Josh Siegel, Ph.D.

SUMMARY

I am an inventor, entrepreneur, and academic passionate about creating and deploying big ideas and transformative technologies. I develop equitable solutions for a changing world through the thoughtful and innovative application of Deep Technology, and help students self-start, disrupt, innovate, and lead within contemporary and emerging industries.

CURRENT ROLES

Assistant Professor, Computer Science and Engineering — January 2019 - Present
(courtesy appointment in Electrical and Computer Engineering)
Michigan State University, East Lansing, MI

Lecturer, Open Learning (Bootcamps, Horizon, xPRO) & Sloan School of Management — March 2019 - Present
Massachusetts Institute of Technology, Cambridge, MA

RESEARCH

Through the lens of practical entrepreneurship, I develop "Deep Technologies" impossible yesterday, difficult to build today, and with the potential to become simultaneously invisible and impossible to live without. My lab explores connected and automated vehicles, ubiquitous connectivity, pervasive sensing, embedded intelligence and expert systems, data-driven product design and manufacturing, emerging theories for business, applied AI, and more.
Example:

- Created a generalized framework for resource-light time-series classification
- Co-developed approaches to safer self-driving through adversarial reinforcement learning
- Invented lightweight, pervasively-sensed diagnostic algorithms for improving vehicle efficiency and reliability
- Developed an architecture improving security and efficiency of constrained connected Digital Twin systems
- Led a cross-university team to develop and commercialize an award-winning telematics platform

TEACHING

I apply thoughtful pedagogy in using mind-and-hand teaching to design and run interactive and impactful courses on automated vehicles, the Internet of Things, entrepreneurship, Digital Transformation, technology adoption and diffusion, and design and manufacturing. My programs run through MSU, MIT, and as bespoke offerings; their audiences range from K12 to postgraduate and executive education, with an emphasis on building strong theoretical and practical foundations conductive to self-efficacy and self-actualization.
Example courses:

- Created and taught MSU "Entrepreneurship in the IoT" & "Advanced Topics in Automated Vehicles"
- Created 14+ multi-day MIT "Tech Innovation," "DeepTech," "ToughTech," Applied AI, and IoT Bootcamps
- Designed and conducted an NSF-funded Research Experience for Undergraduates on self-driving
- Re-developed and taught MSU's "Mobile App Development"
- Created additional, intensive outreach and corporate programs across age groups

ENTREPRENEURSHIP

I engage in entrepreneurship as a multiple-startup founder, corporate consultant, and advisor to maximize the reach, relevance, and impact of our work.
Examples:

- Started three companies commercializing my research; launching new venture with MSU support
- Awarded 9+ patents, including those under negotiation for licensing
- Supporting SMEs, public companies, and government in technology assessment and Digital Transformation
- Clients in manufacturing, energy extraction and storage, equipment management, construction, and materials

EDUCATION

Doctor of Philosophy, June 2016
Master of Science, June 2013
Bachelor of Science, June 2011
Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA

PREVIOUS RESEARCH EXPERIENCE

Research Scientist, June 2017 - December 2018
Postdoctoral Associate, June 2016 - May 2017
Research Assistant, June 2011 - May 2016
Undergraduate Researcher, June 2007 - June 2011
Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA

TEACHING AND MENTORING

Assistant Professor, Computer Science and Engineering January 2019 - Present
Michigan State University, East Lansing, MI

- Created: "Creating Autonomous Vehicles (CSE, ECE, ME)," "Advanced Topics in Automated Vehicles (CSE, ECE)", and "(Entrepreneurship and) the Internet of Things" (CSE); redesigned: "Mobile Development (CSE)"
- **Developed and ran outreach-intensive, NSF-funded Research Experience for Undergraduates on self-driving**, in collaboration with Lawrence Technological University
- **Advised MSU's first dual MSU/NTUA Ph.D. graduate**, Georgios Pappas (2021), earning degrees in Electrical and Computer Engineering from both Michigan State and the National Technical University of Athens

Co-Creator and Lead Tech Instructor, Innovation and Technology Workshops June 2022 - Present
Cambridge, MA; Tysons Corner, VA

- **Created and syndicated multiple multi-day Tech & Innovation Workshops with MIT,** including lectures, lab activities, textbook, workbook, an instructors' manual, and audio/visual collateral. Managed a large ops. team.
- Delivered scenario-driven programs to senior business, government, and military clients 4x, achieving 87% NPS
- Managing client relationship and annually re-developing content for a cohort of 80+ SME CEOs

Creator and Lead, DeepTech, ToughTech, IoT Bootcamps and Private Courses May 2017 - Present
Kolkata, Bangalore, and Delhi India; Tysons, VA; Cambridge, MA; Detroit, MI

- Created 14+ MIT Internet of Things, DeepTech, ToughTech, SportsTech, & Tech & Innovation Bootcamps
- Created Bootcamps about DeepTech in India and delivered to three clients
- Developed and delivered 40-hour high school program on the Internet of Things
- Coached MIT Innovation & Entrepreneurship Bootcamp

Instructor, YPO Digital Transformation Series "The Digital Transformation Ecosystem" August 2020
Instructor, MIT Executive Education "Implementing Industry 4.0" June 2017 - 2022
Creator and Lead, InkTalks, Cranbrook Kingswood, and corporate programs January 2016-Present
Creator and Lead, Hands on PCB Fabrication of Cloud Connected Devices January 2016
Teaching Assistant, 2.008, Design and Manufacturing II (MIT) Fall 2012
Teaching Assistant, SEM.089/095, Tech Start-Ups I & II (MIT) Fall '10-'16

PROFESSIONAL EXPERIENCE

Founder & Consultant, DataDriven Diagnostics LLC, Bloomfield Twp, MI May 2020 - Present
DataDriven Diagnostics offers technical, management, and educational consultant and content preparation. Services include document review, mechanical, electrical, and software design, lecture preparation and teaching, educational evaluation, and longitudinal studies and assessment.

- Serving clients with Digital Transformation roadmapping, oversight, and implementation
- Technology expert (witness), speaker, and editorial content consultant
- Bespoke, interactive corporate education programs

Founder & CTO, CarKnow LLC d.b.a. DataDriven, Brookline, MA December 2016 - February 2019
DataDriven uses mobile devices' built-in sensors to proactively detect and respond to vehicle faults.

- 2017 Global Automotive and Mobility Innovation Challenge finalist; 2016&17 MIT 100K semi-finalist; Telematics Update "Best Aftermarket Telematics Product or Service" shortlist; 2016 MassChallenge Round 2 Judging qualifier

Founder, CEO & CTO, CarKnow LLC, Brookline, MA June 2011 - December 2016
CarKnow built a universal automotive connectivity platform (hardware+software+API).

