

Ilya Avdeev, Ph.D.



September 20, 2023

Members of the Search Committee,

I am delighted to submit my application for the position of Director of the Lubar Entrepreneurship Center (LEC) at the University of Wisconsin-Milwaukee (UWM). I have over 20 years of professional and entrepreneurial experience spanning small businesses, industry and academia. As a tenured faculty member with a Ph.D. in Mechanical Engineering, I have managed multi-million-dollar research and innovation capacity building projects, funded by both public and private sources. I have been instrumental in raising substantial funds for the development of the Lubar Entrepreneurship Center and have led the successful launch of LEC's flagship programs.

In terms of my academic background, I have been part of the UWM community for 14 years, during which I have had the privilege of collaborating across disciplinary boundaries. I started as a junior faculty member, co-teaching with an Art professor, and eventually progressed to become the Director of Innovation at the Lubar Entrepreneurship Center. In this role, I have supported research translation and the realization of innovative ideas among faculty, students, and the academic community in the Great Lakes region. Throughout this journey, I have been fortunate to work with supportive colleagues and collaborators with a "yes, let's!" attitude towards building innovation capacity at UWM.

In close collaboration with university leadership and with generous support of visionary donors, we designed and launched the Lubar Entrepreneurship Center as a hub for innovative thinking and a launchpad for ideas. The center's impact is now evident in the thousands of students and hundreds of faculty members empowered to pursue their dreams and bringing their ideas to fruition. I take great pride in the work we have accomplished over the past decade. The impact of this work can also be seen in the innovation spaces that were developed through the programs I led, including a CEAS makerspace supporting student inventors and the Kulwicki Garage, an innovation hub at the UWM/EMS building, among others.

Today, the Lubar Entrepreneurship Center stands as a sustainable innovation center not only for UWM but also for our local communities and the broader region. It serves as a key node in multiple innovation and entrepreneurial networks and continues to foster entrepreneurial beyond venture creation. LEC has earned the trust of not only UWM academic units but also key departments such as the Office of Undergraduate Admissions, the Multicultural Center, MAVERIC, and others. Given the global challenges we all face, which demand new ideas and

innovative solutions, I believe that LEC will play a pivotal role in creating an environment for creative problem-solving through diverse collaborations.

I am confident that I can contribute significantly to leading the Lubar Entrepreneurship Center. This confidence is based on my deep understanding of this field and UWM's strengths within it, as well as my enthusiasm for furthering its growth in areas such as Innovation Research, Industry Partnerships and Research Translation. I eagerly anticipate the opportunity to discuss potential directions of the Center, and I have outlined my qualifications in relation to the position description below.

Minimum Qualifications:

- *Bachelor's degree:*
 - I earned a Bachelor of Science in Mechanical Engineering from St. Petersburg State Technical University, Russia, in 1999.
- *Demonstrated ability to work in a highly entrepreneurial environment, solve problems creatively and exhibit a high degree of self-sufficiency, including progressive responsibilities working with innovation or entrepreneurial setting:*
 - My leadership journey at UWM has evolved since 2009. I began as the founding Director of the Advanced Manufacturing & Design Lab within the Mechanical Engineering Department. In this capacity I successfully led multiple sponsored research projects, securing over \$1.6M in research funding, while also providing mentorship to both graduate and undergraduate students.
 - Starting in 2011, I took on the leadership of the NSF Research Experience for Teachers Site at UWM, with a focus on promoting STEM education in Milwaukee and fostering K-12 partnerships through direct teacher training at UWM. The RET Site was renewed and is now in its last year.
 - In 2012, I co-founded and led the UWM Student Startup Challenge, an annual program dedicated to supporting student entrepreneurs and innovators. This initiative has continued to thrive.
 - By 2015, I was at the helm of the NSF I-Corps Site of Southeastern Wisconsin, which eventually evolved into an affiliate of the NSF I-Corps Hub of Great Lakes Region. This collaboration, valued at \$15 million, involved multiple flagship Midwest universities.
 - As the Director of the UWM Startup Challenge and I-Corps Site, I worked closely with the President of UWM Research Foundation, Mr. B. Thompson, to conceive, design, pitch, develop, plan, and launch the Lubar Entrepreneurship Center. Since 2018, I have proudly served as the Inaugural Director of Innovation and Associate Director of the center. In this role, I have spearheaded development of foundational innovation curriculum, including human-centered design and lean launchpad methodologies, which have been nearly all center programs. Additionally, I have provided instrumental support for the launch of the LEC Teaching Fellows program.

