

Josh Siegel, Ph.D.

SUMMARY

I am an inventor, academic, and serial entrepreneur with a passion for creating and fostering transformative ideas. I build smart technologies for a changing world through the application of Deep Technology's constituent capabilities of sensing, connectivity, inference, and actuation. In my academic pursuits, I help students self-start, disrupt, innovate, and lead within emerging industries.

CURRENT ROLES

Assistant Professor, Computer Science and Engineering January 2019 - Present
(0% appointment with Electrical and Computer Engineering)
Michigan State University, East Lansing, MI

Short-Term Lecturer Appointments, Open Learning & Sloan School March 2019 - Present
Massachusetts Institute of Technology, Cambridge, MA

RESEARCH INTERESTS

I work through the lens of technology entrepreneurship to develop “Deep Technologies” impossible yesterday, difficult to build today – only feasible with the significant intellectual capital and technical know-how – and so impactful and transformative that they will quickly become invisible, basic needs.

DeepTech includes: connected and automated vehicles; the Internet of Things; pervasive sensing and universal diagnostics; artificial intelligence; data-driven product design and manufacturing; adaptive cybersecurity.

Example projects:

- Developed an architecture improving security and efficiency of constrained connected systems
- Led a cross-university team to develop and commercialize an award-winning telematics platform
- Collaborated with industry to implement algorithms improving vehicle efficiency and reliability

TEACHING INTERESTS

DeepTech; Automated Vehicles; Internet of Things; technology entrepreneurship; design and manufacturing.

Teaching examples:

- Co-developed MSU CSE-ECE-ME 491, SP19: “Creating Autonomous Vehicles”
- Created MSU CSE891/ECE802, FS19: “Advanced Topics in Automated Vehicles”
- Developing CSE491, SP20: “Entrepreneurship in the IoT” (→ SP21 “DeepTech Entrepreneurship”)
- Organized “DeepTech” and “Internet of Things” Bootcamps; coached Innovation & Entrepreneurship
- Simulation Leader, MIT Sloan - Implementing Industry 4.0
- Developed Bootcamps for INKTalks, Cranbrook Kingswood schools, and companies
- Created four-day Printed Circuit Board design-and-build course

EDUCATION

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

TEACHING AND MENTORING

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

- Created: “Creating Automated Vehicles,” “Advanced Topics in Automated Vehicles”, and “Entrepreneurship in the Internet of Things”

Lead Instructor, MIT DeepTech and IoT Bootcamps and Private Courses May 2017 - Present
India; Cambridge, MA; Detroit, MI

- Developed curricula and delivered to high school through executive audiences

Instructor, Implementing Industry 4.0 June 2017 - Present
Lead Instructor, Hands on PCB Fabrication of Cloud Connected Devices January 2016
Teaching Assistant, 2.008, Design and Manufacturing II Fall 2012
Teaching Assistant and Advisor, SEM.089/095, Tech Start-Ups at MIT I & II Fall '10-'16
Massachusetts Institute of Technology, Cambridge, MA

PROFESSIONAL EXPERIENCE

Founder & CTO, CarKnow LLC dba DataDriven, Brookline, MA December 2016 - February 2019
DataDriven uses mobile device sensors to proactively detect and respond to vehicle faults.

- Finalist for 2017 Global Automotive and Mobility Innovation Challenge; semi-finalist 2016&17 MIT 100K; shortlist Telematics Update “Best Aftermarket Telematics Product or Service;” 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 and Novi, MI June 2011 - Present

- Designed hardware for mobile energy audit platform (used on 1M+ homes)
- Designed data collection system for proprietary automotive networks for the University of North Texas
- Active as an industry expert / expert witness / speaker-for-hire / content-consultant for books / consultant to public company boards

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

- Commercialized undergraduate research on road condition monitoring

- Developed “context layer” for reconfiguring applications based on motion cues
- Interviewed for acqui-hire by major U.S. technology company

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

- Developed prize-winning low-cost inertial navigation hardware and software
- Algorithms were ultimately licensed by a game-development studio

