Years:* 25) **Citations:** 5,800+
- Google Scholar Profile:** <https://scholar.google.com/citations?hl=en&user=vThE9GIAAAAJ>



Summary of Impact Factor	
Impact Factor	# Pubs
> 10	2
[7, 10)	3
[5, 7)	12
[3, 5)	25
[2, 3)	15

10. EXTERNAL FUNDING AND SPONSORED RESEARCH

* This section contains funding descriptions that are restricted by the International Traffic in Arms Regulations (ITAR). Other projects may be under NDA. As such, further information about the research may not be available.

** *Shading indicates active grants/contracts.*

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|------|---------------|--|
| 2024 | [EF.45] | Department of Education, Education, Innovation and Research S411B230036
<i>PI:</i> Doris Baker, <i>Co-PI:</i> Eric C. Larson , Paul Toprac, Rachel Garrett
<i>Title:</i> "Transforming the Learning of Science for Second Grade Latinx Students Through Meaningful Interactions using Technology Outside of School (Project MITOS)"
<i>Amount:</i> \$8,000,000 (<i>SMU Share:</i> \$897,000), <i>Duration:</i> January 2024—December 2028 |
| 2023 | [EF.44] | National Institutes of Health, R15-GM122013-02A1
<i>PI:</i> Peng Tao, <i>Co-PI:</i> Eric C. Larson
<i>Title:</i> "Develop light-oxygen-voltage (LOV) sensing optogenetics tools through novel computational approaches with experimental validation"
<i>Amount:</i> \$444,523, <i>Duration:</i> June 2023—June 2026 |
| 2023 | [EF.43]
PI | *CAE USA, (Private Sponsored)
<i>PI:</i> Eric C. Larson
<i>Title:</i> "Phase IV: Human Performance Optimization using Biometric Indices"
<i>Amount:</i> \$91,980, <i>Duration:</i> August 2023—August 2024 |
| 2023 | [EF.42]
PI | *Raytheon Systems (Private Sponsored)
<i>PI:</i> Eric C. Larson , <i>Co-PIs:</i> Mitch Thornton
<i>Title:</i> "RTX Applications of Artificial Intelligence to Defense Systems (RAAIDS) Maritime"
<i>Amount:</i> \$183,916, <i>Duration:</i> June 2023—August 2024 |
| 2023 | [EF.41]
PI | University of Texas, Southwestern Medical Institute
<i>PI:</i> Eric C. Larson , <i>Co-PIs:</i> None
<i>Title:</i> "Phase III: Robotic Surgery Research"
<i>Amount:</i> \$23,760, <i>Duration:</i> June 2023—December 2023 |
| 2023 | [EF.40] | *AFWERX, Department of the Air Force
<i>PI:</i> Mitch Thornton, <i>Co-PIs:</i> Duncan MacFarlane, Eric C. Larson
<i>Title:</i> "Quantum Hybrid Physically Unclonable Function, Phase 2 Research"
<i>Amount:</i> \$454,329, <i>Duration:</i> February 2023—October 2024 |
| 2023 | [EF.39]
PI | *United States Air Force Academy, DOD
<i>PI:</i> Eric C. Larson , <i>Co-PIs:</i> None
<i>Title:</i> "Cognition-aware Computing Measurement via Biometric Sensing"
<i>Amount:</i> \$86,872, <i>Duration:</i> January 2023—June 2024 |
| 2022 | [EF.38]
PI | University of Texas, Southwestern Medical Institute
<i>PI:</i> Eric C. Larson , <i>Co-PIs:</i> None
<i>Title:</i> "Phase II: Robotic Surgery Research"
<i>Amount:</i> \$23,760, <i>Duration:</i> August 2022—December 2022 |
| 2022 | [EF.37] | Goldman-Sachs (Private Sponsored)
<i>PI:</i> Mitch Thornton, <i>Co-PIs:</i> Eric C. Larson ,
<i>Title:</i> "Remote Employee Insider Threat Detection"
<i>Amount:</i> \$250,000, <i>Duration:</i> August 2022—August 2023 |
| 2022 | [EF.36]
PI | *Raytheon Systems (Private Sponsored)
<i>PI:</i> Eric C. Larson , <i>Co-PIs:</i> Mitch Thornton, Joseph Houpt
<i>Title:</i> "Human Machine Teaming in Simulated High Load Environments"
<i>Amount:</i> \$100,000, <i>Duration:</i> June 2022—December 2022 |

- 2022 [EF.35] *Raytheon Systems (Private Sponsored)
PI
PI: Eric C. Larson, Co-PIs: Mitch Thornton
Title: "Guardian Angel Mobile Application (Phase II)"
Amount: \$40,000, Duration: June 2022—December 2022
- 2022 [EF.34] *Raytheon Systems (Private Sponsored)
PI
PI: Eric C. Larson, Co-PIs: Mitch Thornton
Title: "Phase 2: RTX Applications of Artificial Intelligence to Defense Systems (RAAIDS)"
Amount: \$365,000, Duration: January 2022—May 2023
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- 2021 [EF.33] * Office of Naval Research
PI: Mitch Thornton, Co-PIs: Eric C. Larson
Title: "Research and Development of AI/ML Methods to Support Naval Logistics, Phase 3"
Amount: \$119,117, Duration: October 2021—October 2022
- 2021 [EF.32] *Raytheon Systems (Private Sponsored)
PI
PI: Eric C. Larson, Co-PIs: Mitch Thornton
Title: "Applying Machine Learning for State Based Anomaly Detection on Embedded Communication Protocols"
Amount: \$45,000, Duration: October 2021—March 2022
- 2021 [EF.31] *Raytheon Systems (Private Sponsored)
PI
PI: Eric C. Larson, Co-PIs: Mitch Thornton
Title: "RAAIDS for Human Machine Teaming"
Amount: \$50,000, Duration: August 2021—December 2021
- 2021 [EF.30] *CAE USA, formerly L3Harris (Private Sponsored)
PI
PI: Eric C. Larson, Co-PIs: Suku Nair
Title: "Phase IV: Human Performance Optimization using Biometric Indices"
Amount: \$69,042, Duration: June 2021—May 2022
- 2021 [EF.29] *Raytheon Systems (Private Sponsored)
PI
PI: Eric C. Larson, Co-PIs: Mitch Thornton
Title: "User-based Authentication Methods with Mobile Device Latent Vectors"
Amount: \$40,000, Duration: June 2021—December 2021
- 2021 [EF.28] *Raytheon Systems (Private Sponsored)
PI
PI: Eric C. Larson, Co-PIs: Mitch Thornton
Title: "RTX Applications of Artificial Intelligence to Defense Systems (RAAIDS)"
Amount: \$175,000, Duration: March 2021—December 2021
- 2021 [EF.27] *Raytheon Systems (Private Sponsored)
PI: Mitch Thornton, Co-PIs: Eric C. Larson, Duncan MacFarlane
Title: "Refinement and Development Activities for Innovative Security Solutions"
Amount: \$150,000, Duration: January 2021—December 2021
- 2021 [EF.26] Intuitive Robotic Surgery
PI
PI: Eric C. Larson, Co-PIs: Jeffrey Gahan, Alaina Garbens
Title: "Using a multi-task convolutional neural network to predict surgeon skill in robot assisted partial nephrectomy"
Amount: \$50,243, Duration: January 2021—May 2022
- 2020 [EF.25] Institute of Education Services
PI: Joseph Nese (University of Oregon), Co-PIs: Eric C. Larson, Akihito Kamata,
Title: "A Comprehensive Measure of Reading Fluency: Uniting and Scaling, Accuracy, Rate, and Prosody"
Amount: \$588,085, Duration: September 2020—June 2024
- 2020 [EF.24] Toyota Connected (Private Sponsored)
PI: Ping Gui, Co-PIs: Eric C. Larson, Mitch Thornton
Title: "CAN Bus Packet Authentication Research"
Amount: \$306,391, Duration: May 2020—May 2022

2020 [EF.23] *L3 Harris (Private Sponsored)
 PI *PI: Eric C. Larson, Co-PIs: Suku Nair*
Title: "Phase III: Human Performance Optimization using Biometric Indices"
Amount: \$56,193, Duration: February 2020—October 2020

2020 [EF.22] Institute of Education Services
PI: Doris Baker (University of Texas, Dallas), Co-PIs: Eric C. Larson, Akihito Kamata, C. Richards
Title: "Project MELVA-S: IES Measurement"
Amount: \$1,399,977, Duration: July 2020—June 2024

2020 [EF.21] *Raytheon Systems (Private Sponsored)
PI: Mitch Thornton, Co-PIs: Eric C. Larson
Title: "TAK as a Service"
Amount: \$19,990, Duration: April 2020—September 2020

2020 [EF.20] University of Texas, Southwestern Medical Institute
 PI *PI: Eric C. Larson, Co-PIs: None*
Title: "Robotic Surgery Research"
Amount: \$23,760, Duration: August 2020—December 2020

2020 [EF.19] *Raytheon Space and Airborne Systems (Private Sponsored)
 PI *PI: Eric C. Larson, Co-PIs: Mitch Thornton*
Title: "Cyber Anomaly Detection from Serial Data Bus with Context Vectors"
Amount: \$75,490, Duration: May 2020—December 2020

2020 [EF.18] * Office of Naval Research
PI: Mitch Thornton, Co-PIs: Eric C. Larson
Title: "Research and Development of AI/ML Methods to Support Naval Logistics"
Amount: \$50,000, Duration: May 2020—May 2021

2019 [EF.17] *Raytheon Information and Intelligence Systems (Private Sponsored)
PI: Mitch Thornton, Co-PIs: Eric C. Larson
Title: "Data Correlation Investigation to Identify Side Channel Indicators"
Amount: \$50,000, Duration: September 2019—March 2020