- *Demonstrated excellent writing and oral communication skills:*
 - Published over 50 peer-reviewed papers and conference proceedings/abstracts.
 - Authored 45 funded grant and project proposals totaling more than \$3.5 million.
 - Prepared multiple reports for sponsoring organizations.
 - Co-taught nearly 500 workshops and seminars covering various innovation topics.
 - Taught numerous engineering and multi-disciplinary classes, consistently earning one of the highest faculty evaluations within the Mechanical Engineering department.
 - Presented at various engineering, innovation, and entrepreneurship events and have been invited to participate in panel discussions and facilitate workshops.
 - Delivered a TEDx talk in collaboration with Dr. Stern.
 - Successfully pitched new programs to major donors, industry partners, and non-profit organizations.

Preferred Qualifications:

- *Advanced degree(s) in science, engineering, management and/or law or commensurate industry and entrepreneurial experience:*
 - I hold a Ph.D. in Mechanical Engineering from the University of Pittsburgh and M.S. degree in Mechanical Engineering from St. Petersburg State Technical University.
- *Demonstrated 3 or more years experience working in academic or university setting to build programs in entrepreneurship:*
 - I held the responsibility of leading UWM's engagement with the NSF-funded National Center for Engineering Pathways to Innovation (Epicenter), which connected UWM to Stanford's University Innovation Fellows (UIF) program from 2014 to 2018. This connection became a cornerstone of LEC's human-centered design curriculum. In my role as a UIF campus champion, I mentored 25 UIF fellows at UWM, who subsequently became change agents on campus and played integral roles in or led nearly all entrepreneurial capacity-building initiatives at LEC.
 - During my sabbatical leave at Stanford in Fall 2016, I took the lead in developing the Faculty Innovation Program (FIF), an expansion of the University Innovation Fellows program. This global initiative supports change agents in higher education.
 - I have actively contributed to the development of K-12, local, and regional collaborations and have conducted innovation workshops and seminars. Since 2018, I have designed and co-facilitated 277 non-credit workshops, with participation from nearly 6,000 unique individuals.
 - Collaborating with colleagues from nursing and biological sciences, I have played a leadership role in broadening participation in I-Corps training, extending its reach to Ph.D. students across the entire UWM community, with a specific focus on nursing students. Additionally, in partnership with colleagues at the Medical College of Wisconsin, I continue to support the development of human-centered design programs focused on medical education and healthcare.