SELECTED AWARDS

- **2018 ICAT-EGVE Best Demo Award**
- **2018 SCF Artificial Intelligence and Mobile Services (AIMS) Best Paper Award**
- **2015 \$15,000 Lemelson-MIT National Collegiate Student “Drive It” Prize Winner**
- 2015 Hero of the Year in the Cloud Innovation World Cup
- 2015 Telematics Update 2015 “Industry Newcomer” Award Finalist
- 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)
- 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 Winner MIT deFlorez Mechanical Engineering Competition (CloudCar System)
- **2008 MIT/ISN Soldier Design Competition Boeing Prize Winner**
- McCaul Endowment Grant for autonomous vehicle development
- 1st in 2007 University of Michigan, State of Michigan High School Programming Contest (team of 3)
- 2 Cranbrook Kingswood High School Prize Programming Awards
- Cranbrook Kingswood High School Studio Art Award (Metalwork), Excellence In Art Award (Prints)
- Cranbrook Kingswood High School Caltech Book Award, Strickland Writing Scholar Award

PATENTS

1. Jacoby, Chad L; Jurewicz, Jake M; Siegel, Joshua E; Winter, Amos G; Jo, Young S; Panames, Guillermo P; Dorsch, Daniel S. Clutchless Shifting of a Manual Transmission. US Patent 10,315,659, issued June 11, 2019.
2. Erb, Dylan C, Ehrenberg, Isaac M, Jain, Pranay, and Siegel, Joshua E. Systems, Devices and Methods for Three-Dimensional Printing. US Patent Application 14/711,213, issued June 2018.
3. Siegel, Joshua E 2015. System and Method for Providing Predictive Software Upgrades. US Patent 9,086,941, issued Jul 21, 2015.
4. Sarma, Sanjay E, Siegel, Joshua E, Ho, Stephen SW. System and Method for Providing Road Condition and Congestion Monitoring Using Smart Messages. US Patent 8,566,010, issued Oct 22, 2013.
5. [Pending] Siegel, Joshua E; Kumar, Sumeet; Ehrenberg, Isaac. System, Device, and Method for Feature Generation, Selection, and Classification for Audio Detection of Anomalous Engine Operation. US Patent Application 15/639,408.
6. [Pending] Siegel, Joshua E; Bhattacharyya, Rahul. Applying Motion Sensor Data To Wheel Imbalance Detection, Tire Pressure Monitoring, And/Or Tread Depth Measurement. US Patent Application 15/639,192.
7. [Pending] Siegel, Joshua E; Sarma, Sanjay E. Systems and Methods for Managing Data Proxies. US Patent Application 15/483,768.
8. [Pending] Sarma, Sanjay E; Bhattacharyya, Rahul; Siegel, Joshua E.; Reddy Rantareddy, Sai Nithin; Armengol Urpi, Alexandre and Sen, Pankhuri. System and Method for Wireless Sensing of Health Monitoring. US Patent Application 16/16/567,054.

SELECTED PUBLICATIONS (of 50+ patents, papers, chapters, and articles)