2019 [EF.16] National Science Foundation
PI: Corey Clark, Co-PIs: Eric C. Larson, Leanne Ketterlin-Geller
Title: "STEM+C: Teaching Computer Science and Computational Thinking with Community Gaming"
Amount: \$1,521,616, Duration: September 2019—August 2024

2019 [EF.15] *L3 Harris (Private Sponsored)
 PI *PI: Eric C. Larson, Co-PIs: Suku Nair*
Title: "Human Performance Optimization using Biometric Indices and Gaze"
Amount: \$73,860, Duration: September 2019—December 2019

=====Promotion to Associate Professor with Tenure=====
 Pre-Associate Funding: \$2.7M

2019 [EF.14] *Raytheon Information and Intelligence Systems (Private Sponsored)
PI: Mitch Thornton, Co-PIs: Eric C. Larson
Title: "Cyber Security Research Projects"
Amount: \$40,000, Duration: August 2019—March 2020

2019 [EF.13] *Amida Technologies (Private Sponsored)
 PI *PI: Eric C. Larson, Co-PIs: Jennifer Dworak*
Title: "Trojan Placement through Estimation of Criticality and Observability with Recurrent Neural Networks"
Amount: \$60,000, Duration: June 2019—March 2020

2018	[EF.12]	*Raytheon Information and Intelligence Systems (Private Sponsored) <i>PI: Mitch Thornton, Co-PIs: Eric C. Larson</i> <i>Title: "Third-Party Data Supply Chain Integrity Enhancement"</i> <i>Amount: \$75,000, Duration: December 2018—December 2019</i>
2018	[EF.11] PI	*Raytheon Information and Intelligence Systems (Private Sponsored) <i>PI: Eric C. Larson, Co-PIs: Mitch Thornton</i> <i>Title: "Investigation of Unconventional Biometrics with Mobile Devices "</i> <i>Amount: \$75,000, Duration: December 2018—December 2019</i>
2018	[EF.10] PI	Department of Homeland Security <i>Shared PI: Bruce Gnade, Eric C. Larson, Co-PIs: Joseph Camp, Manuel Quevedo (UTD)</i> <i>Title: "Radiation Background Characterization for Enhanced Anomaly Detection"</i> <i>Yearly Amount: \$305,690, Incrementally Awarded to: \$1,505,787, Duration: September 2018—May 2024</i>
2018	[EF.09] PI	*L3 Link (Private Sponsored) <i>PI: Eric C. Larson, Co-PIs: Suku Nair</i> <i>Title: "Human Perf. Optimization using Biometric Indices: Validation for Targeted Pilot Population"</i> <i>Amount: \$65,000, Duration: September 2018—December 2018</i>
2018	[EF.08] PI	*Raytheon Information and Intelligence Systems (Private Sponsored) <i>PI: Eric C. Larson, Co-PIs: Mitch Thornton</i> <i>Title: "Unconventional Biometrics with Mobile Devices and Machine Learning"</i> <i>Amount: \$100,000, Duration: May 2018—May 2019</i>
2018	[EF.07]	*Raytheon Information and Intelligence Systems (Private Sponsored) <i>PI: Mitch Thornton, Co-PIs: Eric C. Larson</i> <i>Title: "IoT Device Sensor Arrays"</i> <i>Amount: \$130,000, Duration: Jun. 2018—Mar. 2019</i>
2018	[EF.06]	*Raytheon Information and Intelligence Systems (Private Sponsored) <i>PI: Mitch Thornton, Co-PIs: Eric C. Larson</i> <i>Title: "Network Discovery Research"</i> <i>Amount: \$100,000, Duration: May 2018—May 2019</i>
2017	[EF.05]	*Raytheon Information and Intelligence Systems (Private Sponsored) <i>PI: Mitch Thornton, Co-PIs: Eric C. Larson, Fred Chang</i> <i>Title: "IoT Distributed Sensors Research"</i> <i>Amount: \$100,000, Duration: Sep. 2017—May. 2018</i>
2017	[EF.04] PI	DigiDoc Technologies (Private Sponsored) <i>PI: Eric C. Larson (100%)</i> <i>Title: "Data collections and algorithmic development for blood oxygenation measurement using commodity smartphone cameras"</i> <i>Amount: \$29,110, Duration: Jun. 2017—Jun. 2018</i>
2017	[EF.03] PI	*Raytheon Information and Intelligence Systems (Private Sponsored) <i>PI: Eric C. Larson, Co-PIs: Mitch Thornton, Fred Chang</i> <i>Title: "Mission Value Calculus Engine in Support of Decision Making and Asset Allocation"</i> <i>Amount: \$100,000, Duration: Sep. 2017—May. 2018</i>
2016	[EF.02] PI	DigiDoc Technologies (Private Sponsored), Undergraduate Fellowship <i>PI: Eric C. Larson</i> <i>Title: "Undergraduate Fellowship in CS with Speci. in Asthma Management using Smartphones "</i> <i>Amount: \$10,000, Duration: Jan. 2016—May 2016</i>
2015	[EF.01]	National Institutes of Health (NIH), Exploratory/Developmental Bioengineering Research Grants (EBRG) [R21] <i>PI: James Taylor (UW), Co-PIs: Eric C. Larson, James Stout (UW), Shwetak Patel (UW, advisor)</i> <i>Title: "An Evaluation of a Novel Technology to Assess Neonatal Jaundice"</i> <i>Total Amount: \$428,315, Duration: Apr. 2015—Mar. 2018</i>

11. INTERNAL FUNDING

- 2022 [IF.08] Dedman College Interdisciplinary Institute
PI: Christopher Dolder, *Co-PIs:* **Eric C. Larson**, Eric Godat, Mike Porter, and Guillermo Vasquez
Title: “Physical Data Capture Lab”
Amount: \$4,000, *Duration:* August 2022—May. 2023
- 2020 [IF.07] Lyle School of Engineering Research Seed Funding
PI: Paul Krueger, *Co-PIs:* **Eric C. Larson**
Title: “Determination of Flow Generation Geometry Using Machine Learning”
Amount: \$31,680, *Duration:* August 2020—Dec. 2020
- 2019 [IF.06] Lyle School of Engineering Research Seed Funding
PI: Bruce Gnade, *Co-PIs:* **Eric C. Larson**
Title: “Development of CMOS-based Rotational Spectroscopy”
Amount: \$30,900, *Duration:* April 2019—Dec. 2019
- 2018 [IF.05] Lyle School of Engineering Research Seed Funding
PI: **Eric C. Larson**, *Co-PIs:* Eli Olinick, Michael Hahsler, Paul Kruger
Title: “Deep Convolutional Networks for Forgery Classification and Anomaly Detection”
Amount: \$21,120, *Duration:* May 2018—Dec. 2018
- 2017 [IF.04] Office of Provost Special Seed Funding
PI: **Eric C. Larson**, *Co-PIs:* Pavel Klimovich
Title: “Binding Affinity Prediction via Collaborative Filtering with Latent Factors”
Amount: \$30,000, *Duration:* Aug. 2017—Feb. 2018
- 2017 [IF.03] Just-in-Time Teaching and Technology Grants
PI: **Eric C. Larson**
Title: “Augmented Reality with CoreML iOS Development for CSE5323/CSE7323”
Amount: \$1,000, *Duration:* Aug. 2017—Dec. 2017
- 2014 [IF.02] Lyle School of Engineering Research Seed Funding
PI: **Eric C. Larson**, *Co-PI:* Joseph Camp
Title: “Phone-as-a-Sensor Health Monitoring with Body Area Networks”
Amount: \$20,608, *Duration:* May 2014—Dec. 2014
- 2013 [IF.01] SMU Laboratory Upgrade Grant
PI: **Eric C. Larson**
Title: “Laboratory Upgrades in Mobile Application Development, Embedded Mobile Sensing, and Peripheral Communication on a Mobile Device”
Amount: \$14,632, *Duration:* Dec. 2013—May 2014

12. BOOKS AND BOOK CHAPTERS

*Refers to SMU Student Authors or SMU Post-doctoral Researchers in my Research Lab

- 2016 [B.03] **E. C. Larson**, E. Saba, S. Kaiser*, M. Goel, S. Patel (2016). Pulmonary Monitoring Using Smartphones. *Mobile Health: Sensors, Analytic Methods, and Applications*, editors James M. Rehg, Susan A. Murphy, & Santosh Kumar. Book Chapter.
- 2014 [B.02] M. Stiber, B. Stiber, and **E.C. Larson** (2014). Signal Computing: Digital Signals in the Software Domain. [Open Access Book](#). Textbook.
- 2012 [B.01] G. Yen and **E.C. Larson** (2012). Facial Feature Tracking via Evolutionary Multi-objective Optimization. *Principal Concepts in Applied Evolutionary Computation: Emerging Trends*. Book Chapter, 4.