- *Demonstrated experience in building entrepreneurial programming including business development or incubation programs:*
 - I co-lead a signature entrepreneurial program at the Lubar Entrepreneurship Center, the NSF I-Corps. Since its establishment in 2015, the NSF I-Corps program has trained 25 cohorts comprising of 222 technology innovation teams, including 842 faculty and students from UWM, MCW, MU, MSOE and CUW. These teams have undergone training in the Lean Launch methodology for commercializing research and discoveries. Collectively, they have conducted 7,711 customer interviews during their five-week training and secured more than \$27 million in follow-on grants and small angel investments, resulting in the launch of 36 new ventures.
 - I played a key role in the development, launch, and early fundraising efforts for the UWM Student Startup Challenge program. This program serves as an incubator of ideas and talent on campus and is one of the flagship student-facing initiatives at the Lubar Entrepreneurship Center.
 - Additionally, I co-designed and co-facilitated training sessions for tech startups focused on energy and water technologies in collaboration with M-WERC and Water Council tech incubators.
- *Demonstrated success in development, launch and scaling of new enterprises:*
 - I have played a crucial role in the co-development, launch, and ongoing expansion of the UWM's Lubar Entrepreneurship Center – an academic innovation and entrepreneurship hub generously supported by donors and situated in a 24,000 sq. ft. facility. The center began as a collection of programs created from the ground up and sustained through grants. Over time, it has transformed into a sustainable incubator fostering talent and innovative ideas, with a significant impact extending well beyond campus.
 - In addition to my academic involvement, I am a small business owner specializing in providing innovation consulting services to K-12 and higher education institutions.
- *Demonstrated success in fund raising from private or government sources:*
 - As an Associate Director of the Lubar Entrepreneurship Center, I have collaborated with the LEC director and university advancement to support fundraising efforts from private donors and foundations, resulting in the establishment of a center endowment exceeding \$20 million.
 - I have been actively involved in co-developing pilot entrepreneurial programs that form the core of the Lubar Entrepreneurship Center. Additionally, I played a pivotal role in presenting the center's concept to the Lubar family.
 - As a UWM faculty member and Principal Investigator (PI), I have led 15 sponsored projects and grants aimed at enhancing innovation capacity at UWM, securing a total of \$1.5 million in innovation funding since 2011. These initiatives range from developing the CEAS pilot to the Student Startup Challenge to receiving VentureWell faculty grants supporting student and sustainability entrepreneurship, UWMRF technology

development awards, Growth Agenda for Wisconsin, WEDC state funding for scaling up entrepreneurial programs at UWM, NSF I-Corps funding for two Sites and one Hub focused on research translation and academic entrepreneurial training, and MCW support for human-centered design programming and collaboration in the healthcare sector.

- In addition to my involvement in innovation funding, I have prepared competitive proposals and led more than twenty external and internal research projects at UWM, amassing nearly \$2 million in funding. These projects have been sponsored by a diverse array of entities, including private corporations such as GE Healthcare, Johnson Controls, Rexnord, and MDG, federal organizations like NSF, as well as internal UWM sources such as CEAS, CIE, and SURF.
- *Demonstrated ability to lead an organization including management and financial controls, including 5 or more years with responsibility for budget and outcomes:*
 - In my capacity as a co-director (PI) of the NSF I-Corps program at UWM, I have overseen the management of seed funding for over 200 I-Corps teams spanning multiple institutions of higher education in Milwaukee since 2015. This role includes the management of three I-Corps grants amounting to approximately \$1 million in funding, participant support, and Ph.D. fellow support. I have also been responsible for handling NSF and Hub reporting.
 - During my tenure as the director of the UWM Student Startup Challenge, I managed seed funding for student entrepreneurial teams, which was sourced through VentureWell, Growth Agenda for Wisconsin and other grant funding mechanisms. In this role, I held responsibility for reporting to the funding agencies from 2011 to 2018.
 - As the director of the NSF Research Experience for Teachers Site, I have effectively managed a budget of nearly \$1 million, which supports 40+ teachers and curriculum development initiatives across multiple school districts. My responsibilities also encompass NSF reporting, a role I have maintained since 2012.
- *Demonstrated ability to coordinate programs with multiple constituencies:*
 - I co-lead the NSF I-Corps program, which serves as a partner in the Great Lakes Hub, involving 15 universities, and provides support to five research universities in Milwaukee. The program's participants come from a wider range of disciplines and are aided by a network of industry and community mentors.
 - In my role as a co-leader of the Lubar Entrepreneurship Center, I have been instrumental in developing new programs and partnerships. This includes fostering faculty collaborations through initiatives LEC Teaching Fellows, establishing K-12 partnerships with the Shorewood and New Berlin School Districts, and forging community partnerships with entities such as Inception Health, FMLH/MCW, ProHealth, Rockwell Automation, Husco and others.