Peer-Reviewed Journal Articles

1. 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.” Accepted to IEEE Sensors Journal.
2. J. Siegel, M. Beemer and S. Shepard. “Non-Destructive Testing for Delamination and Voids in Fused Deposition Modeled Parts Using Artificial Intelligence.” Accepted to Elsevier Additive Manufacturing.
3. J. Siegel, S. Sarma. “Using Open Channels to Trigger IoT’s Invited, Unintended Consequences.” IEEE Security & Privacy, Volume 17, Issue 3, pp. 49-55. May-June 2019.
4. J. Siegel, S. Sarma. “A Cognitive Protection System for the Internet of Things.” IEEE Security & Privacy, Volume 17, Issue 3, pp. 40-48. May-June 2019.
5. J. Siegel. “Cognitive Protection Systems for the Internet of Things.” Homeland Defense and Security Information Analysis Center Journal. Volume 5, Issue 4, pp. 16-20. January 2019.
6. A. Soley,* J. Siegel*, D. Suo, S. Sarma. “The Value in Vehicles: An Economic Assessment of Automotive Data.” Digital Policy, Regulation and Governance, 2018. * Authors contributed equally
7. 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. September 2018. **Featured on MIT’s Homepage, 6/15/18.**
8. J. Siegel, S. Kumar, S. Sarma, “The Future Internet of Things: Secure, Efficient, and Model-Based.” IEEE IoT Journal. Volume 5, Issue 4. August 2018.
9. D. Suo, J. Siegel, S. Sarma. “Merging Cybersecurity and Safety in Product Design.” Accepted to IET Intelligent Transportation Systems. Volume 12, Issue 9.
10. 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. Volume 66. November 2017. **Featured on MIT’s Homepage, 10/26/17.**
11. 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. Volume 19, Number 8. August 2018.
12. 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. Volume 10, Issue 1, 2018.
13. J. Siegel, D. Erb, I. Ehrenberg, P. Jain, S. Sarma, “Local Viscosity Control Printing for High Throughput Additive Manufacturing of Polymers.” In press in “3D Printing and Additive Manufacturing,” December 2016.
14. I. Ehrenberg, J. Siegel and D. Erb. “The tallest column: On monetary value of Stature in Jewish Law.” Hakirah, Volume 25, 2018.
15. 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). October 2015.

Peer-Reviewed Conference Articles

1. 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.” Abstract accepted to INTED 2020.
2. Y. Sun, Y. Wang, Z. Liu, J. Siegel, and S. Sarma. “PointGrowNet: Autoregressively Learned Point Cloud Generation with Self-Attention” - Accepted to IEEE Winter Conference on Applications of Computer Vision 2020.
3. 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” - Accepted to International Performance Computing and Communications Conference 2019.
4. 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.
5. R. Strzebkowski, T. Gehrman, J. Siegel, K. Politopoulos, Christodoulides, C. and Pappas, G. “AR/VR/Game-based Edutainment Applications and Real-Time Data Visualisation Technologies for Discovery Learn-

ing in the Industry and Distance Education.” In Proceedings of OEB Conference, December 2018. **Work led to the “Best Learning Experience” award at the Cyprus Education Leaders Award, 2019.**

6. G. Pappas, J. Siegel and K. Politopoulos. “VirtualCar: Virtual Mirroring of IoT-Enabled Avacars in AR, VR and Desktop Applications.” ICAT-EGVE 2018 (demonstration track). **Winner - Best Demonstration**
7. 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. **Winner – Best Paper award.**
8. D. Suo, J. Siegel, S. Sarma. “TIRCPS: Merging Cybersecurity and Safety in Product Design.” ITS World Congress. September 2018.
9. 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.
10. 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 2016. In Lecture Notes in Computer Science, 2016.
11. J. Siegel, R. Bhattacharyya, A. Deshpande, S. Sarma. “Smartphone-Based Vehicular Tire Pressure and Condition Monitoring.” Proceedings of SAI Intelligent Systems 2016.
12. J. Siegel, R. Bhattacharyya, A. Deshpande, S. Sarma. “Smartphone-Based Wheel Imbalance Detection.” Proceedings of Dynamic Systems and Controls Conference 2015.
13. S. Mayer and J. Siegel. “Conversations with Connected Vehicles.” Proceedings of IoT 2015.
14. 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. Paper invited for submission into Special Issue Journal.
15. 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.

Book Chapters

1. J. Siegel and S. Kumar, “Cloud, Context, and Cognition: Paving the Way for Efficient and Secure IoT Implementations” to appear in “Handbook on Integration of Cloud Computing, Cyber Physical Systems and Internet of Things”, forthcoming.
2. J.Siegel and D. Morris. “Robotics, Automation, and the Future of Sports,” accepted to appear in book “Sports and Technology,” 2020.