- Winner, 2014 MassChallenge MassIT Government Innovation Prize
- Press mention in AOL Media's *"Translogic," The New York Times,* and *AutoBlog*

Consultant, Self Employed, Brookline, MA June 2011 - 2013

- Designed hardware for mobile energy audit platform (used on 1M+ homes)
- Designed automotive data collection system for the University of North Texas

Technical Advisor & Developer, AutoMob [MySuzy], Cambridge, MA September 2010 - June 2012

- Commercialized undergraduate research as "context layer" for motion-based app reconfiguration

Co-Founder & President, Course Zero Automation, Boston, MA March 2008 - January 2011

- Developed "Boeing Prize" winning inertial navigation unit and algorithms (later licensed)

SELECTED AWARDS

- 2025 SAE International Educational Award Honoring Ralph R. Teetor
- 2025 IEEE ISEC 3^{rd} Best Paper
- 2023 IEOM Smart Mobility First Prize Paper
- Cyprus Education Leaders Gold (2021, 2020), Silver (2023), and Best Learning Experience (2019) Awards
- **2020 IEEE Sensors Best Paper**
- **2018 ICAT-EGVE Best Demo**
- **2018 SCF Artificial Intelligence and Mobile Services (AIMS) Best Paper**
- **2015 $15,000 Lemelson-MIT National Collegiate Student "Drive It" Prize**
- 2015 Hero of the Year in the Cloud Innovation World Cup
- 2015 Telematics Update "Industry Newcomer" Award Finalist
- 2017 and 2015 Global Automotive Innovation Challenge Finalist
- **2014 BMW-EURECOM "Highly Autonomous Driving in the IoT" Best Ideation Award**
- **2014 $25,000 MassIT Government Innovation Competition Winner**
- 2014 BMW-EURECOM "Highly Autonomous Driving in the IoT" Outstanding Research Travel Grant
- 2014 IPSO Alliance Challenge SemiFinalist (mentored by Presidential Innovation Fellow Geoff Mulligan)
- 2014 MassChallenge Finalist
- 2014/15 IoT/M2M Hero of the Year in the Innovation World Cup
- 2014/15 Innovation World Cup - Finalist, Mobility Solutions & GEO Award
- 2014, 2017 Top 100 (out of 900) - NASA Tech Briefs "Create the Future" Competition
- 2011 3rd Place Award MIT deFlorez Mechanical Engineering Competition (CloudCar System)
- **2008 MIT/ISN Soldier Design Competition Boeing Prize**
- McCaul Endowment Grant for autonomous vehicle development
- 1st in 2007 University of Michigan, State of Michigan High School Programming Contest
- Cranbrook Kingswood High School Prize Programming Awards ('10, '11, '18)

- Cranbrook Kingswood Studio Art Award (Sculpture), Excellence In Art Award (Prints)
- Cranbrook Kingswood Caltech Book Award & Strickland Writing Scholar Award

PATENTS

** denotes equal contribution, † denotes authors under my (co)supervision.*

1. J. Siegel and T. Ahmed†. " Generalizable approach to reducing data volume and quality while retaining application performance." Provisional application for patent, 2024.
2. S. Sarma, R. Bhattacharyya, J. Siegel, S.N. Reddy Kantareddy., A. Armengol Urpi, P. Sen. "System and Method for Wireless Sensing of Health Monitoring." Chile 612-2021
3. J. Siegel, U. Coda† and A. Terwilliger†. "System And Method For Vibroacoustic Diagnostic And Condition Monitoring A System Using Neural Networks." US17/856,652. Pending, 2023.
4. J. Siegel and A. Terwilliger†. "Acoustic Vehicle Characterization Neural Networks." US63/357,683. Pending, 2022.
5. J. Siegel* and G. Falco*. "System and Method for Metamaking and Metaverse Rights Management." US63/301,771. Pending, 2022.
6. G. Falco*, T. Sookor*, S. Zanlongo*, A. Byerly*, J. Siegel*. "Space Iron Dome." Provisional application for patent, 2022.
7. G. Falco*, J. Siegel*. "System and Method Implementing a Distributed Audit Trail." US17,450,035A1. Pending, 2022.
8. S. Sarma, , S.N. Reddy Kantareddy, R. Bhattacharyya, P. Sen†, A. Armengol Urpi, J. Siegel. "Antenna and System for Wireless Sensing of Health Monitoring." US11,701,271, 2023.
9. J. Siegel, U. Coda†. "System and Method for Context-Based Vibroacoustic Diagnostic and Condition Monitoring Model Selection." Pending, 2021.
10. S. Sarma, R. Bhattacharyya, J. Siegel, S.N. Reddy Kantareddy., A. Armengol Urpi, P. Sen. "System and Method for Wireless Sensing of Health Monitoring." US11,185,449B2. 2021.
11. J. Siegel, R. Bhattacharyya. "Applying Motion Sensor Data To Wheel Imbalance Detection, Tire Pressure Monitoring, And/Or Tread Depth Measurement." US10,830,908B2. 2020.
12. J. Siegel, S. Sarma "Systems and Methods for Managing Data Proxies." US10,637,951. 2020.
13. C. Jacoby*, J. Jurewicz*, J. Siegel*, A. Winter*, Y.S. Jo*, G. Panames*, D. Dorsch*. Clutchless Shifting of a Manual Transmission." US10,315,659. 2019.
14. D. Erb*, I. Ehrenberg*, P. Jain*, J. Siegel*. "Systems, Devices and Methods for Three-Dimensional Printing." US10,052,824B2. 2018.
15. J. Siegel "System and Method for Providing Predictive Software Upgrades." US9,086,941. 2015.
16. S. Sarma*, J. Siegel*, S. Ho*. "System and Method for Providing Road Condition and Congestion Monitoring Using Smart Messages." US8,566,010. 2013.
17. Additional 7+ Provisional Applications for Patent and 13+ IP Disclosures

SELECTED PUBLICATIONS (of 100+, h-index=26)

** denotes equal contribution, † denotes authors under my (co)supervision.*

Peer-Reviewed Journal Articles

1. J. Siegel, K. Yang. "Redefining Excellence: Revolutionizing Quality Management with Deep Technology." *Quality Progress*, 58(3), 2025, pp. 30–37. American Society for Quality (ASQ) Quality Progress.
2. I. Papamichael, G. Pappas*,†, J. Siegel, V. Inglezakis, G. Demetriou, A. Zorpas, C. Hadjisavvas. "Metaverse and circular economy." Waste Management & Research, 2023, 0734242X231180406.
3. P. Gupta*,†, D. Coleman*,†, J. Siegel. "Towards Physically Adversarial Intelligent Networks (PAINs) for Safer Self-Driving)." IEEE Control Systems Letters (7), pp. 1063-1068, 2023.
4. A. Terwilliger†* and J. Siegel.. "Improving Misfire Fault Diagnosis with Cascading Architectures via Acoustic Vehicle Characterization ." MDPI Sensors, Special Issue on Intelligent Systems for Fault Diagnosis and Prognosis, 2022, pp. 1-22. [**Invited / Feature Paper**].
5. S. Rao†*, A. Quezada†*, S. Rodriguez†, C. Chinolla†, C.J. Chung and J. Siegel.. "Developing, Analyzing, and Evaluating Vehicular Lane Keeping Algorithms Using Electric Vehicles." MDPI Vehicles (4) 4, 2022, pp. 1012-1042. [**Invited / Feature Paper**].