13. PAPERS IN SUBMISSION

* == Refers to Student Authors or Post-doctoral Researchers

- XX [C.X] Y. Wang*, Z. Wu*, J. Nese, A. Kamata, and **E.C. Larson**, and J. Cao (202x). A Unified Model for Reading Fluency and Prosody. *In submission*.
In Sub (Impact Factor: TBD, H-5 Index: TBD)

- XX [C.X] S. Scielzo, S. Gibbs*, V. Tanner*, and E.C. Larson (202x). Towards a Real-Time Model of Trust in Human-Machine Team Paradigms. (*in submission*) (Impact Factor: TBD, H-5 Index: TBD)
- XX [J.X] E. Henderson,* J. Henderson,* A. Sinha,* **E.C. Larson**, D.M. Miller, and M. Thornton (202x). Automated Synthesis of Quantum Subcircuits game-based learning. (*in submission*) (Impact Factor: TBD, H-5 Index: TBD)
- XX [C.X] C. Yang,* Y. Wang*, **E.C. Larson**, and J. Cao (202x). Interpretable Semantic Analysis of Text Using Transformers. *In submission*. (Impact Factor: TBD, H-5 Index: TBD)
- XX [J.X] Pan, Y., Adams, E. L., Ketterlin-Geller, L. R., **Larson, E. C.**, & Clark, C. (202x). Enhancing middle school students' computational thinking competency through curriculum-oriented game-based learning. (*in submission*) (Impact Factor: TBD, H-5 Index: TBD)
- XX [C.X] M.R. Giannone*, S. Arrowsmith, J. Park, M. B. Stump, C. Hayward, **E.C. Larson**, (202x). Developing a Deep Learning Fusion Model for Event Detection and Classification within the Korean Peninsula. *In submission*. (Impact Factor: TBD, H-5 Index: TBD)
- XX [B.X] Z. Wolf,* M. Thornton, and **E. C. Larson**, (202x). Data Exfiltration from Network-isolated Virtual Computing Systems with Infrastructure Mediated Power Analysis. *In submission*. (Impact Factor: TBD, H-5 Index: TBD)
- XX [C.X] C. Harper,* L. Wood,* P. Gersoft, and **E. C. Larson**, (202x). Differentiable CNN Kernel Sizes via Fourier Analysis. *In submission*. (Impact Factor: TBD, H-5 Index: TBD)
- XX [C.X] C. Harper,* M. Thornton, and **E. C. Larson**, (202x). DCT-DiffStride: Differentiable Dimensionality Reduction. *In submission*. (Impact Factor: TBD, H-5 Index: TBD)
- XX [C.X] C. Harper,* M. Thornton, and **E. C. Larson**, (202x). Speaker Embedding with Context Vectors using Improved Latent Space Statistics Pooling. *In submission*. (Impact Factor: TBD, H-5 Index: TBD)
- XX [C.X] Mike Taylor*, **E. C. Larson**, and Mitch Thornton (202x). General Process Detection via Side Channel Estimation. *In submission*. (Impact Factor: TBD, H-5 Index: TBD)

14. REFEREED JOURNAL PUBLICATIONS

* == Refers to Student Authors or Post-doctoral Researchers

- 2023 [J.29] C. Harper,* M. Thornton, and **E. C. Larson**, (2023). Automatic Modulation Classification with Deep Neural Networks. *Journal of Electronics*. MDPI Open Access Journal. (Impact Factor: 2.9, H-5 Index: 88)
- [J.28] Y. Wang*, Z. Wu,* (*Shared lead author*) J. Dai, T. Morgan, A. Garbens, H. Kominsky, J. Gahan, and **E.C. Larson** (2023). Evaluating Robotic Partial Nephrectomy Surgeons with Fully Convolutional Segmentation and Multitask Attention Networks. *Journal of Robotic Surgery (JORS)*, 2023. Doi: 10.1007/s11701-023-01657-0. (Impact Factor: 2.48, H-5 Index: 26)
- [J.27] Y. Fouzani,* B. Gnade, and **E. C. Larson**, (2023). CMOS-Based Rotational Spectroscopy: Massive Spectral Fingerprint Generation for Enabling Automated Molecular Detection. *Cell: Heliyon*. HELIYON-D-22-25421R2. DOI: 10.2139/ssrn.4273800. (Impact Factor: 3.78, H-5 Index: 75)

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- [J.26] Z. Wu,* G. Alford, S. Stothoff, O. Pensado, and **E. C. Larson** (2023). Exploring Convolutional Neural Networks for Predicting Sentinel-C Backscatter between Image Acquisitions. *IEEE Transactions on Geoscience and Remote Sensing*. 10.1109/TGRS.2023.3283217. (Impact Factor: 8.15, H-5 Index: 113)
- [J.25] H. Tian*, X. Jiang*, S. Xiao, H. La Force*, **E. C. Larson** and P. Tao (2023). LAST: Latent Space Adaptive Sampling for Protein Trajectories. *Journal of Chemical Information Modeling*. Pgs. 67-75 (Impact Factor: 6.16, H-5 Index: 73)
- 2022 [J.24] X. Ding*, Y. Fang, T. Han, and **E.C. Larson** (2022). An Approach for Combining Multimodal Fusion and Neural Architecture Search Applied to Knowledge Tracing. *Journal of Applied Intelligence (APIN), International Journal of Research on Intelligent Systems*. Springer Publishing. Pgs. 1-12. (Impact Factor: 5.1, H-5 Index: 65)
- [J.23] V. Viswanath*, J. Hoffman*, X. Ding*, **E.C. Larson**, Edward Wang (2022). Towards Ubiquitous SpO2 Sensing on Unmodified Smartphones: Deep Learning Applied to a Varied Fractional Inspired Oxygen (FiO2) Study. *NPJ Digital Medicine*. Springer Nature. Pgs 1-10. (Impact Factor: 11.65, H-5 Index: 72)
- [J.22] H. Kominsky, Y. Wang,* J. Gahan, A. Garbens, and **E.C. Larson** (2022). "Using a multi-task convolutional neural network to predict surgeon skill in robot-assisted partial nephrectomy." 2022 *Journal of Urology*. Supplemental Volume 5, pg e727. (Impact Factor: 7.45, H-5 Index: 80)
- 2021 [J.21] H. Tian*, X. Jiang*, F. Trozzi*, S. Xiao, **E. C. Larson** and P. Tao (2021). Explore protein conformational space with variational autoencoder. *Journal on Frontiers in Molecular Biosciences, section Biological Modeling and Simulation* (Frontiers). <https://www.frontiersin.org/articles/10.3389/fmolb.2021.781635/full> (Impact Factor: 4.62, H-5 Index: 42)
- [J.20] Y. Wang*, J. Dai, T. Morgan, M. Elsaid*, A. Garbens, X. Qu*, R. Steinberg, J. Gahan, and **E.C. Larson** (2021). "Evaluating Robotic-Assisted Surgery Training Videos with Multi-task Convolutional Neural Networks." *Journal of Robotic Surgery (JORS)*, 2021. Doi: 10.1007/s11701-021-01316-2. (Impact Factor: 2.48, H-5 Index: 23)
- [J.19] M. Makos*, N. Verma*, **E.C. Larson**, and E. Kraka (2021). Prediction of the Transition State Geometry via Generative Adversarial Network. *The Journal of Chemical Physics*. (Impact Factor: 3.49, H-5 Index: 81)
- [J.18] R. Srinivas*, N. Verma*, E. Kraka, and **E.C. Larson** (2021). Deep Learning-based Ligand Design using Shared Latent Implicit Fingerprints from Collaborative Filtering. *Journal of Chemical Information and Modeling*. (Impact Factor: 4.96, H-5 Index: 62)
- [J.17] N. Verma*, X. Qu*, F. Trozzi, Md. Elsaid*, N. Karki, P. Tao, B. Zoltowski, **E. C. Larson**, E. Kraka (2021). SSnet: A Deep Learning Approach for Protein-Ligand Interaction Prediction. *International Journal of Molecular Sciences (IJMS), Section of Molecular Pharmacology*. (Impact Factor: 5.93, H-5 Index: 150)
- [J.16] J. Wilson*, S. Nair, S. Scielzo, and **E.C. Larson** (March 2021). Cognition-Aware Computing: Objective Measures of Cognitive Load Using Deep Multi-Modal Learning: A Use-Case in Aviation. *Proceedings of the ACM Journal on Interactive Mobile Wearable, and Ubiquitous Technology*. Vol. 5, Issue. 1, Article 40 (March 2021), 35 pages. <https://doi.org/10.1145/3448111> (Impact Factor: 2.10, H-5 Index: 45)
- 2020 [J.15] J. Wilson*, S. Nair, S. Scielzo, and **E.C. Larson** (August 2020). Automatic Gaze Classification for Aviators: Using Multi-task Convolutional Networks as a Proxy for Flight Instructor Observation. *International Journal of Aeronautics, Aviation, and Aerospace (IJAAA)*. (Impact Factor: 0.49, H-5 Index: 10)
- [J.14] X. Ding* and **E.C. Larson** (2020). "Incorporating Uncertainties in Student Response Modeling by Loss Function Regularization." *Journal of Neurocomputing*, 2020. (Impact Factor: 5.72, H-5 Index: 119)