Submitted Manuscripts and Pre-Prints

1. J. Siegel, G. Pappas, K. Politopoulos and Y. Sun. “A gamified simulator and physical platform for self-driving algorithm training and validation.” Submitted to IEEE Transactions on Games.
2. J. Siegel, A. Das, Y. Sun and S. Pratt. “Safe Energy Savings Through Context-Aware Hot Water Demand Prediction.” Submitted to Elsevier Engineering Applications of Artificial Intelligence.
3. J. Siegel and K. Yang. “Deep Quality: A Revolution In Needs-Meeting and Designing to Real Value,” submitted for consideration in the Harvard Business Review.
4. J. Siegel and S. Krishnan. “Cultivating Invisible Impact with Deep Technology and Creative Destruction,” submitted for consideration in the Harvard Business Review.
5. G. Pappas, V. Karaiskou, J. Siegel, K. Politopoulos, and C. “Virtual Art Viewing for Education and Learning (VAVEL): A tool for automatic Virtual Art Space creation for students and artists,” submitted to RISE IMET 2020.

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 In-

- stitute 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." **Released at 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

Popular Media

1. [Wall Street Journal] A Classic Chevy Fit for a Hometown Parade - **Cross-Posted to MIT Homepage, 8/19/2018**
2. "Bad (Internet of) Things." Computerworld, 30 November, 2016.
3. "Imagining The 'Connected' Car of the Future." PRI's "Science Friday." 30 September, 2016.
4. "Smartphone Mechanic." BYU Radio's "Top of Mind with Julie Rose." December 13, 2017
5. "S2E05." The "Internet of Things Podcast." February 2018.
6. "Lansing Stunts the Automotive Revolution." The Detroit News, Editorial Section. 5 May, 2016.
7. "CarKnow's Car Hacking." AOL Translogic. Episode 135.

SELECTED INVITED TALKS

1. "Connectivity and the Internet of Things in Industry." AIChE Seminar. Forthcoming (Michigan, 3/2020)
2. "The Internet of Things, Connected Vehicles, and the Role of Localization." SureThing Workshop (Lisbon, Portugal, 1/2020)
3. Defining Deep Technology. 2019 (International Webinar)
4. Making Connectivity Commonplace - Michigan State University (Lansing, MI). 2018.
5. Making Connectivity Commonplace - Wayne State (Detroit, MI). 2018.
6. IoT as a Design Tool - MIT Ideation Lab (Cambridge, MA). 2018.
7. Context and Cognition for a Secure and Efficient IoT - University of Washington Summer Institute 2017 (Unpacking the Future of IoT)
8. UBS Investor Meeting - Connected Vehicles, Autonomy, and Mobility Services (Cambridge, MA)
9. **[Keynote]** Killer Apps for the IoT - MIT Startup Exchange Conference, (Cambridge, MA)
10. DataDriven - The Machine Learning Mechanic - SAE World Congress, (Detroit, MI, USA)
11. UBS Investor Meeting - Connecting Vehicles: Architectures, applications, and future research directions, (Cambridge, MA)
12. Cloud and Cognition for Cost and Efficiency Improvements - IoT Meetup, (International Webinar)
13. IoT's Role in Industry - Disruptive Angels "Hacking Innovation" Conference, (International Webinar)
14. Data Proxies and Cognition in Industry - MIT ILP R&D Conference, (Cambridge, MA)
15. The IoT for Energy Applications - Lincoln Labs Seminar 2016, (Lincoln, MA)
16. Field Intelligence Lab - MIT Office for Digital Learning Lunch Series, (Cambridge, MA)

17. Cloud, Context, and Cognition - Viakable Forum on Technology and Innovation 2016 (Monterrey, MX)
18. Low-cost, pervasive sensing leveraging existing wireless infrastructure - IoT 2015 (Seoul, Korea)
19. Engineering Connectivity: Hot-Rodding in the Digital Era - Lemelson/MIT EurekaFest 2015 (Cambridge, MA, USA)
20. CarKnow - NextEnergy GAIC at SAE World Congress (Detroit, MI, USA)
21. Unlocking Open Data Standards - IoT 2014 (Cambridge, MA, USA)
22. CarKnow and the Virtual Vehicle - t=0 Hardware Night 2014 (Cambridge, MA, USA)
23. CarKnow - University Research and Entrepreneurship Symposium 2013 (Cambridge, MA, USA)
24. Cloudy with a Chance of Big Data - IoT Meetup Kickoff Presentation 2013 (Cambridge, MA, USA)
25. CloudCar - Verizon 4G Venture Forum 2013 (San Francisco, CA, USA)
26. Presenter with MIT Industrial Liaison Program (direct engagement with C-suite and technical leadership from 50+ companies on 50+ occasions)
27. Presenter on entrepreneurial and technology panels (MIT Entrepreneurs Club, MassChallenge, Global Automotive and Mobility Challenge)