6. I. Papamichael, G. Pappas[†], J. Siegel, A. Zorpas. "Unified waste metrics: A gamified tool in next-generation strategic planning." Science of the Total Environment (833), 2022, pp. 154835.
7. G. Pappas[†*], J. Siegel[*], E. Kassens-Noor, J. Rutkowski[†], K. Politopoulos, A. Zorpas. " Game-Based Simulation and Study of Pedestrian-Automated Vehicle Interactions." Automation (3)3, 2022, pp. 315-336. **NTUA Thomaidion Award**
8. G. Pappas[†], I. Papamichael, A. Zorpas, J. Siegel, J. Rutkowski[†], K. Politopoulos. "Modelling Key Performance Indicators in a Gamified Waste Management Tool." Modelling (3)1, 2022, pp. 27-53. **[Invited]**
9. E. Kassens-Noor, J. Siegel and T. Decaminada. "Choosing Ethics over Morals: A Possible Determinant to Embracing Artificial Intelligence in Future Urban Mobility." Frontiers in Sustainable Cities (3). 2021, pp. 1-11.
10. J. Autiosaalo[†], J. Siegel, K. Tammi. "Twinbase: Open-source server software for the Digital Twin Web." IEEE Access (9), 2021, pp. 140779-140798.
11. J. Siegel, U. Coda[†], A. Terwilliger[†]. "Surveying Off-Board and Extra-Vehicular Monitoring and Progress Towards Pervasive Diagnostics." SAE Connected and Automated Vehicles 4(4), 2021, pp. 347-370.
12. J. Siegel[*], G. Pappas[*†]. "Morals, Ethics, and the Technology Capabilities and Limitations of Automated and Self-Driving Vehicles." *AI & Society*, 38, 2023, pp. 213–226.
13. J. Siegel, K. Yang. "Going Deep'.' Quality Progress 54(11), 2021, pp. 14-19. **Cover Story (10/2021).**
14. K. Karur[*,†], N. Sharma, C. Dharmatti and J. Siegel[*]. "A Survey of Path Planning Algorithms for Mobile Robots." MDPI Electronics 3(3), 2021, pp. 448-468.
15. G. Pappas[*†], J. Siegel[*]. "A Gamified Simulator and Physical Platform for Self-Driving Algorithm Training and Validation." MDPI Electronics 10(9), 2021, article 1112.
16. J. Barnett[†], N. Gizinski[†], E. Mondragon-Parra[†], J. Siegel, D. Morris, T. Gates, E. Kassens-Noor, P. Savolainen. "Automated Vehicles Sharing the Road: Surveying Detection and Localization of Pedalcyclists." IEEE Transactions on Intelligent Vehicles 6(4), 2021, pp. 649-664.
17. D. Suo[†], J. Siegel, A. Soley. "Driving Data Dissemination: The "Terms" Governing Connected Car Information," IEEE Intelligent Transportation Systems Magazine 13(1), 2020, pp. 20-30.
18. J. Siegel and S. Krishnan. "Cultivating Invisible Impact with Deep Technology and Creative Destruction." Journal of Innovation Management 8(3), 2020, pp. 6-19.
19. G. Falco[*], J. Siegel[*]. "A Distributed 'Black Box' Audit Trail Design Specification for Connected and Automated Vehicle Data and Software Assurance." SAE International Journal of Transportation Cybersecurity and Privacy 3(2), 2020, pp. 97-111.
20. D. Kent[†], B. Cheng, J. Siegel. "Assuring Vehicle Update Integrity using Asymmetric Public Key Infrastructure (PKI) and Public Key Cryptography (PKC)." SAE International Journal of Transportation Cybersecurity and Privacy, 2(2), 2020, pp. 141-158
21. J. Siegel, M. Beemer, S. Shepard. "Automated non-destructive inspection of Fused Filament Fabrication components using Thermographic Signal Reconstruction." Additive Manufacturing 31, 2020, article 100923.
22. J. Siegel, A. Das, Y. Sun and S. Pratt. "Safe Energy Savings Through Context-Aware Hot Water Demand Prediction." Elsevier Engineering Applications of Artificial Intelligence 90, 2020, article 103481.
23. P. Sen[†], S.N. Kantareddy, R. Bhattacharyya, S. Sarma and J. Siegel. "Low-cost diaper wetness detection using disposable RFID tags and in-situ hydrogel sensing." IEEE Sensors 20 (6), 2019, pp. 3293-3302. **IEEE Sensors Best Paper (2020).**
24. J. Siegel, S. Sarma. "Using Open Channels to Trigger IoT's Invited, Unintended Consequences." IEEE Security & Privacy 17 (3), 2019, pp. 49-55.
25. J. Siegel, S. Sarma. "A Cognitive Protection System for the Internet of Things." IEEE Security & Privacy, 17 (3), 2019, pp. 40-48.
26. J. Siegel. "Cognitive Protection Systems for the Internet of Things." Homeland Defense and Security Information Analysis Center Journal 5 (4), 2019, pp. 16-20.
27. A. Soley[*†], J. Siegel[*], D. Suo, S. Sarma. "The Value in Vehicles: An Economic Assessment of Automotive Data." Digital Policy, Regulation and Governance 20 (6), 2018, pp. 513-527.
28. J. Siegel, S. Pratt, YB. Sun, S. Sarma. "Implementing Real-Time Deep Neural Networks For Internet-Enabled Arc-Fault Detection." Engineering Applications of Artificial Intelligence 74 (September), 2018, pp. 35-42.**Featured on MIT's Homepage, 6/15/18.**
29. J. Siegel, S. Kumar, S. Sarma, "The Future Internet of Things: Secure, Efficient, and Model-Based." IEEE Internet of Things Journal 5 (4), 2018, pp. 2386-2398.
30. D. Suo, J. Siegel, S. Sarma. "Merging Cybersecurity and Safety in Product Design." IET Intelligent Transportation Systems 12 (9), 2018, pp. 1103-1109.
31. J. Siegel, R. Bhattacharyya, S. Kumar, S. Sarma, "Air Filter Particulate Loading Detection using Smartphone Audio and Optimized Ensemble Classification." Engineering Applications of Artificial Intelligence 66 (November), 2017, pp. 104-112. **Featured on MIT's Homepage, 10/26/17.**
32. J. Siegel, D. Erb, S. Sarma, "A Survey of the Connected Vehicle Landscape - Architecture, Enabling Technologies,

Applications, and Development Areas." IEEE Transactions on Intelligent Transportation Systems Journal 19 (8), 2018, pp. 2391-2406.

33. J. Siegel, D. Erb, S. Sarma, "Algorithms and Architectures: A Case Study in When, Where and How to Connect Vehicles." IEEE Transactions on Intelligent Transportation Systems Magazine 10 (1), 2018, pp. 74-87. 2018.
34. J. Siegel, D. Erb, I. Ehrenberg, P. Jain, S. Sarma, "Local Viscosity Control Printing for High Throughput Additive Manufacturing of Polymers." 3D Printing and Additive Manufacturing 3 (4), 2016, pp. 252-261.
35. I. Ehrenberg, J. Siegel and D. Erb. "The tallest column: On monetary value of Stature in Jewish Law." Hakirah 25, 2018, pp. 161-173.
36. E. Wilhelm, J. Siegel, S. Mayer, L. Sadamori, S. Dsouza, C. Chau, S. Sarma. "CloudThink: A Scalable Secure Platform for Mirroring Transportation Systems in the Cloud" Transport 30 (3), 2015, pp. 320-329.