- [J.13] X. Ding*, Z. Raziqi*, **E.C. Larson**, E. Olinick, P. Krueger, and M. Hahsler (2020). "Swapped Face Detection using Deep Learning and Subjective Assessment." *EURASIP Journal on Information Security*. (Impact Factor: 3.17, H-5 Index: 27)
- [J.12] Gahan, Jeffrey, Ryan Steinberg, Alaina Garbens (2020), *Xingming Qu, and Eric Larson. "MP34-06 Machine learning using a multi-task convolutional neural network can accurately assess robotic skills." *The Journal of Urology* 203, no. Supplement 4 (2020): e505-e505. (Impact Factor: 7.45, H-5 Index: 80)
- 2019 [J.11] F. Chang, **E.C. Larson**, and M. Fontenot (2019). "Computer Science Education: Fueling Tomorrow's Technology Growth." *Georgetown Journal of International Affairs*. <https://www.georgetownjournalofinternationalaffairs.org/?category=Science+%26+Technology> (Impact Factor: N/A, H-5 Index: 11)
- [J.10] X. Ding*, A. Doyle*, K. Donahoo*, E. Bing, R. Rajgopal, and **E.C. Larson** (2019). "EduAware: Using Tablet-Based Navigation Gestures to Predict Learning Module Performance." *Journal of Interactive Learning Environments*. <https://www.tandfonline.com/doi/abs/10.1080/10494820.2019.1609524> (Impact Factor: 2.87, H-5 Index: 47)
- [J.09] T. Giallanza*, T. Siems*, E. Sharp*, I. Johnson*, E. Gabrielsen*, M. Thornton, and **E.C. Larson** (June 2019). Keyboard Snooping via Mobile Phones: Threats of Device Arrays. *Journal of Interactive, Wearable, and Ubiquitous Technology* (IMWUT). 2019. (Impact Factor: 4.16, H-5 Index: 45)
- 2018 [J.08] X. Ding*, D. Nassehi, and **E.C. Larson**. Measuring Oxygen Saturation using Convolutional Neural Networks on Smartphones. *IEEE Journal of Biomedical and Health Informatics*, JBHI (2018). (Impact Factor: 5.77, H-5 Index: 71)
- [J.07] R. Srinivas*, P. Klimovich*, and **E.C. Larson**. Implicit-descriptor ligand-based virtual screening by means of collaborative filtering. *Journal of Cheminformatics*. 10, no. 1 (2018): 56. (Impact Factor: 5.51, H-5 Index: 42)
- 2017 [J.06] C. Wangwiwattanna*, X. Ding*, and **E.C. Larson**. PupilNet, Measuring Task Evoked Pupillary Response using Commodity RGB Tablet Cameras: Comparison to Mobile, Infrared Gaze Trackers for Inferring Cognitive Load (Dec. 2017). *Journal of Interactive, Wearable, and Ubiquitous Technology* (IMWUT). (Impact Factor: 4.16, H-5 Index: 45)
- [J.05] J. Taylor, J. Stout, L. deGreef, M. Goel, S.N. Patel, E. Chung, A. Koduri, S. McMahan, J. Dickerson, E. Simpson, and **E. C. Larson** (2017). Use of a Smartphone App to Assess Neonatal Jaundice. *Journal of Pediatrics*. August 2017: p.e20170312. (Impact Factor: 7.13, H-5 Index: 120)
- 2011 [J.04] **E. C. Larson**, J. Froehlich, T. Campbell, C. Haggerty, L. Atlas, J. Fogarty, and S. N. Patel, (2011). "Disaggregated Water Usage Sensing from a Single, Non-Intrusive Sensor: an Extended Analysis of HydroSense using Staged Experiments." *The Pervasive and Mobile Computing Journal* (PMC). 8(1):82-102. (Impact Factor: 4.67, H-5 Index: 45)
- [J.03] J. Froehlich, **E.C. Larson**, S. Gupta, G. Cohn, M. Reynolds, S.N. Patel (2011). "Disaggregated End-Use Energy Sensing for the Smart Grid" *IEEE Pervasive Computing, Special Issue on Smart Energy Systems*. 10(1):28-39. (Impact Factor: 3.175, H-5 Index: 25)
- 2010 [J.02] **E. C. Larson** and D. M. Chandler (2010). "The Role of Strategy in Image Quality: The Most Apparent Distortion," *Journal of Electronic Imaging*, 19(1), 011006, January-March 2010. **Featured on Cover, Most Cited Article in JEI** (Impact Factor: 0.95, H-5 Index: 25)
- 2010 [J.01] **E. C. Larson** and G. Yen (2010). "Facial Feature Tracking via Evolutionary Multi-objective Optimization," *International Journal of Applied Evolutionary Computation* (IJAE), 1(1):57-71, 2010. (Impact Factor: 3.83, H-5 Index: 28)

15. REFEREED CONFERENCE PUBLICATIONS (PEER REVIEWED)

* == Refers to Student Authors or Post-doctoral Researchers

- 2024 [C.64] A Photonic Physically Unclonable Function's Resilience to Multiple-Valued Machine Learning Attacks (2024). Jessie M. Henderson*, Elena R. Henderson*, Clayton A. Harper*, Hiva Shahoei*, William V. Oxford, **Eric C. Larson**, Duncan L. MacFarlane and Mitchell A. Thornton. *IEEE International Symposium on Multiple-Valued Logic (ISMVL)*. (H-5 Index: 10)
- [C.63] C. Harper,* M. Thornton, and **E. C. Larson**, (2024). Learnable Statistical Moments Pooling for Automatic Modulation Classification. *2024 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Seoul, Korea, Republic of, 2024, pp. 8981-8985, doi: 10.1109/ICASSP48485.2024.10446295. (Impact Factor: 4.8, H-5 Index: 123)
- [C.62] Y. Wang*, Z. Wu,* J. Nese, A. Kamata, V. Nilabh,* and **E.C. Larson**, (2024). Improving Oral Reading Fluency Assessment through Sub-sequences Matching of Acoustic Word Embeddings. *2024 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Seoul, Korea, Republic of, 2024, pp. 10766-10770, doi: 10.1109/ICASSP48485.2024.10447029. (Impact Factor: 4.8, H-5 Index: 123)
- [C.61] M. Lee,* C. Harper,* M. Thornton, and **E. C. Larson** (2024). Impacts of Synthetically Generated Data on Trackformer-based Multi-Object Tracking. *IEEE Applied Imagery and Pattern Recognition Workshop (AIPR 2024)*. To Appear. (Impact Factor: 0.90, H-5 Index: 14)
- [C.60] J. Sylvester,* M. Lee,* M. Thornton, and **E. C. Larson** (2024). Using Time Series Clustering to Inform Multimodal CNN Architectures. *IEEE Applied Imagery and Pattern Recognition Workshop (AIPR 2024)*. To Appear. (Impact Factor: 0.90, H-5 Index: 14)
- 2023 [C.59] Micah A. Thornton (presenter), J. Sylvester,* M. Lee,* W.V. Oxford, J. Gable, **E.C. Larson** and M.A. Thornton, "Granger Causality Extensions for Testing RBG," in proc. *International Cryptographic Modules Conference (ICMC)*, (refereed abstract for presentation/talk), September 20-22, 2023. (H-5 Index: 23)
- [C.58] C. Sayre,* **E. C. Larson**, G. DiLegro,* J. Camp, and B. Gnade (2023). Radiation Anomaly Detection Using an Adversarial Autoencoder. *Annual Asilomar Conference on Signals, Systems, and Computers*, (Asilomar 2023). (Impact Factor: 1.01, H-5 Index: 30)
- [C.57] Pan*, Y., Adams, E. L., Foster*, P., Klinkert*, J. L., Goff*, E., Tseng*, C., Ketterlin-Geller, L. R., **Larson, C. E.**, & Clark, C. (2023). Fostering middle school students' computational thinking competency in game-based learning. *Association for Education Communications & Technology International Convention (AECT)*, Orlando, Florida & Virtual, October 2023.
- [C.56] Z. Wu,* **E. C. Larson**, M. San, D. Baker, N. Gage, A. Kamata, (2023). Towards Scalable Vocabulary Acquisition Assessment with BERT. *ACM International Conference on Learning at Scale (L@S 2023)*. (H-5 Index: 25)
- [C.55] Adams, E. L., Foster, P. D.*, Klinkert, L. J.*, Goff, E.*, Tseng, C.*, Ketterlin-Geller, L. R., **Larson, E. C.**, & Clark, C. (2023). *Using a new version of Minecraft to promote computational thinking learning opportunities: Investigating middle grades student outcomes*. American Educational Research Association Place-based conference (AERA), Chicago, IL. (Impact Factor: 3.43, H-5 Index: 44)
- [C.54] A. Sinha,* J. Henderson,* E. Henderson,* M. Thornton, and **E. C. Larson**, (2023). A programmable true random number generator using commercial quantum computers. *SPIE SPIE Defense + Commercial Sensing: Quantum Information Science, Sensing, and Computation (SPIE-QISSC 2023)*. 15 pgs.
- [C.53] Z. Wolf,* M. Thornton, and **E. C. Larson**, (2023). Data Leakage in Isolated Virtualized Enterprise Computing Systems. *International Conference on Information Systems Security and Privacy (ICISSP 2023)*. 12 pgs. (H-5 Index: 21)