- As the NSF Research Experience for Teachers Site PI, I oversee a program that brings together school districts (comprising teachers and curriculum directors), UWM researchers and industry partners.
- *Highly organized and able to prioritize multiple tasks and responsibilities:*
- Since joining UWM in 2009, I have taken on multiple roles, and each year, I have embraced progressively more responsibilities while successfully renewing and scaling up various (as mentioned above).

I am no stranger to the LEC or the UWM community at large. I am particularly excited about the opportunity to take on a new leadership role and to continue our growth together. I look forward to discussing it further. Thank you for considering my application.

Sincerely,



Ilya Avdeev, Ph.D.

*Director of Innovation and Kellner Entrepreneurship Fellow
Lubar Entrepreneurship Center
Associate Professor of Mechanical Engineering
College of Engineering & Applied Science
University of Wisconsin-Milwaukee*

CURRICULUM VITAE

DR. ILYA V. AVDEEV

DIRECTOR OF INNOVATION AND KELLNER ENTREPRENEURSHIP FELLOW
LUBAR ENTREPRENEURSHIP CENTER
UNIVERSITY OF WISCONSIN-MILWAUKEE

ASSOCIATE PROFESSOR
DEPARTMENT OF MECHANICAL ENGINEERING
COLLEGE OF ENGINEERING & APPLIED SCIENCE
UNIVERSITY OF WISCONSIN-MILWAUKEE

SEPTEMBER 20, 2023

EDUCATION:

- Ph.D. Mechanical Engineering, University of Pittsburgh (2003).
Dissertation: "New Formulation for Finite Element Modeling Electrostatically Driven Microelectromechanical Systems."
- M.S. Mechanical Engineering, St. Petersburg State Technical University, Russia (1999).
Thesis: "Finite Element Modeling of Composite Beam Structures."
- B.S. Mechanical Engineering, St. Petersburg State Technical University, Russia (1997).
Thesis: "Computational Mechanics of Beam Structures."

SIGNIFICANT CONTINUING EDUCATION:

- Green LaunchPad for Educators Workshop, Lowell, MA, October 16-17, 2019.
- Connected Systems Challenge, Connected Systems Institute, University of Wisconsin-Milwaukee, Milwaukee, WI, May 9-10 / June 20-21, 2018.
- Teaching & Learning Studio, Hasso Plattner Institute of Design, Stanford University, Stanford, CA, July 26-29, 2016.
- Lean LaunchPad for Educators Seminar, Stanford University, Stanford, CA, April 21-23, 2014.
- Price-Babson Symposium for Entrepreneurship Educators, Babson College, Babson Park, MA, January 8-12, 2012.

ACADEMIC AND PROFESSIONAL POSITIONS HELD:

Director of Innovation / Associate Director, Lubar Entrepreneurship Center, 2018 – present

- Kellner Entrepreneurship Fellow, 2017 – present.
- Co-Instructor / Design Coach, Teaching & Learning Studio (TLS), Hasso Plattner Institute of Design at Stanford University (d.school), 2018 – present.
- Affiliated Associate Professor, Kern Institute for Transformation of Medical Education, Medical College of Wisconsin, 2018 – present.
- Adjunct Instructor, Academy for Innovation & Entrepreneurship, University of Maryland, 2021-2022.
- Co-Director (PI and Faculty Lead): NSF I-Corps Hub of Great Lakes Region at UWM, 2022 – present.
- Co-Director (PI): NSF I-Corps Site of Southeastern Wisconsin, 2015 – 2022.
- Co-Founder / Co-Director: UWM Startup Challenge, 2013 – 2019.
- UWM Campus Lead: NSF National Center for Engineering Pathways to Innovation (Epicenter), 2014 – 2018.

Associate Professor, Department of Mechanical Engineering, UW-Milwaukee, 2015 – present

- Director: Advanced Manufacturing and Design Laboratory (AMDL), 2009 – present.
- Director (PI): NSF RET Site: Milwaukee Water-Energy Nexus Education Initiative, 2018 – present.