Peer-Reviewed Conference Articles

1. J. Siegel, C.J. Chung. "Hands-On Learning in Autonomous Vehicle Development: Outcomes of an NSF REU Program Using Real Vehicles." In *15th IEEE Integrated STEM Education Conference*, 2025.
2. C.J. Chung, J. Siegel. "Impact of the COVID-19 Pandemic on Robofest: A Longitudinal Analysis of STEM Education Outcomes." In *Proceedings of the 15th IEEE Integrated STEM Education Conference (ISEC)*, 2025. IEEE.
3. G. Pappas†, P. Themistocleous, E. Nicodemou, E. Constantinou, J. Siegel. "A Gamified Virtual Library Towards Enhancing Student Engagement In Distance Learning." In *19th Annual International Technology, Education and Development Conference*, 2025.
4. C.J. Chung, J. Siegel, M. Wilson. "Undergraduate Research Experiences for Automated and Connected Vehicle Algorithm Development using Real Vehicles." In *2024 ASEE North Central Section Conference*, 2024.
5. A. Bagiati, K. Kennedy, A. Salazar-Gomez, J. Siegel, C. Breazeal. "Scenario-based Emerging Technologies Workshop for Military Leaders." In *2024 ASEE Annual Conference & Exposition*, 2024.
6. K. Chan*,†, S. Zilberman*,†, N. Polanco*,†, B. Cheng, J.Siegel. " SafeDriveR-L: Towards Test Case Generation for Human-induced Uncertainty in Autonomous Vehicles." International Conference on Software Engineering, 2024.
7. G. Pappas†, S. Seshadri, S. Krishnan, J. Siegel, A. Zorpas. "Triggering Behavioral Change via Gamification for Promoting Energy Efficiency." Accepted to International Conference on Renewable Energy Sources and Energy Efficiency, 2023.
8. S. Shah†, B. Franz†,T. Forgach†, M. Jostes†, C.J. Chung, J. Siegel, A. Zorpas. "Comparing Traditional Computer Vision Algorithms and Deep Convolutional Neural Networks as Self Driving Algorithms for Use in Dynamic Conditions." Accepted to 2023 IEEE MIT Undergraduate Research Technology Conference, 2023.
9. M. Khalfin*,†, J. Volgren*,†, L. LeGoullon*,†, B. Franz*,†, S. Shah*,†, T. Forgach*,†, M. Jones*,†, M. Jostes*,†, C.J. Chung, J.Siegel. " Vehicle-to-Everything Communication Using a Roadside Unit for Over-the-Horizon Object Awareness and Trajectory Planning." IEOM International Conference on Smart Mobility and Vehicle Electrification, 2023. **Winner: IEOM Smart Mobility First Place**
10. G. Pappas†, J. Siegel, I. Papamichael, A. Zorpas. "A Metaverse framework for waste management." Accepted to the 18th International Conference on Environmental Science and Technology, 2023.
11. G. Pappas†, A. Petrides, V. Liapis, and J. Siegel. "Integrating Game-Based Learning in Distance Learning Platforms: The Case of 'Ancient Theater of Philippi' Tool." In *Proceedings of the 2022 International Conference on Interactive Media, Smart Systems and Emerging Technologies (IMET)*, 2022, pp. 1–2. doi:10.1109/IMET54801.2022.9929648.
12. R. Kaddis†, E. Stading†, A. Bhuptani†, H. Song†, C.J. Chung and J. Siegel. "Developing, Analyzing, and Evaluating Self-Drive Algorithms Using Electric Vehicles on a Test Course." The 8th National Workshop for REU Research in Networking and Systems, 2022.
13. G. Falco, N. Gordon, A. Byerly, A. Grotto, J. Siegel, S. Zanlongo. "The Space Digital Dome: Autonomous Defense of Space Vehicles from Radio Frequency Interference." Proceedings of the 2022 IEEE Aerospace Conference, 2022.
14. G. Pappas†, A. Petrides, V. Liapis, J. Siegel. "Ancient Theater of Philippi: A 3D Photogrammetry-based Game for Distance Humanities Learning." Proceedings of INTED, 2022, pp. 3590-3597. **"Gold Award," Cyprus Education Leaders Award, 2021.**
15. K. Karur†, G. Pappas†, J. Siegel, M. Zhang. "End-to-End Synthetic LiDAR Point Cloud Data Generation and Deep Learning Validation." SAE WCX 2022.]**NTUA Thomaidion Award**
16. G. Pappas†, S. Stavrou, A. Peratikou, J. Siegel, K. Politopoulos, C. Christodoulides. "Cyber Escape Room: An Educational 3D Escape Room Game Within A Cyber Range Training Realm." INTEAD2020 Proceedings, 2020, pp. 2621-2627. **"Gold Award," Cyprus Education Leaders Award, 2020.**
17. T. Mustapaa, J. Autiosalo†, P. Nikander, J. Siegel, R. Viitala. "Digital Metrology for the Internet of Things." Proceedings of the 2020 Global Internet of Things Summit (GIoTS), 2020, pp. 1-6.

18. Y. Sun, Y. Wang, Z. Liu, J. Siegel, and S. Sarma. "PointGrowNet: Autoregressively Learned Point Cloud Generation with Self-Attention." IEEE Winter Conference on Applications of Computer Vision, 2020, pp. 61-70.34.5% acceptance.
19. Y. Sun, S.N. Kantareddy, J. Siegel, A. Armengol-Urpi, X. Wu, H. Wang and S. Sarma. "Towards Industrial IoT-AR Systems using DeepLearning-Based Object Pose Estimation." International Performance Computing and Communications Conference, 2019, pp. 1-8.28.4% acceptance.
20. Y. Sun, A. Armengol-Urpi, S.N. Kantareddy, J. Siegel, S. Sarma. "MagicHand: A Deep Learning Approach towards Manipulating IoT Devices in Augmented Reality Environment." In Proceedings of 2019 IEEE Conference on Virtual Reality and 3D User Interfaces, 2019, pp. 1738-1743.17.9% acceptance.
21. R. Strzebkowski, T. Gehrmann, J. Siegel, K. Politopoulos, Christodoulides, C. and Pappas, G. "AR/VR/Game-based Edutainment Applications and Real-Time Data Visualisation Technologies for Discovery Learning in the Industry and Distance Education." In Proceedings of OEB Conference, 2018. **"Best Learning Experience" at 2019 Cyprus Education Leaders Awards.**
22. G. Pappas†, J. Siegel and K. Politopoulos. "VirtualCar: Virtual Mirroring of IoT-Enabled Avacars in AR, VR and Desktop Applications." ICAT-EGVE, 2018, pp. 1-3. **Best Demonstration**
23. J. Siegel, YB. Sun and S. Sarma. "Automotive Diagnostics as a Service: An Artificially Intelligent Mobile Application for Tire Condition Assessment." Services Society Artificial Intelligence and Mobile Services (AIMS) Industry and Applications Track. In Lecture Notes in Computer Science, 2018, pp. 172-184. **Best Paper.**
24. D. Suo, J. Siegel, S. Sarma. "TIRCPS: Merging Cybersecurity and Safety in Product Design." ITS World Congress, 2018.
25. BT. Kumaravel, R. Bhattacharyya, J. Siegel, S. Sarma, N. Arunachalam. "Development of an Internet of Things enabled Manufacturing system for tool wear characterization." Proceedings of the 2017 IEEE International Symposium on Robotics and Manufacturing Automation, 2017, pp. 1-6.
26. J. Siegel, S. Kumar, I. Ehrenberg, S. Sarma, "Engine Misfire Detection With Pervasive Mobile Audio," European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases. In Lecture Notes in Computer Science, 2016, pp. 226-241.26.7% acceptance.
27. J. Siegel, R. Bhattacharyya, A. Deshpande, S. Sarma. "Smartphone-Based Vehicular Tire Pressure and Condition Monitoring." Proceedings of SAI Intelligent Systems, 2016, pp. 805-824.
28. J. Siegel, R. Bhattacharyya, A. Deshpande, S. Sarma. "Smartphone-Based Wheel Imbalance Detection." Proceedings of Dynamic Systems and Controls Conference, 2015, article V002T19A002.
29. S. Mayer and J. Siegel. "Conversations with Connected Vehicles." Proceedings of IoT 2015, 2015, pp. 38-44.
30. J. Siegel, R. Bhattacharyya, A. Deshpande, S. Sarma. "Vehicular Engine Oil Service Life Characterization Using On-Board Diagnostic (OBD) Sensor Data." Proceedings of IEEE Sensors 2014, 2014, pp. 1722-1725.
31. J. Jurewicz, G. Pamanes, Y. Suk Jo, P. Yen, J. Siegel, C. Jacoby, D. Dorsch, A. Winter. "Design Of A Clutch-Less Hybrid Transmission For A High-Performance Vehicle." Proceedings of 2015 ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, 2015, article V010T11A056.

Book Chapters

1. J.Siegel, D. Morris. "Robotics, Automation, and the Future of Sports," in "21st Century Sports," 2^{nd} edition, 2024, pp. 67-85.
2. J.Siegel, D. Morris. "Robotics, Automation, and the Future of Sports," in "Digital Technology Sports (Sports Industry Development Tsinghua Series)," 2022, pp. 61-89. [Translation]
3. G. Pappas*,†, J.Siegel, I. Vogiatzakis, K. Politopoulos. "Gamification and the Internet of Things in Education," in "Handbook of Intelligent Techniques in Educational process," 2022, pp. 317-339.
4. J. Siegel, V. Palusci. "Technological Advances in Child Abuse Prevention," in *Preventing Child Abuse: Critical Roles and Multiple Perspectives*, 2021, pp. 125–152. Nova Science Publishers.
5. J. Siegel, S. Kumar, "Cloud, Context, and Cognition: Paving the Way for Efficient and Secure IoT Implementations" in "Handbook on Integration of Cloud Computing, Cyber Physical Systems and Internet of Things", 2020, pp. 165-192.
6. J.Siegel, D. Morris. "Robotics, Automation, and the Future of Sports," in "21st Century Sports," 2020, pp. 55-73.