CONFERENCE PRESENTATIONS AND POSTERS

1. J. Siegel. "Cracking the code on automotive tire faults." AI and Mobile Services, 2018. Seattle, WA. **Best Paper award.**
2. J. Siegel. "Making Things Think: How context and cognition secure and supervise the IoT" New Directions in Software Technology 2017. Maui, HI
3. 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.
4. J. Siegel, R. Bhattacharyya, A. Deshpande and S. Sarma. "Smartphone-Based Vehicular Tire Pressure and Condition Monitoring." SAI Intelligent Systems 2016. London, England.
5. S. Mayer and J. Siegel. "Conversations with Connected Cars." IoT 2015. Seoul, Korea.
6. 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.
7. 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.
8. J. Siegel. "CarKnow: Avacars Enabling Virtual Vehicles." SENSORS Expo 2014. Rosemont, IL, USA.
9. D. Erb, J. Siegel, I. Ehrenberg, P. Jain. "Local Viscosity Control Printing." MIT deFlorez Competition 2015. Cambridge, MA, USA.
10. J. Siegel. "CARduino and CloudThink." MIT deFlorez Competition 2013. Cambridge, MA, USA.
11. J. Siegel. "Remotely Reconfigurable Vehicle Telemetry System and Supporting Applications." MIT deFlorez Competition 2011. Cambridge, MA, USA.
12. 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

At MIT, Josh directly advised over one dozen visiting, undergraduate, Masters', and Ph.D. students.

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|---------------------------|----------------------------|---------------------------------------|
| 1. [Ph.D.] Yongbin Sun | 6. [S.B.] Elizabeth Pedlow | 11. [Visiting] Bala Thoravi Kumaravel |
| 2. [Ph.D.] Dajiang Suo | 7. [S.B.] Aaron Rose | 12. [Visiting] Pranav Sharan |
| 3. [S.M.] Pankhuri Sen | 8. [S.B.] Doug Coughran | |
| 4. [Staff] Shane Pratt | 9. [S.B.] Hassan Kane | |
| 5. [Affiliate] Alex Soley | 10. [S.B.] Alex Nachlas | |

At MSU, Josh is advising or has advised:

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|--|--|---|
| 1. [B.S.] Aniruddha Das [MIT + Georgia Tech] | 3. [Ph.D.] Harrison Fernandez [Aalto University] | |
| 2. [B.S./M.S.] Matthew Rhodes [MSU + UW] | 4. [Ph.D.] Karthik Karur | 7. [Ph.D.] Georgios Pappas [Bootcamps + NTUA] |
| | 5. [Ph.D.] Adam Terwilliger | |
| | 6. [Ph.D.] Juuso Autiosalo | |

FUNDING AND GRANTS

At MIT, Josh managed a Ford-MIT Project and directly secured and managed over \$1.5M in government grants and corporate contracts. These projects were sponsored by Ford, CMPC, Jaguar Land Rover, DOT-Volpe, NSF, and the Oregon DOT. Additionally, NVIDIA provided support with two GPU Grants (Titan Xp graphics cards).

At MSU, Josh is Co-PI of the Elektrobit Virtual Laboratory (funding from the Elektrobit company for automotive and related teaching and research).