- [C.52] Kuo Wang,* Xin Qiao,* George Sammit,* **Eric C. Larson**, Joe Nese, and Akihito Kamata (2023, April). Improving Automated Scoring of Prosody Using Deep Learning Algorithm. *Presented at National Council for Measurement in Education (NCME)*, Chicago, IL. (Impact Factor: 1.188)
- [C.51] Xin Qiao*, Akihito Kamata, **Eric C. Larson**, Kuo Wang*, and Srunya Somsong (2023, April). Detailed Prosody Report for Oral Reading Fluency Assessment via Machine Learning. *Presented at National Council for Measurement in Education (NCME)*, Chicago, IL. (Impact Factor: 1.188)
- [C.50] Yihao Wang,* **Eric C. Larson**, Joe Nese, and Akihito Kamata (2023, April). Sub-sequence Matching Algorithm for Improving Automated Speech Recognitions for ORF Assessment. *Presented at National Council for Measurement in Education (NCME)*, Chicago, IL. (Impact Factor: 1.188)
- 2022 [C.49] Darrel Young*, Mark Bradbury*, **Eric C. Larson**, Mark Bigham*, and Mitch Thornton (2022). Current Status and Overview of SMU-DDI Cyber Autonomy Range. *IEEE Applied Imagery and Pattern Recognition Workshop (AIPR 2022)*. (H-5 Index: 12)
- [C.48] H. Tian*, X. Jiang*, H. La Force*, S. Xiao, **E. C. Larson** and P. Tao (2022). LAST: Latent Space Adaptive Sampling for Protein Trajectories. Thirty Ninth Annual International Conference on Machine Learning (ICML), Special Workshop on AI4Science, Presented. (Impact Factor: 18.48, H-5 Index: 204, 19th highest ranked publication venue, via Google Metrics 2022)
- [C.47] Mike Taylor*, **E. C. Larson**, and Mitch Thornton (2022). General Process Detection Through Physical Side Channel Characterization. *IEEE International Conference on Systems (SysCon 2022)*. (H-5 Index: 19)
- [C.46] G. Sammit,* Z. Wu,* Y. Wang,* Z. Wu,* A. Kamata, J. Nese, and **E. C. Larson** (2022). Automated Prosody Classification for Oral Reading Fluency with Quadratic Kappa Loss and Attentive X-vectors. *International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2022)*. Pgs 3613-3617. (Impact Factor: 4.96, H-5 Index: 96)
- [C.45] Foster, P.*, Tseng, C.*, Klinkert, L. J.*, Adams, E. L., Ketterlin-Geller, L. R., **Larson, E. C.**, & Clark, C. (2022, April). *Assessing middle school student computational thinking in an immersive game environment*. National Council for Measurement in Education (NCME), San Diego, CA. (Impact Factor: 1.0)
- [C.44] N. Crothers*, Y. Sinha*, S. Scielzo, and **E.C. Larson** (2022). "Real-Time Situation Awareness Assessment for Pilots via Machine Learning: Constructing an Automated Classification System." *Modeling & Simulation (MODSIM) World 2022*. (Impact Factor: 1.60, H-5 Index: 17)
- [C.43] M. Lee*, J. Sylvester*, S. Aggarwal*, M. Thornton, and **E.C. Larson** (2022). "Side Channel Identification using Granger Time Series Clustering with Applications to Control Systems." *International Conference on Information Systems Security and Privacy (ICISSP 2022)*. pgs. 290-298 (H-5 Index: 13)
- [C.42] Tseng, C.,* Foster, P. D.,* Adams, E. L., Ketterlin-Geller, L. R., **Larson, E. C.**, Luo, V., Klinkert, L. J., & Clark, C. (2022). *Incorporating teacher voice in the development of game-based learning environments*. American Educational Research Association (AERA) 2022, San Diego, CA. (Impact Factor: 2.46, H-5 Index: 38)
- 2021 [C.41] J. Sylvester*, M. Lee*, M. J. Hornbach, M. Thornton, **E.C. Larson**, S. Aggarwal, M. Manga, S. Hurwitz, A. Calvert, S. Wilkinson, B. Miller, and Z. Smith (2021). Time Series Clustering using Granger Causality to Identify Time Series Applicable to Forecasting Internal Waves in Lake and Marine Environments. *American Geophysical Union Annual Meeting (AGU21)*. *Accepted for Poster Presentation and Lightning Presentation*. December 2021. (Impact Factor: 4.26, H-5 Index: 33)

- [C.40] Luo, V. *, Klinkert, L. J. *, Tseng, C. *, Foster, P. D. *, Adams, E. L., Ketterlin-Geller, L. R., Clark, C, and **Larson, E. C.** (2021). A Multidisciplinary Approach To Designing Immersive Gameplay Elements for Learning Standard-Based Educational Content. *In CHI PLAY'21: Annual Symposium on Computer-Human Interaction in Play*, October, 2021. ACM, New York, NY, USA, 9 Pgs. (Impact Factor: 2.73, H-5 Index: 6 (young venue))
- [C.39] C. Harper*, A. Sinha*, M. Thornton, and **E.C. Larson** (November 2021). "SNR-Boosted Automatic Modulation Classification." *Annual Asilomar Conference on Signals, Systems, and Computers*, Asilomar 2021. (H-5 Index: 30)
- [C.38] A. Sinha*, M. Taylor*, N. Srirama*, T. Manikas, **E.C. Larson**, and M. Thornton, (2021). "Industrial Control System Anomaly Detection Using Convolutional Neural Network Consensus." 5th IEEE Conference on Control Technology and Applications (CCTA 2021). (H-5 Index: 20)
- [C.37] M. Taylor*, **E.C. Larson**, and M. Thornton, (2021). "Rapid Ransomware Detection Through Side Channel Exploitation." 2021 IEEE Conference on Cyber Security and Resilience (IEEE-CSR 2021). (H-5 Index: 13)
- [C.36] E. Tsang*, P. Foster, E. Adams, L. Ketterlin-Geller, **E.C. Larson**, and C. Clark (2021). "A Standard Decomposition Process to Inform the Development of Game-Based Learning Environments Focused on Computational Thinking." International Conference of Computational Thinking and STEM Education 2021 (CTE-STEM 2021). (no metrics available, < 4 years)
- [C.35] R. Oshanna*, M. Thornton, **E.C. Larson**, and X. Romague (2021). "Realtime edge processing detection of malicious attacks using machine learning and processor core events." 15th Annual IEEE International Systems Conference (SysCon 2021). (H-5 Index: 19)
- [C.34] L. Wood* and **E.C. Larson** (2021). "Parametric Spectral Filters for Fast Converging, Scalable Convolutional Neural Networks." International Conference on Acoustics, Speech, and Signal Processing. ICASSP 2021. (Impact Factor: 4.96, H-5 Index: 96)
- 2020 [C.33] C. Harper*, L. Lyons*, M. Thornton, and **E.C. Larson** (November 2020). "Enhanced Automatic Modulation Classification using Deep Convolutional Latent Space Pooling." Annual Asilomar Conference on Signals, Systems, and Computers, 2020. (H-5 Index: 30)
- [C.32] S. Scielzo, J. Wilson*, and **E.C. Larson** (June 2020). "Towards the Development of an Automated, Real-Time, Objective Measure of Situation Awareness for Pilots." Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC).
Overall Best Paper Winner, Platinum Paper (Winner among all papers at conference)
(H-5 Index: 15)
- [C.31] X. Ding* and **E.C. Larson** (2020). "Automatic RNN Cell Design for Knowledge Tracing using Reinforcement Learning." 2020 ACM Conference on Learning at Scale. (Impact Factor: 2.06, H-5 Index: 26)
- 2019 [C.30] X. Ding* and **E.C. Larson** (2019). "Why Deep Knowledge Tracing has less Depth than Anticipated." 2019 Conference on Educational Data Mining. (Impact Factor: 1.57, H-5 Index: 27)
- [C.29] T. Giallanza*, E. Gabrielsen*, M. Taylor*, **E.C. Larson**, and M. Thornton (2019). "Task Value Calculus: Fast Adaptive Optimization of Tasks for Multi-objective Diagrams." International Symposium on Multi-Valued Calculus. May 2019, Alberta, CA. (Impact Factor: 0.96, H-5 Index: 27)
- [C.28] S. Douglas and **E.C. Larson** (2019). "Relationships Between Deep Learning and Linear Adaptive Systems." International Conference on Acoustics, Speech, and Signal Processing. ICASSP 2019.
Invited Paper.
(Impact Factor: 4.96, H-5 Index: 96)

- 2016 [C.27] S. Kaiser*, A. Parks*, P. Leopard*, C. Albright*, J. Carlson*, M. Goel, D. Nassehi, **E.C. Larson**. (2016). Design and learnability of vortex whistles for managing chronic lung function via smartphones. In Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2016). Heidelberg, Germany. September 2016. Acceptance Rate: 26% (101/389) (Impact Factor: 3.10, H-5 Index: 47)
- [C.26] M. Goel, E. Saba, M. Stiber, E. Whitmire, J. Fromm, **E.C. Larson**, G. Borriello, S. Patel (2016). Spirocall: Measuring lung function over a phone call. In Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems 2016 May 7 (CHI 2016).
Nominated for Best Paper
Acceptance Rate: 23% (565/2435) (Impact Factor: 2.73, H-5 Index: 101)
- 2015 [C.25] S. Rafiqi*, C. Wangwiwattana*, E. Fernandez, S. Nair, and **E. C. Larson** (2015). "Work-in-progress, PupilWare-M: Cognitive Load Estimation Using Unmodified Smartphone Cameras." 12th Annual IEEE International Conference on Mobile Ad hoc and Sensor Systems (MASS 2015). Dallas, TX. October 2015. (H-5 Index: 18)
- [C.24] S. Rafiqi*, C. Wangwiwattana*, J. Kim*, E. Fernandez, S. Nair, and **E. C. Larson** (2015). "PupilWare: Towards Pervasive Cognitive Load Measurement using Commodity Devices." 8th International Conference on Pervasive Technology Related to Assistive Environments (PETRA 2015). Corfu, Greece. July 2015. (H-5 Index: 3)
- [C.23] K. Chen, S. Gupta, **E. C. Larson**, S. Patel (2015). "DOSE: Detecting User-Driven Operating States of Electronic Devices from a Single Sensing Point." Proceedings of the International Conference on Pervasive Computing (PerCom 2015). Saint Louis, Missouri. January 2015. (Impact Factor: 2.23, H-5 Index: 27)
- 2014 [C.22] L. DeGreef, M. Goel, M. Seo, J. Stout, J. Taylor, **E.C. Larson**, and S. Patel (2014). "BiliCam: Using Mobile Phones to Measure Newborn Jaundice." Proceedings of the 16th International Conference on Ubiquitous Computing. (UbiComp 2014). Seattle, WA. September 2014.
Nominated for Best Paper
Acceptance Rate: 21% (94/454) (Impact Factor: 3.10, H-5 Index: 47)
- [C.21] **E.C. Larson** (2014). "Consumer Centered Calibration for End-use Water Monitoring." Proceedings of the Workshop on Non-intrusive Load Monitoring 2014. Acceptance Rate: 30% (7/23)
- 2013 [C.20] J. Lindsay, I. Jiang, **E.C. Larson**, R. Adams, S.N. Patel, & B. Hannaford (2013). "Good Vibrations: An Evaluation of Vibro-tactile Impedance Matching for Low Power Wearable Applications." Proceedings of UIST 2013. St. Andrews, UK, October 8-11, 2013. Acceptance Rate: 19% (60/317) (Impact Factor: 6.01, H-5 Index: 42)
- [C.19] M. Aumi, S. Gupta, M. Goel, **E.C. Larson**, and S.N. Patel (2013). "DopLink: Using the Doppler Effect for Multi-Device Interaction." Proceedings of the 15th International Conference on Ubiquitous Computing. (UbiComp 2013). Zurich Switzerland. September 8-12, 2013. Acceptance Rate: 23% (92/394) (Impact Factor: 3.10, H-5 Index: 47)
- [C.18] **E.C. Larson**, M. Goel, M. Redfield, G. Boriello, M. Rosenfeld, and S.N. Patel (2013). Tracking lung function on any phone. Proceedings of the 3rd ACM Symposium on Computing for Development, 29:1-29:2. 10.1145/2442882.2442917 (Impact Factor: 1.04, H-5 Index: 23)
- 2012 [C.17] **E.C. Larson**, M. Goel, G. Boriello, S. Heltshe, M. Rosenfeld, and S.N. Patel (2012). "SpiroSmart: Using a Microphone to Measure Lung Function on a Mobile Phone." Proceedings of the 14th International Conference on Ubiquitous Computing (UbiComp 2012), Pittsburgh, USA, Sep 5-8, 2012.
Nominated for Best Paper
Acceptance Rate: 19% (58/301) (Impact Factor: 3.10, H-5 Index: 47)