Submitted Manuscripts and Pre-Prints

1. G. Pappas†, S. Seshadri, S. Krishnan, J. Siegel, I. Papamichael, and A. A. Zorpas. "Transforming Energy Audit Data into a Gamified Tool for Stakeholder Training." Submitted to *IEEE Access*, 2025.
2. G. Pappas†, D. Lappas, P. Karampelas, J. Siegel, I. Templalexis, and S. Stavrou. "Generic Drone Simulator: Design, Development and User Testing in a Virtual Search and Rescue Mission." Under review at *IEEE Computer Graphics and Applications*, 2025.

3. G. Klevering, K. Wijewardena, X. Zhang, J. Siegel, L. Xiao. "PlaCoB: Collaborative Beamforming for Long-Range Platoon-to-Platoon Communication." Submitted to the *26th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, 2025
4. S. Barnes†, M. Davis†, J. Siegel. "Driving Accessibility: Shifting the Narrative & Design of Automated Vehicle Systems for Persons With Disabilities Through a Collaborative Scoring System." Submitted to *ACM Transactions on Accessible Computing*, 2025.
5. B. Froemming-Aldanondo†, T. Rastoskueva†, M. Evans†, M. Machado†, A. Vadella†, R. Johnson†, L. Escamilla†, M. Jostes†, D. Butani†, R. Kaddis†, C.-J. Chung, J. Siegel. "Evaluating Low-Resource Lane Following Algorithms for Compute-Constrained Automated Vehicles." Submitted to AIRC, 2025.
6. M. Evans†, M. Machado†, R. Johnson†, A. Vadella†, L. Escamilla†, B. Froemming-Aldanondo†, T. Rastoskueva†, M. Jostes†, D. Butani†, R. Kaddis†, C.-J. Chung, J. Siegel. "A Roadside Unit for Infrastructure Assisted Intersection Control of Autonomous Vehicles." Submitted to *IEEE International Conference on Electro Information Technology (EIT)*, 2025.
7. M. Saffary†, N. Inampudi†, J. Siegel. "Developing a Taxonomy of Elements Adversarial to Autonomous Vehicles." *arXiv*, arXiv:2403.00136, 2024.
8. M. Khalfin†, J. Volgren†, M. Jones†, L. LeGoullon†, J. Siegel, C.J. Chung. "Developing, Analyzing, and Evaluating Vehicular Lane Keeping Algorithms Under Dynamic Lighting and Weather Conditions Using Electric Vehicles." *arXiv preprint arXiv:2406.06899*, 2024.
9. S. Bhattacharya†, D. Helo†, J. Siegel. "Impact of Network Topology on Byzantine Resilience in Decentralized Federated Learning." *arXiv preprint arXiv:2407.05141*, 2024.
10. M. Evans†, M. Machado†, R. Johnson†, A. Vadella†, L. Escamilla†, B. Froemming-Aldanondo†, T. Rastoskueva†, M. Jostes†, D. Butani, R. Kaddis†, J. Siegel. "Vehicle-to-Everything (V2X) Communication: A Roadside Unit for Adaptive Intersection Control of Autonomous Electric Vehicles." *arXiv preprint arXiv:2409.00866*, 2024.
11. B. Froemming-Aldanondo†, T. Rastoskueva†, M. Evans†, M. Machado†, A. Vadella†, R. Johnson†, L. Escamilla†, M. Jostes†, D. Butani, R. Kaddis†, J. Siegel. "Developing, Analyzing, and Evaluating Self-Drive Algorithms Using Drive-by-Wire Electric Vehicles." *arXiv preprint arXiv:2409.03114*, 2024.
12. T. Ahmed†, J. Siegel. "Pareto Data Framework: Steps Towards Resource-Efficient Decision Making Using Minimum Viable Data (MVD)." *arXiv preprint arXiv:2409.12112*, 2024.
13. K. Rousch*†, E. Kassens-Noor, M. Cai, P. Savolainen, J.Siegel, . "Human Behavior and Automated Driving Features." Submitted to Journal of Traffic and Transportation Engineering.
14. A. Terwilliger*,†, J.Siegel. " The AI Mechanic: Acoustic Vehicle Characterization Neural Networks." arXiv Preprint, 2022.
15. K. Yang, S. Krishnan, J.Siegel. " Individualized Customer Value: Where Hyper-Targeting and Hyper-Tailoring Meet." SSRN Preprint, 2022.
16. J. Siegel, G. Falco. "Cyberphysical Sequencing for Distributed Asset Management with Broad Traceability." arXiv Preprint, 2021.

Theses

1. Siegel, Joshua. "Data Proxies, the Cognitive Layer, and Application Locality: Enablers of Cloud-Connected Vehicles and Next-Generation Internet of Things" Ph.D. Dissertation. Massachusetts Institute of Technology, 2016.
2. Siegel, Joshua. "CloudThink and the Avacar: embedded design to create virtual vehicles for cloud-based informatics, telematics, and infotainment" S.M. Thesis. Massachusetts Institute of Technology, 2013.
3. Siegel, Joshua. "Design, Development, and Validation of a Remotely Reconfigurable Vehicle Telemetry System for Consumer and Government Applications," S.B. Thesis. Massachusetts Institute of Technology, 2011.

Technical and White Papers

1. J. Siegel, S. Krishnan, B. Subirana, S. Sarma., J. Merritt, L. Joseph, R. Arias. "Realizing the Internet of Things: A Framework for Collective Action." **World Economic Forum Davos, January 2019.**
2. E. Wilhelm, J. Siegel, S. Mayer, J. Paefgen, M. Tiefenbeck, M. Bicker, S. Ho, R. Dantu, S. Sarma. CloudThink: An Open Standard for Projecting Objects into the Cloud
3. J. Siegel. "Internet of Things Trends." *World Economic Forum Transformation Map*, November 2017; updated January 2019.
4. S. Sarma and J. Siegel. "Industrial Intelligence: AI's Implications on Security, Seamlessness and Services for the IIoT." Industrial Internet Consortium Journal of Innovation. November, 2017.
5. J. Siegel. "Neural Network-Enabled Arc-Fault Detection for Critical Infrastructure Supervision." **Spotlight,** Homeland Defense and Security Information Analysis Center. August 2018.
6. Contributor - [World Economic Forum] - Accelerating the Impact of IoT Technologies

7. Review Committee - [World Economic Forum] - State of the Connected World (2023)

Datasets

1. Game and Survey Data for "Game-Based Simulation and Study of Pedestrian-Automated Vehicle Interactions"
2. Oxidized and Non-Oxidized Tire Sidewall and Tread Images
3. Single Family Hot Water Flow Data
4. Electronic Circuit Current Data
5. Automotive Engine Air Filter Audio Samples - Free Flowing, Contaminated and Obstructed Samples

Popular Media

1. "Finding Big Value in Small Data." Automation Alley, December, 2024.
2. "Tesla is last in Initial Quality, but it's the industry that needs to change." AutoNews, October, 2020.
3. "Researcher: Question 1 wrong way to go." CommonWealth Magazine. October, 2020.
4. [Wall Street Journal] A Classic Chevy Fit for a Hometown Parade - **On MIT Homepage, 8/19/2018**
5. "Bad (Internet of) Things." Computerworld, 30 November, 2016.
6. "Imagining The 'Connected' Car of the Future." PRI's "Science Friday." 30 September, 2016.
7. "Smartphone Mechanic." BYU Radio's "Top of Mind with Julie Rose." December 13, 2017
8. "S2E05." The "Internet of Things Podcast." February 2018.
9. "Lansing Stunts the Automotive Revolution." The Detroit News, Editorial Section. 5 May, 2016.
10. "CarKnow's Car Hacking." AOL Translogic. Episode 135.