PROFESSIONAL MEMBERSHIPS

IEEE, SAE

LEADERSHIP AND ACTIVITIES

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

- Host weekly meetings with entrepreneurs, provide concept feedback, organize events to inspire students, sponsor for-credit seminar and Startup Bootcamp program
- Organize outreach and recruitment, including activity fairs and MIT ESP programming
- Helped to 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

Co-Author & Curator, World Economic Forum March 2017-Present

- Co-author of IoT white paper shared at 2019 Davos and other WEF summits
- Contributor, World Economic Forum. Accelerating the Impact of IoT Technologies

- Develop content for “Transformation Map” on the Internet of Things

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

- Review applications for Lemelson-MIT National Student Prize Competition “Drive It” Award
- Review applications for Lemelson InvenTeams

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

Expert Consultant, Pending Litigation (IoT Consumer Goods) June 2018-Present

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 (T-ITS, ITSM, IoT-J) & MDPI (IoT, Sensors, Sustainability, Applied Sciences)

Reviewer, Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) research proposals

Review Panelist, National Science Foundation

Judge, Robofest (Lawrence Technological University)

Invited Expert, ECMA TC53 Working Group (Standards Development for ECMAScript on IoT Devices)

Expert Technical Consultant, Publicly-traded automotive aftermarket supplier

Other service:

1. 2019-Present - Personal Consulting for the Board (Public Company)
2. 2018-Present - Homeland Defense And Security Information Analysis Center - Subject Matter Expert
3. 2018-Present - GLG Consulting - Council Member
4. 2018 - Red Line Editorial - Technical Content Editor for The Internet of Things: Tech Bytes
5. 2018 - CyberReason - Expert Interviewee for “The Defenders” Movie
6. 2018 - MIT/Emeritus Entrepreneurship Bootcamp - Judge + Panelist
7. 2017-18 - UBS Investments - Industry Expert
8. 2017 - Cranbrook-Kingswood “Detroit Ex-Pat” Alumni Panel - Panelist
9. 2017 - MIT ILP “Killer Apps in the IoT” - Panelist

ABBREVIATED MEDIA COVERAGE

1. [MIT News] MIT engineers build smart power outlet - **MIT Homepage, 6/18/2018**
2. [MIT News] Revolutionizing everyday products with artificial intelligence]
3. [VentureBeat] MIT researchers develop a smart power outlet that can prevent your house from burning down
4. [DigitalTrends] MIT engineers a smarter, safer power outlet (for IoT, of course)
5. [MIT News] New Software Lets your Car Tell you What it Needs - **MIT Homepage Spotlight,**

10/26/2017

6. [Digital Trends] MIT app listens to a car to diagnose problems before symptoms are apparent
7. [ArsTechnica] A phone app that listens to your car and could warn of impending trouble
8. [Smithsonian] This App Can Diagnose Your Car Trouble
9. [Technology Review] A Stethoscope for Cars - January/February 2018 Issue
10. [Geek.com] MIT App Turns Anyone Into the Car Whisperer
11. [Yahoo Finance] Smartphones could diagnose car maintenance needs ahead of problems by listening
12. [ThomasNet] MIT App Listens for a Car's Plea for Maintenance
13. [Highways Today] Cars, Trucks and Construction Equipment will soon tell you what they need
14. [PRI] Cars in the Cloud
15. [Science Friday] Imagining the "Connected" Car of the Future
16. [AAAS Science Update] Car Noise App
17. [WIRED] The Internet of Anything: The Little Box That Hooks Your Old Car Up to the Internet
18. [Translogic] TRANSLOGIC 135: CarKnow Car Hacking
19. [AutoBlog] In Detail: CarKnow Car Hacking
20. [AutoBlog] How to hack a Buick Regal with CarKnow
21. [Mass High Tech] MIT spawns tech that succeeds when GPS fails
22. [Mass.Gov Blog] Astra IDentity and CarKnow win the Commonwealth's First MassIT Government Innovation Prize
23. [MIT News] Lemelson-MIT announces 2015 National Collegiate Student Prize Competition winners
24. [Discovery News] College Inventors Awarded for Leading the Future of Tech
25. [MIT News] Tomorrow's soldier: powered, spring-loaded and located
26. [MIT News] MIT student ingenuity plus high-tech batteries yields advanced all-electric Porsche
27. [MIT News] Outside the classroom, students create future businesses

HOBBIES AND INTERESTS

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