- [C.16] J. Froehlich, L. Findlater, M. Ostergren, S. Ramanathan, J. Peterson, I. Wragg, **E.C. Larson**, F. Fu, M. Bai, S.N. Patel, J. Landay (2012). "The Design and Evaluation of Prototype Eco-Feedback Displays for Fixture-Level Water Usage Data." Proceedings of the 2012 ACM Annual Conference on Human Factors in Computing Systems (CHI 2012), 2367-2376, Austin, TX May 2012.
Best Paper Honorable Mention
Acceptance Rate: 23% (363/1577) Acceptance Rate: 25% (Impact Factor: 2.73, H-5 Index: 101)
- [C.15] T. Phan, **E.C. Larson**, S. Sohoni, and D. Chandler (2012). "Performance-Analysis-Based Acceleration of Image Quality Assessment." IEEE Southwest Symposium on Image Analysis and Interpretation (SSIAI 2012), 81-84, April 2012.
(H-5 Index: 11)
- [C.14] E. Saba, **E. C. Larson**, and S. N. Patel (2012). "DANTE Vision: In-Air and Touch Gesture Sensing for Natural Surface Interaction with Combined Depth and Thermal Cameras." First Annual Conference on Emerging Signal Processing Applications (ESPA 2012), 167-170, January 2012.
Acceptance Rate: 38% (52/137)
- 2011 [C.13] **E. C. Larson** T. Lee, S. Liu, M. Rosenfeld, and S. N. Patel (2011). "Accurate and Privacy Preserving Cough Sensing from a Low Cost Microphone." Proceedings of the 13th International Conference on Ubiquitous Computing (UbiComp 2011), 375-384, Beijing, China, September 2011.
Acceptance Rate 16.6% (50/302) (Impact Factor: 3.10, H-5 Index: 47)
- [C.12] **E.C. Larson**, J. Froehlich, E. Saba, T. Campbell, L. Atlas, J. Fogarty, S.N. Patel (2011). "A Longitudinal Study of Pressure Sensing to Infer Real-World Water Usage Events in the Home." Proceedings of the Ninth International Conference on Pervasive Computing (Pervasive 2011). 50-69, San Francisco, CA, June 12-15, 2011.
Acceptance Rate: 23.6% (22/93) (Impact Factor: 1.02, H-5 Index: 47)
- [C.11] **E.C Larson**, G. Cohn, S. Gupta, X. Ren, B. Harrison, D. Fox, S.N. Patel (2011) "HeatWave: Thermal Imaging for Surface user Interaction." Proceedings of the 2011 ACM Annual Conference on Human Factors in Computing Systems (CHI 2011), 2565-2574, Vancouver, Canada, May 7 - 12, 2011.
Best Paper Honorable Mention
Acceptance Rate: 25% (Impact Factor: 2.73, H-5 Index: 101)
- 2010 [C.10] T. Campbell, **E.C. Larson**, G. Cohn, J. Froehlich, R. Alcaide and S.N. Patel (2010). "WATTR: A Method for Self-Powered Wireless Sensing of Water Activity in the Home." In Proceedings of the 12th ACM International Conference on Ubiquitous Computing (UbiComp 2010). 169-172, Copenhagen, Denmark, September 2010.
Acceptance Rate: 19% (39/202) (Impact Factor: 3.10, H-5 Index: 47)
- [C.09] G. Cohn, S. Gupta, J. Froehlich, **E. C. Larson**, and S. Patel (2010). "GasSense: Appliance-Level, Single-Point Sensing of Gas Activity in the Home" Proceedings of the Eighth International Conference on Pervasive Computing (Pervasive 2010), 265-282, Helsinki, Finland, May 17-20.
Acceptance Rate: 17% (Impact Factor: 1.02, H-5 Index: 47)
- 2009 [C.08] J. Froehlich, **E. C. Larson**, C. Haggerty, T. Campbell, S. Patel, and J. Fogarty (2009). "HydroSense: Infrastructure-Mediated Single-Point Sensing of Whole Water Home Activity In Proceedings of the 11th ACM International Conference on Ubiquitous Computing (UbiComp 2009), Orlando, FL, Sep. 2009.
Nominated for Best Paper
Acceptance Rate: 12.4% (Impact Factor: 3.10, H-5 Index: 47)
- [C.07] **E. C. Larson** and D. M. Chandler (2009). "The Most Apparent Distortion: A Dual Strategy for Full Reference Image Quality," Proc. SPIE Image Quality and System Performance, 7242, January 2009.
(Impact Factor: 0.45, H-5 Index: 23)
- 2008 [C.06] **E. C. Larson** and D. Chandler (2008). "Unveiling relationships between regions of interest and image fidelity metrics." Visual Communications and Image Processing 2008 (VCIP 2008), 6822, 2008.
(Impact Factor: 0.44, H-5 Index: 20)
- [C.05] **E. C. Larson** and G. Yen (2008). "Facial feature tracking in dynamic bandwidth environments: a genetic approach," IEEE World Congress on Computational Intelligence (CEC 2008), 2819-2826, June 2008.
(Impact Factor: 0.73, H-5 Index: 8)

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- [C.04] V. Kadiyala, S. Pinneli, **E. C. Larson**, and D. M. Chandler (2008). "Quantifying the Perceived Interest of Objects in Images: Effects of Size, Location, Blur, and Contrast," Proc. Human Vision and Electronic Imaging 2008 (HVEI 2008), San Jose, CA, January 2008. (H-5 Index: 5)
- [C.03] **E. C. Larson**, C. Vu, and D. Chandler (2008). "Can Visual Fixation Patterns Improve Image Fidelity Assessment?," Proc. of the International Conference on Image Processing (ICIP 2008), 2572-2575, 2008. (Impact Factor: 2.08, H-5 Index: 60)
- [C.02] C. Vu, **E.C. Larson**, and D.M. Chandler (2008). Visual fixation patterns when judging image quality: Effects of distortion type, amount, and subject experience. In *Image Analysis and Interpretation, 2008. SSIAP 2008. IEEE Southwest Symposium on* (pp. 73-76). IEEE. (H-5 Index: 11)
- 2007 [C.01] **E. C. Larson** and D. Chandler (2007). "Explaining Crypsis and Information Content in the Mammalian Visual Pathway using Statistical Measures of Animal Camouflage," OSA Fall Vision Meeting 2007, January 2007.

16. PATENTS

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- 2021 [P.09] Thornton, M. A., **Larson, E. C.**, Manikas, T. W., Taylor, M. A., Sinha, A., Srirama, N., Patent, "Computing System Network Anomaly Detection Using Packet Prediction and External Sensors", 63/211,281, Provisional, United States, Ironwood Cyber, Inc. *Provisional Patent Filed*.
- 2018 [P.08] **E.C. Larson**, M. Thornton, I. Johnson*, E. Gabrielsen*, and T. Siems*. Generating Upsampled Signals from Gyroscope Patent No. 11387083B1.
Assignee: Ironwood Cyber, Inc.
- 2017 [P.07] **E.C. Larson**, Spencer Kaiser*, Ashley Parks*, Patrick Leopard*, and Damoun Nassehi (2017). Vortex Whistle Devices and Systems and Methods for Spirometry Measurements. App No. 15/702351. US Patent Pending.
Assignee: DigiDoc Technologies
- 2014 [P.06] **E.C. Larson**, M. Goel, L. DeGreef, S. Patel, J. Stout, and J. Taylor (2014). "Devices, Systems and Methods for Estimating Bilirubin Levels." App No. PCT/US2014/024761. US Patent Pending
License Agreement with Google
- [P.05] **E.C. Larson**, M. Goel, and S.N. Patel (2014). "Sound-Based Spirometric Devices, Systems and Methods." App. No. 14/400,064. US Patent Pending
License Agreement with Google
- 2013 [P.04] T. Campbell, **E.C. Larson**, G. Cohn, S.N. Patel (2013). "Automatic Valve Shutoff Device and Methods." WO Patent 2,013,106,690. US Patent Pending.
License Agreement with Allstate Insurance
- 2012 [P.03] S. Patel, **E.C. Larson**, T. Lee, S. Liu (2012). "Cough Detecting Methods and Devices for Detecting Coughs." WO Patent 2,013,040,485. US Patent Pending.
License Agreement with Google
- [P.02] T. Campbell, **E. C. Larson**, G. Cohn, R. Alcaide, J. Froehlich, S. Patel (2012). "Systems and Methods for Energy Harvesting in a Contained Fluid Circuit." WO Patent 2,012,021,551. US Patent Pending.
- 2009 [P.01] S. Patel, J. Fogarty, J. Froehlich, **E. C. Larson**. "Sensing Events Affecting Liquid Flow in a Liquid Distribution System." EP Patent 2,440,901.
License Agreement with Phin Technologies and Belkin Technologies

17. OTHER PUBLICATIONS (MINIMALLY OR NOT PEER REVIEWED)

These publications refer to publications resulting from student projects in the SMU Master of Science in Data Science which are **internally reviewed at SMU**, or other sources with **only minimal or no peer review** (such as arXiv paper posts). While these publications represent excellent projects that may be cited for their scholarly contributions, they **do not count toward peer-reviewed publications**.