Proceedings Edited

1. IoT '22: Proceedings of the 12th International Conference on the Internet of Things

Other Works

1. "ECMA TC53" (Contributor) - Resulting in ECMA419 1st (2021),2nd (2023), and 3rd (forthcoming, 2025) editions, TR/109, TR/110
2. "Robofest Advisory Board" (Member) – Resulting in Robofest 2021 Assessment Report, 2022, 2023, and 2024

Theses Supervised

1. G. Pappas. "Extended Reality (XR) & Gamification in the context of the Internet of Things (IoT) and Artificial Intelligence (AI)." Ph.D. Dissertation, Electrical and Computer Engineering, Michigan State University ***and*** National Technical University of Athens. 2021.
2. U. Coda. "Artificial Intelligence for Vehicle Engine Classification and Vibroacoustic Diagnostics." Masters Thesis, Automotive Engineering, Politecnico Di Torino. 2020.

SELECTED INVITED TALKS

1. [**Keynote**] "AI for Benefit Consulting." TRUE Network Advisors Partners' Event. (Phoenix, AZ, 2/2025)
2. [**Keynote**] "DeepTech and Mobility Innovation." GM Geek Week. (Digital, 4/2022)
3. "The DeepTech Lab." MIT AutoID Lab. (Digital, 12/2020)
4. "Robots, Automation, and the Future of Sports." MIT Horizon. (Digital, 12/2020)
5. "The Impact of Connectivity and Automation on Fleet Operations." NC Clean Energy Sustainable Fleet Technology Conference Series. (Digital, 11/2020)
6. "The Deep Technologies Behind Industry 4.0." MMAIChE Seminar. (Digital, 11/2020)
7. "Artificial Intelligence and Machine Learning in Manufacturing." PSU ICDS. (Digital Panel, 10/2020)
8. "How to Write a Research Paper." MSU Graduate Lunch and Learn Seminar. (Digital, 10/2020)
9. "DeepTech and the Digital Transformation Ecosystem." YPO Executive Education. (Digital, 8/2020)
10. "Deep Technology." CampusParty 2020. (Digital, 7/2020)
11. ~~"Keynote." Robofest.~~ *Cancelled due to COVID-19.* (Pachuca, Mexico, 4/2020)
12. "V2V and Automotive Cybersecurity." MSU CSE/ECE491 Guest Lecture. (East Lansing, MI, 3/2020)
13. "Kickoff." MIT-Lemelson & MSUK-12 Mid-Grant Review (East Lansing, MI, 2/2020)
14. "The IoT, Connected Vehicles, and Localization." SureThing Workshop (Lisbon, Portugal, 1/2020)
15. Defining Deep Technology. 2019 (International Webinar)
16. Making Connectivity Commonplace - Michigan State University (Lansing, MI). 2018.
17. Making Connectivity Commonplace - Wayne State (Detroit, MI). 2018.
18. IoT as a Design Tool - MIT Ideation Lab (Cambridge, MA). 2018.
19. Context and Cognition for Secure and Efficient IoT - UWash Summer Institute (Snoqualmie, WA, 2017)

20. UBS Investor Meeting - Connected Vehicles, Autonomy, and Mobility Services (Cambridge, MA)
21. [**Keynote**] Killer Apps for the IoT - MIT Startup Exchange Conference, (Cambridge, MA)
22. DataDriven - The Machine Learning Mechanic - SAE World Congress, (Detroit, MI, USA)
23. UBS Investor Meeting - Connecting Vehicles (Cambridge, MA)
24. Cloud and Cognition for Cost and Efficiency Improvements - IoT Meetup, (International Webinar)
25. IoT's Role in Industry - Disruptive Angels "Hacking Innovation" Conference, (International Webinar)
26. Data Proxies and Cognition in Industry - MIT ILP R&D Conference, (Cambridge, MA)
27. The IoT for Energy Applications - Lincoln Labs Seminar 2016, (Lincoln, MA)
28. Field Intelligence Lab - MIT Office for Digital Learning Lunch Series, (Cambridge, MA)
29. Cloud, Context, and Cognition - Viakable Forum on Technology and Innovation 2016 (Monterrey, MX)
30. Low-cost, pervasive sensing leveraging existing wireless infrastructure - IoT 2015 (Seoul, Korea)
31. Engineering Connectivity: Hot-Rodding in the Digital Era - EurekaFest 2015 (Cambridge, MA, USA)
32. CarKnow - NextEnergy GAIC at SAE World Congress (Detroit, MI, USA)
33. Unlocking Open Data Standards - IoT 2014 (Cambridge, MA, USA)
34. CarKnow and the Virtual Vehicle - t=0 Hardware Night 2014 (Cambridge, MA, USA)
35. CarKnow - University Research and Entrepreneurship Symposium 2013 (Cambridge, MA, USA)
36. Cloudy with a Chance of Big Data - IoT Meetup Kickoff Presentation 2013 (Cambridge, MA, USA)
37. CloudCar - Verizon 4G Venture Forum 2013 (San Francisco, CA, USA)
38. Presenter with MIT Industrial Liaison Program (50+ companies and 60+ occasions)
39. Presenter with MIT Entrepreneurs Club, MassChallenge, Global Automotive and Mobility Challenge

SELECTED CONFERENCE PRESENTATIONS, POSTERS, AND ABSTRACTS

1. A. Saffary†, J. Siegel. "Developing a Taxonomy for Characterizing Adversarial Events in Automated Driving." Accepted as a poster to MSU Engineering Symposium, 2024.
2. J. Rutkowski†, J. Siegel. "An Ethnographic Study of Reactions to Trolley Problem Scenarios in Self-Driving Cars." Accepted as a poster to MSU URAAF, 2023.
3. C. Conrad†, R. Rodriguez†, P. Savolainen, T. Gates and J. Siegel. "Unintended Consequences: Impacts of Driver Behavior on Automation." Accepted as a poster to MSU Mid-SURE, 2022.
4. K. Rousch†, N. Joshi†, C. Yancovitz†, P. Savolainen, E. Kassens-Noor, J. Siegel M. Cai, and F. Abatan. "The Future of Crash Prevention." Accepted as a poster to MSU Mid-SURE, 2021.
5. J. Siegel, G. Pappas†, V. Karaiskou, K. Politopoulos, and C. Chritodoulides "Virtual Art Viewing for Education and Learning (VAVEL): A tool for automatic Virtual Art Space creation for students and artists," accepted to RISE IMET 2020 (presented 2021).
6. E. Kassens-Noor, Z. Neal, J. Siegel and T. Decaminada. "Choosing Morals over Ethics: a Possible Determinant to Embracing Autonomous Vehicles?" Accepted as a poster to TRB Annual Meeting 2021.
7. J. Siegel. "Cracking the code on automotive tire faults." AI and Mobile Services, 2018. Seattle, WA. **Best Paper.**
8. J. Siegel. "Making Things Think: How context and cognition secure and supervise the IoT" New Directions in Software Technology 2017. Maui, HI
9. J. Siegel, S. Kumar, I. Ehrenberg and S. Sarma. "Automotive Engine Misfire Detection Using Smartphone Audio." European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases 2016. Riva del Garda, Italy.
10. J. Siegel, R. Bhattacharyya, A. Deshpande and S. Sarma. "Smartphone-Based Vehicular Tire Pressure and Condition Monitoring." SAI Intelligent Systems 2016. London, England.
11. S. Mayer and J. Siegel. "Conversations with Connected Cars." IoT 2015. Seoul, Korea.
12. J. Siegel, R. Bhattacharyya, A. Deshpande, S. Sarma. "Vehicular Engine Oil Service Life Characterization Using On-Board Diagnostic (OBD) Sensor Data." IEEE Sensors 2014. Valencia, Spain.
13. J. Siegel. "CloudThink: Using 'Avacars' to Solve the Vehicle Data Access Problem" — BMW/EURECOM Summer School, "Highly Autonomous Driving in the Internet of Things," Tegernsee, Germany.
14. J. Siegel. "CarKnow: Avacars Enabling Virtual Vehicles." SENSORS Expo 2014. Rosemont, IL, USA.
15. D. Erb, J. Siegel, I. Ehrenberg, P. Jain. "Local Viscosity Control Printing." MIT deFlorez Competition 2015. Cambridge, MA, USA.
16. J. Siegel. "CARduino and CloudThink." MIT deFlorez Competition 2013. Cambridge, MA, USA.
17. J. Siegel. "Remotely Reconfigurable Vehicle Telemetry System and Supporting Applications." MIT deFlorez Competition 2011. Cambridge, MA, USA.
18. J. Siegel. "Wearable Non-Contact AC Voltage Detector." MIT deFlorez Competition 2010. Cambridge, MA, USA.