Assistant Professor, Department of Mechanical Engineering, UW-Milwaukee, 2009 – 2015

- Founding Director: Advanced Manufacturing and Design Laboratory (AMDL).
- Director/PI: NSF RET Site: Milwaukee Regional Energy Education Initiative.

Member Technical Staff, ANSYS Inc., Canonsburg, PA, 2003-2009

- Technical team leader, core ANSYS Mechanical testing team.
- Coordinator, graduate student/co-op internship program.

Adjunct Assistant Professor, Department of Industrial Engineering, University of Pittsburgh, Pittsburgh, 2007-2009

- Teaching IE-1087/2098 “FEA in Product Design” course.
- Teaching IE-1051 “Computer Aided Design” course.

Software Development Engineer (Graduate Intern), ANSYS Inc., Canonsburg, PA

- Development of a novel electrostatic boundary element formulation and software for modeling electronic devices and MEMS, 5/2003-12/2003.
- Development and testing of a new reduced-order finite element technique and software for modeling MEMS transducers (ANSYS 7.0 release), 5/2002-8/2002.
- Development and testing of a new coupled-field finite element formulation and software for 2-D modeling of MEMS (ANSYS 6.0 release), 5/2001-8/2001.

Graduate Research Assistant, University of Pittsburgh, Pittsburgh, PA

- In collaboration with- and sponsored by ANSYS Inc., Canonsburg, PA: research on development of a novel finite element formulation for modeling coupled-field MEMS, 9/2000-12/2003.
- Sponsored by the Air Force Research Laboratory, Kirtland AFB, NM: FEM investigation of sound transmission and loss in advanced grid-stiffened structures, 9/2000-9/2002.

Teaching Assistant, University of Pittsburgh, Pittsburgh, PA

- ME 1029, Mechanical Design II, 01/02-04/02.
- ME 1060, Numerical Methods in Engineering Analysis, 01/00-04/00.
- ME 0024, Introduction to Mechanical Engineering Design, 09/99-12/99.

Engineer-Mathematician, St. Petersburg State Technical University, St. Petersburg, Russia

- Sponsored by Volkswagen-Stiftung on research: "Adaptive methods for structural analysis and structural optimization of composites," 6/1997-8/1999.
- Sponsored by First Class Grant of the Association of Technical Universities and Ministry of Common and Professional Education of Russia on research: "Computational mechanics of composite structures," 1/1996-5/1997.

PROFESSIONAL AWARDS AND RECOGNITIONS:

- UWM's 2023 Faculty Distinguished Public Service Award, July 2023.
- Most Innovative Toolkit Poster Presentation Award, VentureWell OPEN 2023 Annual Conference, March 2023.
- MCW's Outstanding Medical Student Teacher Award, October 2019.
- STEM Forward Young Engineer of the Year Award, Milwaukee, WI, 2013.
- Entrepreneurship and Technology Management Research Award, UW-Milwaukee, Milwaukee, WI, 2012.
- Inaugural John Swanson Doctoral Fellowship, ANSYS Inc., Canonsburg, PA, 2000-2003.
- Graduate Student Fellowship, ISSEP, Moscow, Russia, 1997-1999.
- Award of the Government of St. Petersburg, Russian Academy of Science and Ministry of Common and Professional Education of Russia in the Field of Mechanics, 1997-1998.
- Scholarship of the Science Council of St. Petersburg State Technical University, 1997-1999.
- First rank conference diploma: "Modern scientific schools: perspectives of development," 1998.
- First rank diploma of the all-Russia student conference-competition "Dynamics and strength of machines," 1997.