- 2023 [OP.18] Andrew Havard*, Theodore Manikas, **E. C. Larson**, and Mitch Thornton (2023). CNN-Assisted Steganography -- Integrating Machine Learning with Established Steganographic Techniques. *arXiv :2304.12503*; 2023. <http://arxiv.org/abs/2304.12503> *Not Peer Reviewed*.

- 2022 [OP.17] H. Tian, X. Jiang, S. Xiao, H. LaForce, **E. C. Larson** and P. Tao (2022). LAST: Latent Space Assisted Adaptive Sampling for Protein Trajectories. *arXiv :2204.13040*; 2022. <https://arxiv.org/pdf/2204.13040> *Not Peer Reviewed*.
- [OP.16] Tseng, C.,* Foster, P. D.,* Klinkert, J.,* Adams, E. L., Clark, C., **Larson, E. C.**, & Ketterlin-Geller, L. R. (2022). *Using cognitive walkthroughs to evaluate students' computational thinking during gameplay*. Paper to be presented to the International Conference of the Mathematics Education for the Future Project, King's College, Cambridge University, UK. *Minimal Peer Review*
- 2021 [OP.15] H. Tian, X. Jiang, F. Trozzi, S. Xiao, **E. C. Larson** and P. Tao (2021). Exploring the protein conformational space with variational autoencoder. *ChemRxiv*. Cambridge: Cambridge Open Engage; 2021. <https://chemrxiv.org/engage/chemrxiv/article-details/6149299187a02de46f4294ec> *Not Peer Reviewed*.
- [OP.14] Klinkert*, L. J., Foster*, P. D., Adams, E. L., Clark, C., Ketterlin-Geller, L., **Larson, E.C.**, Tseng*, C-Y., and Luo*, V. (2021). *Building Student Computational Thinking using Online Gaming*. 2021 STEM for All Video Showcase. <https://stemforall2021.videohall.com/presentations/1994> *Minimal Peer Review*
- [OP.13] Sisi Kang* and **E.C. Larson**. Automated Speech Recognition Scoring System to Enhance Child Computer Interaction in a Learning Module (2021). *SMU Journal of Undergraduate Research (JoUR)*. *Minimal Peer Review*
- [OP.12] Jason S. Hoffman, Varun Viswanath, Xinyi Ding, Matthew J. Thompson, **E. C. Larson**, Shwetak N. Patel and Edward Wang. Smartphone Camera Oximetry in an Induced Hypoxemia Study. *arXiv:2104.00038* <http://arxiv.org/abs/2104.00038> (2021). *arXiv paper, not peer reviewed*.
- [OP.11] R. Mundada*, L. Nibhrat*, A. McCarthy*, R. Howell*, and **E.C. Larson**. AirWare: Utilizing Convolutional Architectures for In-Air Hand-Gesture Recognition with Multi-modal Audio Doppler and Infrared Signals. *arXiv:2101.10245* <http://arxiv.org/abs/2101.10245> (2021). *arXiv paper, not peer reviewed*.
- [OP.10] C. Wangwiwatanna, S. Aggarwal, and **E.C. Larson**. "Writers Gonna Wait: The Effectiveness of Notification to Initiate Aversive Action in Writing Procrastination." *arXiv: 2101.10191* <http://arxiv.org/abs/2101.10191> (2021). *arXiv paper, not peer reviewed*
- [OP.09] X. Ding* and **Larson, E.C.** (2021). "On the Interpretability of Deep Learning Based Models for Knowledge Tracing." *Workshop at Association for the Advancement of Artificial Intelligence. AAAI 2021*. *Minimal Peer Review, Invited Submission*
- 2020 [OP.08] Tseng, C., Ketterlin Geller, L.R., Clark, C., **Larson, E.C.** (2020). *STEM+C educator advisory panel* (Tech Rep. No 20-18). Dallas, TX: Southern Methodist University, Research in Mathematics Education.
- 2019 [OP.07] X. Ding*, Z. Raziei*, **E.C. Larson**, E. Olinick, P. Krueger, and M. Hahsler. "Swapped Face Detection using Deep Learning and Subjective Assessment." *arXiv preprint arXiv:1909.04217* (2019). *arXiv paper, not peer reviewed*
- [OP.06] Verma, Niraj*, Xingming Qu*, Francesco Trozzi, Yunwen Tao, Mohamed Elsaied*, E.C. Larson, and Elfi Kraka. "SSnet-Secondary Structure based End-to-End Learning model for Protein-Ligand Interaction Prediction." *bioRxiv* (2019). *arXiv paper, not peer reviewed*.
- 2018 [OP.05] Z. Raziei, X. Ding*, **E.C. Larson**, M. Hahsler, P. Krueger, and E. Olinick. "Deep Convolutional Networks for Forgery Classification and Anomaly Detection." *INFORMS 2018*. *Minimal Peer Review*
- [OP.04] Jessica Wheeler*, Jean Jecha*, Manjula Kottegoda*, Sharon Teo*, Julie Fast and **E.C. Larson** (2018). "Bipolar Mania Eye Image Classification." *SMU Data Science Review*, Vol. 1. March 2018. <https://scholar.smu.edu/datasciencereview/vol1/iss1/1> *Minimal Peer Review*
- [OP.03] Karen Clark*, Mridul Jain*, Araya Messa*, Vinh Le*, and **E.C. Larson** (2018). "Open Cycle: Forecasting Ovulation for Family Planning." *SMU Data Science Review*, Vol. 1. March 2018. <https://scholar.smu.edu/datasciencereview/vol1/iss1/2> *Minimal Peer Review*
- [OP.02] Claire Chu*, Bill Kerneckel*, Nathan Mowat*, Christopher Woodard*, and **E.C. Larson** (2018). "Comparative Study: Reducing Cost to Manage Accessibility with Existing Data." *SMU Data Science Review*, Vol. 1. March 2018. <https://scholar.smu.edu/datasciencereview/vol1/iss1/5> *Minimal Peer Review*

18. TEACHING

Teaching Awards **2023 Altshuler Distinguished Teaching Award and Member of SMU's Academy of Distinguished Teachers** which annually recognizes four SMU faculty members for their notable commitment to and achievements in fostering student learning. These are teachers whose concerns for higher education go beyond classroom boundaries and often the boundaries of their own disciplines. In student mentoring, in discussions about teaching, and in continuous reflection about their own successes and ways to improve, they represent the highest achievement in reaching the goals of higher education.

2020 Nominated for President's Associates Award which honors tenured faculty members who have sustained high achievement as teachers and whose scholarship makes a meaningful contribution to student learning

2016 Professor of the Year, Honoring Our Professors of Excellence (HOPE)
College-wide Award Given Annually to One SMU Professor

Courses Redesigned **CS8321 Neural Networks and Machine Learning**
Lecture Course on Contemporary Research in Neural Networks including Generative Models, Transfer Learning, Neural Visualization, and Reinforcement Learning. First offered Spring 2019.

Teaching Format: Interactive Lectures with Demonstration Code built into Lecture Slides.

Courses Created **CS5324/7324 Machine Learning in Python**
Lecture Course on Machine Learning Methods, with Emphasis on Neural Networks and Deep Learning. Uses Flipped Modules for five lectures, with emphasis on projects related to data classification and regression. Offered once every semester to accommodate demand for course. Enrollment consistently exceeds 50 students.

Teaching Format: Traditional Lecture, Live Coding Demonstrations, Live Polling, Flipped Lecture Format with Flipped Assignments

CS5323/7323 Mobile Sensing, and Learning in iOS
Lecture and Lab Course for Accessing, Processing, and Learning from Sensors on Mobile Devices. Five flipped modules with emphasis on design of iOS applications. Seven apps due during the semester, including final project app. Usage of CoreML in iOS for local machine learning as well as RESTful API for cloud processing. Offered every other semester. Enrollment consistently stays at 24 students (maximum that lab can accommodate).

Teaching Format: Traditional Lecture, Live Coding Demonstrations, Flipped Lecture Format with Flipped Assignments

CS5325/7325 Ubiquitous and Cognitive Computing
Lecture Course on Human-Computer Interaction Methods for Wearables and Ubiquitous Technology. Seven flipped modules and ten lectures discussing various papers published in the field. Emphasis on creating of technology and evaluation of technology for final project. Offered every other semester. Enrollment consistently exceeds 20 students.