INVITED CONFERENCES

1. [Ideator] 2018 US SOCOM "Innovation Foundry 2.0"
2. [Invited Guest] 2017 & 2018 Detroit Homecoming

STUDENTS

Among multiple appointments at MSU and MIT, Josh has directly advised:

1. [PostDoc] Kehinde Elelu
   Audio Diagnostics
2. [Ph.D.] Yongbin Sun
   Computer Vision
3. [Ph.D.] Dajiang Suo
   Cybersecurity
4. [M.S.] Batuhan Yucer
   Self-Driving
5. [M.S.] Onur Yucedag
   Self-Driving
6. [B.S./M.S.] Jacob Rutkowski
   Games as Tools
7. [S.M.] Pankhuri Sen
   Low-cost Sensing
8. [Staff] Shane Pratt
   Embedded Intelligence
9. [Affiliate] Alex Soley
   Social Impact of AVs
10. [S.B.] Elizabeth Pedlow
    Robotic Platforms
11. [S.B.] Aaron Rose
    Connected Car
12. [S.B.] Doug Coughran
    Connected Car
13. [S.B.] Hassan Kane
    Connected Car
14. [S.B.] Alex Nachlas
    Connected Car
15. [Visiting] Bala Thoravi Kumaravel
    IoT Manufacturing
16. [Visiting] Pranav Sharan
    Computer Vision
17. [B.S.] Aniruddha Das [MIT + Georgia Tech]
    Embedded Intelligence
18. [B.S.] Owen Evey
    Computer Vision
19. [B.S.] Aditya Ashok
    Vibroacosutic Diagnostics
20. [B.S.] Matthew Rhodes
    Pervasive Intelligence
21. [B.S.] Daniel Lee
    Vibroacoustic Classification
22. [B.S.] Ashok Dodaballapur
    Robotics
23. [B.S.] Aarham Wasit Khan
    Hackathon Impacts
24. [B.S.] Minh Nguyen
    Applied Deep Learning
25. [B.S.] Hung Luong
    Applied Acoustic Processing
26. [B.S.] Aaditya Moudgil
    Applied Acoustic Processing
27. [B.S.] Dheeraj Thota
    TBD
28. [B.S.] Nrushad Joshi
    NSF REU - ADAS
29. [B.S.] Katelyn Rousch
    NSF REU - ADAS
30. [B.S.] Cleveland Yancovitz
    NSF REU - ADAS
31. [B.S./Intern] Aidan Erickson
    Cybersecurity
32. [B.S./Intern] Josué Kpodo [MSU, Moddable]
    Metadata Standards for IoT
33. [M.S.] Umberto Coda [AE, Politecnico di Torino]
    Vibroacoustic Diagnostics
34. [Ph.D.] Ali Saffary
    Safer Self-Driving
35. [M.S.] Dave Ackley
    Cybersecurity
36. [Ph.D.] Jeff Walthers
    Cybersecurity
37. [Ph.D.] Tashfain Ahmed
    Acoustic Diagnostics
38. [Ph.D.] Harrison Fernandez
    Cybersecurity
39. [Ph.D.] Karthik Karur [ECE]
    Enhanced Braking Systems
40. [Ph.D.] Adam Terwilliger
    Computer Vision
41. [Ph.D.] Juuso Autiosalo [ME, Aalto University]
    Digital Twins
42. [B.S.] Bashhar Byrouthy
    ROS Implementation
43. [**Dual Ph.D.**] Georgios Pappas [ECE; MSU + NTUA + MIT Bootcamps]
    IoT, AI and Games as Tools
44. [B.S.] Cass Conrad
    NSF REU - ADAS
45. [B.S.] Ryan Rodriguez
    NSF REU - ADAS
46. [B.S.] Aarna Bhuptani
    NSF REU - Self-Drive
47. [B.S.] Alexander Quezada
    NSF REU - Self-Drive
48. [B.S.] Cebastian Chinolla
    NSF REU - Self-Drive
49. [B.S.] Enver Stading
    NSF REU - Self-Drive
50. [B.S.] Heather Song
    NSF REU - Self-Drive
51. [B.S.] Ryan Kaddis
    NSF REU - Self-Drive
52. [B.S.] Seth Rodriguez
    NSF REU - Self-Drive
53. [B.S.] Shika Rao
    NSF REU - Self-Drive
54. [B.S.] Michael Khalfin
    NSF REU - Self-Drive
55. [B.S.] Jack Volgren
    NSF REU - Self-Drive
56. [B.S.] Luke LeGoullon
    NSF REU - Self-Drive
57. [B.S.] Brendan Franz
    NSF REU - Self-Drive
58. [B.S.] Shilpi Shah
    NSF REU - Self-Drive
59. [B.S.] Travis Forgach
    NSF REU - Self-Drive
60. [B.S.] Matthew Jones
    NSF REU - Self-Drive
61. [B.S.] Milan Jostes
    NSF REU - Self-Drive
62. [B.S.] Anna Vadella
    NSF REU - Self-Drive
63. [B.S.] Benat Froemming-Aldanondo
    NSF REU - Self-Drive
64. [B.S.] Luis Escamilla
    NSF REU - Self-Drive
65. [B.S.] Marcial Machado
    NSF REU - Self-Drive
66. [B.S.] Michael Evans
    NSF REU - Self-Drive
67. [B.S.] Rickey Johnson
    NSF REU - Self-Drive
68. [B.S.] Tatiana Rastoskueva
    NSF REU - Self-Drive
69. [H.S./B.S.] Nishan Inampudi
    EM Emissions / Self-Driving
70. [H.S.] 20 Cranbrook Kingswood 2018, 2025 Senior May Students
    IoT / Self-Driving

FUNDING AND GRANTS

At MSU, Josh was PI of the NSF-funded Research Experience for Undergraduates "Collaborative Research: Developing, Analyzing, and Evaluating Self-Drive Algorithms Using Real Street Legal Electric Vehicles on Campus," supported under grant award 2150096 ($108,000), supported under the MTRAC Program by the State of Michigan 21st Century Jobs Fund received through the Michigan Strategic Fund and administered by the Michigan Economic Development Corporation ($40,000), and by the MSU Foundation Venture Fellows program ($85,491) . He also ran the Elektrobit Virtual Laboratory (automotive and related teaching and research) and supports MSU's College of Engineering in managing a gift from Magna. Siegel was previously funded by British Petroleum, and helps MSU extra curricular activities, like the Indy Autonomous Challenge team, garner sponsorship and external support from government, corporate, and academic partners.

Josh directly secured and managed over $1.5M in government grants and corporate contracts while at MIT. Projects were sponsored by Ford, CMPC, Jaguar Land Rover, DOT-Volpe, NSF, and the Oregon DOT. NVIDIA provided support with two GPU Grants (Titan Xp GPUs). Particle and Texas Instruments have provided in-kind donations of hardware to Siegel's work at both MIT and MSU.

PROFESSIONAL MEMBERSHIPS

IEEE Senior Member, SAE Member, ACM Member

LEADERSHIP AND ACTIVITIES

Treasurer ('08-'11, '13-'15) & President ('10-'14), MIT Entrepreneurs Club February 2008 - December 2018

- Host weekly meetings with entrepreneurs, provide feedback, organize events to inspire students
- Organize outreach and recruitment, including activity fairs and MIT ESP programming
- Helped organize industry-affiliated Hackathon at MIT

Co-President ('08-'09), MIT Electric Vehicle Team October 2007 - August 2009

- Researched rapid recharge technology and converted 1976 Porsche 914 to electric drive
- Regular presenter at MIT Energy Club events

Team Captain ('08-'10) & Mentor ('10-'12), ISN Soldier Design Competition November 2007 - June 2012

- Developed solutions to meet urgent soldier needs, including hardware, electronics, and software
- Created MEMS inertial navigation system for soldier use in GPS-deprived environments

Entrepreneurship Lead ('09-'11) & SteerCo ('10-'11), MIT Hibur Delegation November 2009 - March 2011

- Member of student-led delegation to the Technion, focusing on entrepreneurship and EV research
- Worked with Technion students to set up internship and research partnerships

House, Parking & Risk Manager, SteerCo, MIT Alpha Epsilon Pi December 2007 - June 2011

- Maintained two houses, coordinated major renovations
- Volunteer work & philanthropy: organize food drives, charity events, run Gift of Life registry
- Teach with other members in MIT's "Splash" program, run by MIT Educational Studies Program

RECENT SERVICE

Faculty Co-Lead, Michigan State University Indy Autonomous Challenge 2024
2024 Goodwood Time Trial Record Holder; Indy Motor Speedway Pass Challenge Winner
Reviewer, National Science Foundation, Various Programs 2020-Present
Technical Program Committee Member, ACM IoT Conference 2023
Technical Program Committee Co-Chair, ACM IoT Conference 2022
Co-Author & Curator, World Economic Forum March 2017-Present

- Co-author of IoT white paper shared at 2019 Davos; reviewer, 2023 State of the Internet of Things
- Contributor, World Economic Forum. Accelerating the Impact of IoT Technologies
- Develop content for "Transformation Map" on the Internet of Things

Volunteer Judge, National Invention Convention 2022-Present

- Review applications for NIC Prizes

Screening Committee Member, Lemelson-MIT Student Prize & InvenTeams 2016-Present

- Review applications for Lemelson-MIT National Student Prize and InvenTeams

Mentor, MSU Honors College Professorial Assistantship Program August 2020-Present
Committee Member, MSU CSE Curriculum Committee February 2019-Present
Faculty Co-Lead, MSU AutoDrive Challenge Student Team August 2019-Present
Student Advisor/Mentor, MSU EnSURE Program April 2019-August 2019
Program Committee, HyperAgents Workshop, The WebConf 2019 October 2018-2019
Review Panelist, National Science Foundation 2019-Present
Judge, Robofest (Lawrence Technological University) 2019-Present
Invited Expert, ECMA TC53 (leading sensor metadata provenance specification) 2018-Present
Reviewer, Ontario Ministry of Agriculture, Food and Rural Affairs research proposals 2018-2019
Organizer, MSU CSE New Faculty Meetings 2019
Representative, Cranbrook Regional Alumni Network (New England) October 2017-December 2018
Scientific Committee, IEEE Conference on IoT for the Global Community January 2017-July 2017
Technical Program Committee, Electric Vehicle Systems, ACM eEnergy 2016 December 2015-May 2016

Reviewer

- **IEEE** Transactions on Intelligent Transportation Systems, Intelligent Transportation Systems Magazine, Internet of Things, Sensors Journals
- **Elsevier** Engineering Applications of Artificial Intelligence
- **Springer Nature** Applied Science
- **Taylor & Francis** Journal of Urban Affairs
- **Wiley** Engineering Reports
- **MDPI** IoT, Sensors, Sustainability, Applied Sciences
- **TRB** Annual Meeting

Other service:

1. 2022-Present - Advising US government
2. 2020-Present - Consulting for the CEO (Mid-Scale Private Company)
3. 2019-Present - Consulting for the Board (Large Public Company)
4. 2018-Present - Homeland Defense And Security Information Analysis Center - Subject Matter Expert
5. 2018-Present - GLG Consulting - Council Member
6. 2018 - Expert Witness - IoT Litigation
7. 2018 - Red Line Editorial - Technical Content Editor for The Internet of Things: Tech Bytes
8. 2018 - CyberReason - Expert Interviewee for "The Defenders" Movie
9. 2018 - MIT/Emeritus Entrepreneurship Bootcamp - Judge & Panelist
10. 2017/8 - UBS Investments - Industry Expert
11. 2017 - Cranbrook-Kingswood "Detroit Ex-Pat" Alumni Panel - Panelist
12. 2017 - MIT ILP "Killer Apps in the IoT" - Panelist

ABBREVIATED MEDIA COVERAGE

1. [MIT News] Low-cost "smart" diaper can notify caregiver when it's wet - **MIT Homepage, 2/14/2020**
2. [Boston Globe] New disposable smart diaper sends phone a message when a change is needed]
3. [The Verge] RFID sensor is powered by dirty diapers]
4. [The New York Times] Short-Term Programs for Long-Term Success]
5. [MIT News] MIT engineers build smart power outlet - **MIT Homepage, 6/18/2018**
6. [MIT News] Revolutionizing everyday products with artificial intelligence]
7. [VentureBeat] MIT researchers develop a smart power outlet
8. [DigitalTrends] MIT engineers a smarter, safer power outlet (for IoT, of course)
9. [MIT News] New Software Lets your Car Tell you What it Needs - **MIT Homepage, 10/26/2017**
10. [Digital Trends] MIT app listens to a car to diagnose problems before symptoms are apparent
11. [ArsTechnica] A phone app that listens to your car and could warn of impending trouble
12. [Smithsonian] This App Can Diagnose Your Car Trouble
13. [Technology Review] A Stethoscope for Cars - January/February 2018 Issue
14. [Geek.com] MIT App Turns Anyone Into the Car Whisperer

15. [Yahoo Finance] Smartphones could diagnose car maintenance needs ahead of problems by listening
16. [ThomasNet] MIT App Listens for a Car's Plea for Maintenance
17. [Highways Today] Cars, Trucks and Construction Equipment will soon tell you what they need
18. [PRI] Cars in the Cloud
19. [Science Friday] Imagining the "Connected" Car of the Future
20. [AAAS Science Update] Car Noise App
21. [WIRED] The Internet of Anything: The Little Box That Hooks Your Old Car Up to the Internet
22. [Translogic] TRANSLOGIC 135: CarKnow Car Hacking
23. [AutoBlog] In Detail: CarKnow Car Hacking
24. [AutoBlog] How to hack a Buick Regal with CarKnow
25. [Mass High Tech] MIT spawns tech that succeeds when GPS fails
26. [Mass.Gov Blog] Astra IDentity and CarKnow the first MassIT Government Innovation Prize
27. [MIT News] Lemelson-MIT announces 2015 National Collegiate Student Prize Competition winners
28. [Discovery News] College Inventors Awarded for Leading the Future of Tech
29. [MIT News] Tomorrow's soldier: powered, spring-loaded and located
30. [MIT News] MIT student ingenuity plus high-tech batteries yields advanced all-electric Porsche
31. [MIT News] Outside the classroom, students create future businesses

HOBBIES AND INTERESTS

- Car hacking
- Auto restoration
- Motorsport
- Electric vehicles
- DIY CNC Tools