Teaching Format: Traditional Lecture, Student Led Paper Discussions, Flipped Lecture Format with Flipped Assignments

MSDS7331 Data Mining for Data Scientists

Flipped Lecture Format Course, Specialized for Master in Data Science. Course was created and filmed by Professor Larson, including design of all live format curriculum and projects. Emphasis on breadth of data mining concepts including visualization, regression, classification, clustering, association mining, and collaborative filtering. Twelve sections offered yearly with 10-15 students per section (with adjunct lecturers in MSDS program). One of the highest rated courses in the MSDS program.

Teaching Format: Online Format Class with Video Lectures Each Week and One Live Lecture Period, Live Coding Demonstrations, Flipped Lecture Format with In-Class Assignments (Virtual Student Groups)

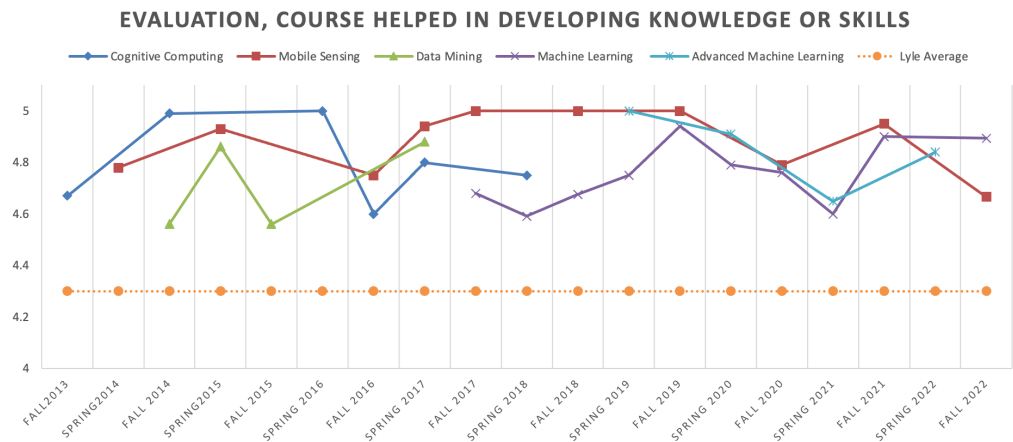
Other Courses Taught at SMU

CS8098 Computer Science Seminar. Offered every semester. Serves as orientation to graduate students. Professor Larson has manipulated this course to include instruction on giving technical presentations, writing papers, and generally navigating graduate life during first three weeks of course. Remainder of course is reserved for research talks from various speakers, mostly external to SMU.

CS5331/7331 EMIS5332/7332 Introduction to Data Mining

CS7331 Data Mining, SMU-Raytheon Garland Program

Teaching Evaluation Summary



Evaluations per course, per semester. Note that Lyle evaluation questions changed in Fall of 2019. Therefore, I am reporting evaluation scores on the question “This course helped me to develop knowledge or skills.” **My overall average evaluations are higher than this question**, but I believe this question is particularly insightful towards the content, tools, and manner of my lectures.

Student Comments

“It was apparent and appreciated the amount of work you put into this course and your students. I can honestly say I am a little astounded in the amount I have learned from your course alone. Working ...and taking courses can be tough, but I always enjoyed your lectures and if I had to watch the replay, I wasn’t tempted to put it on times 2.”

“...all of the notebooks that Dr. Larson provided were incredibly helpful. He provides the best resources by far in the program. He is an accomplished coder and you can tell by the way that he explains the code as he works through the problems. His videos are extremely professional...”

“Eric Larson is a fantastic and gifted teacher and does not need to change anything at all about his teaching style. He is excellent at engaging the class, is knowledgeable and passionate about the subject, and willing to help students at any time outside of class.”

“One of my favorite instructors at SMU”

“Professor Larson is by far one of, if not the best professor I have ever had. He is able to teach complicated topics in an extremely approachable way.”

Other Courses Offered Outside SMU	CSS457 Multimedia and Signal Computing (UW Bothell)
	EE518 Advanced Digital Signal Processing (UW Seattle) Lecturer for Recitation, Professional Master's Program
	EE233 Circuit Analysis II (UW Seattle) Lab Manager, Lecturer for Recitation
	ECEN 3714 Network Analysis (OSU Stillwater) Lab Manager, Lecturer for Recitation
	ECEN 3021 Experimental Methods II (OSU Stillwater) Lab Manager, Lecturer for Recitation

19. SERVICE

2024-present	Associate Editor (Second Term) for ACM Journal of IMWUT
2023-2024	Chair, AI-Powered Faculty Search Committee (Two Positions)
2023-2024	Search Committee Member for Quantum Faculty (Two Positions)
2023-2024	Search Committee Member for CS Department Head
2023	Search Committee Member for TEIL Cluster Hire
2023	IES PI-Meeting Panelist Organizer, Improving Literacy Assessments via Automated Transcription
2023	Member, Data Science Director Search Committee
2023-present	Member of SMU Information Technology Leadership Council (Faculty Representative)
2023	Panelist, University forum on Generative AI and Chat-GPT
2023	Panelist, University Program on Mentorship and Graduate Student Success
2022-2023	Member, Lyle Dean Search Committee
2022-2023	Chair, CS Faculty Search Committee
2021-2022	Ph.D. of Data Science Program Committee Member
2022-2023	Search Committee Member for TEIL Cluster Hire
2021-2022	Search Committee Member for Cluster Hire 21st Century Education and Technology
2019-present	Master of Science in Data Engineering Program Committee Oversight Member
2020-2022	Lyle School Advisor for Data Science Major and Minor
2019- 2021	Member of Data Science Oversight Committee
2020-2021	Chair, CS Faculty Search Committee (Resulting in Faculty Hire at Full Professor)
2019-2020	Chair, CS Faculty Search Committee (Resulting in Faculty Hire at Associate Professor)
2018	Committee Member for 10 Year Impact Award Paper in Ubiquitous Computing
2017-2023	Associate Editor for ACM Journal of Interactive, Mobile, Wearable, and Ubiquitous Technology
2016-present	Member of SMU Human Subjects Board and IRB
2016	Committee Member on Taskforce to Review Lyle Engineering Senior Design
2015-2016	Program Committee Member for International Conference on Ubiquitous Computing and Best Paper Selection Committee
2014-present	Faculty in Charge for Computer Science Research Seminar

20. SUPERVISORY COMMITTEE MEMBER (MS AND PHD, COMMITTEE MEMBER ONLY)

2023	[CM.25] Rodriguez, Juan Jose, Praxis Committee Member, Design and Implementation of a Spacecraft Anomaly Detection Framework using Federated Learning. (August 2023)
	[CM.24] Du, Jinyu, Dissertation Committee Member, A COMPARISON OF CONFIDENCE INTERVALS IN STATE SPACE MODELS. PhD Completed. (May 2023).
	[CM.23] Sitton, J., Dissertation Committee Member, INDIRECT BRIDGE MONITORING USING CROWDSOURCED SMARTPHONE DATA FROM PASSING VEHICLES. PhD Completed. (April 2023).
	[CM.22] Aman, J., Dissertation Committee Member, THREE TALES ON EQUITY IN TRANSPORTATION: ACCESS, GENDER, AND MOBILITY SEGREGATION. PhD Completed. (April 2023).
	[CM.21] Tian, H., Dissertation Committee Member, EXPLORING PROTEIN CONFORMATIONS AND FUNCTIONS THROUGH MOLECULAR DYNAMICS SIMULATIONS AND MACHINE LEARNING. PhD Completed. (April 2023).
	[CM.20] Wolf, Z., MS Committee Member, DATA LEAKAGE IN ISOLATED VIRTUALIZED ENTERPRISE COMPUTING SYSTEMS. PhD Completed. (April 2023).

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- [CM.19] Oshana, R. Dissertation Committee Member, REAL_TIME DETECTION AND SUPPRESSION OF MALICIOUS ATTACKS USING MACHINE LEARNING AND PROCESSOR CORE EVENTS. PhD Completed. (April 2023).
- [CM.18] Yang, C. Dissertation Committee Member, ATTENTION-BASED MULTIPLE INSTANCE CLASSIFICATION MODEL FOR WORD-LEVEL CONTEXT-BASED SENTIMENT ANALYSIS. Prospectus in Dedman, Dept. of Statistics. (Proposed February, 2023; PhD Completed August 2023).
- 2022 [CM.17] Kan, S., Dissertation Committee Member, TOWARDS MULTIPRONGED ON-CHIP MEMORY AND DATA PROTECTION FROM VERIFICATION TO DESIGN AND TEST, Completed. (November 2022)
- [CM.16] Moghadam, A.S., Dissertation Committee Member, LEVERAGING CROWDSOURCED NAVIGATION DATA IN ROADWAY PLUVIAL FLASH FLOOD PREDICTION, PhD Completed. (August 2022)
- [CM.15] Li, Z., Dissertation Committee Member, CIVIL AND ENVIRONMENTAL ENGINEERING Department, "EQUITY OF URBAN NEIGHBORHOOD INFRASTRUCTURE: A DATA-DRIVEN ASSESSMENT", PhD Completed. (April 2022).
- 2021 [CM.14] Badi, M., Dissertation Committee Member, ENGINEERING-ELECTRICAL ENGINEERING Department, "CHARACTERIZATION OF UAV-BASED WIRELESS CHANNELS WITH DIVERSE ANTENNA CONFIGURATIONS". (November 2021).
- [CM.13] Zhang, X., Dissertation Committee Member, ENGINEERING-ELECTRICAL ENGINEERING Department, "CONTEXT-AWARE SENSING AND FUSION FOR STRUCTURAL HEALTH MONITORING AND NIGHT TIME INTELLIGENT TRANSPORTATION SYSTEM", Completed. (January 2021).
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