PEER-REVIEWED JOURNAL ARTICLES (H-INDEX: 12, I10-INDEX: 14, CITATIONS: 729):

1. Holt, J., Talsma, A., Woehrle, L., Klingbeil, C., and Avdeev. I. Fostering Innovation and Design Thinking in Graduate Programs. *Nurse Educator* 47(6), 2022. 356-357.
2. Mead, T., Pietsch, C., Matthew, V., Lipkin-Moore, S., Metzger, E., Avdeev, I.V. and Ruzycki, N.J., 2021. Leveraging a Community of Practice to Build Faculty Resilience and Support Innovations in Teaching during a Time of Crisis. *Sustainability*, 13(18), p.10172.
3. K. Jablokow, N. Sonalkar, I. Avdeev, B. Thompson, M. Megahed, and P. Pachpute, "Exploring the Dynamic Interactions and Cognitive Characteristics of NSF Innovation Corps (I-Corps) Teams," 2018 ASEE Annual Conference & Exposition (2018).
4. M. Gilaki and I. Avdeev, "Impact modeling of cylindrical lithium-ion battery cells: heterogeneous vs. homogeneous approach," *Journal of Power Sources* (2016), 328: 443-451.
5. T. Katona, S. Tello, B. O'Toole and I. Avdeev, "Pathways Partners: Entrepreneurial Change Across Campus," *The Journal OF Engineering Entrepreneurship* (2016), 7(1): 35-48.
6. I. Avdeev, A. Francis, J. Hamann and S. Ananthasivan, "Accurate Characterization of Torsional Stiffness of Flexible Disc Couplings," *Journal of Engineering for Gas Turbines and Power* (2015), 137: 082504-1.
7. I. Avdeev and M. Gilaki, "Numerical Analysis and Experimental Characterization of Cylindrical Lithium-Ion Battery Cells Subject to Lateral Impact," *Journal of Power Sources* (2014), 271:382-391.

8. I. Avdeev, M. Martinsen and A. Francis, "Rate- and Temperature-Dependent Experimental Characterization of a Multilayer Polymer Separator," *Journal of Materials Engineering and Performance* (2014), 23:315-325.
9. P.L. Menezes, M.R. Lovell, I.V. Avdeev, J.-S. Lin and C.F. Higgs III, "Studies on the Formation of Discontinuous Chip during Rock Cutting Using an Explicit Finite Element Model," *International Journal of Advanced Manufacturing Technology* (2014), 70:635-648.
10. P.L. Menezes, M.R. Lovell, I.V. Avdeev, J.-S. Lin and C.F. Higgs III, "An Explicit Finite Element Model to Study the Influence of Rake Angle on the Discontinuous Chip Formation during Orthogonal Metal Cutting," *The International Journal of Advanced Manufacturing Technology* (2014), 73(5):875-885.
11. P.L. Menezes, M.R. Lovell, I.V. Avdeev and C.F. Higgs III, "Studies on the Formation of Discontinuous Rock Fragments during Cutting Operation," *International Journal of Rock Mechanics and Mining Sciences* (2014), 71:131-142.
12. R. Amano, I. Avdeev, R. Malloy and M. Z. Shams, "Power Performance Test on Different Design of Wind Turbine Rotor Blade," *International Journal of Sustainable Energy*, (2013), 32(2):78-95.
13. I. Avdeev and M. Shams, "Vascular stents: Coupling full 3-D with reduced-order structural models," *2010 IOP Conf. Ser.: Mater. Sci. Eng.* 10 (DOI: 10.1088/1757-899X/10/1/012133).
14. I. Avdeev, K. Sobolev, A. Amirjanov and A. Hastert, "Micromechanical Models of Structural Behavior of Concrete," *2010 MRS Proceedings Library*, Vol. 1276 (DOI: 10.1557/PROC-1276-20).
15. C. Jewart, K. Chen, B. McMillen, M. Bails, S. Levitan, J. Canning and I. Avdeev, "Sensitivity enhancement of fiber Bragg gratings to transverse stress by using microstructural fibers," *Optics Letters* (2006), 31(15):2260-2262.
16. M. Bails, J. Martinez, S. Levitan, J. Boles, I. Avdeev, M. Lovell and D. Chiarulli, "Performance Simulation of a Microwave Micro-Electromechanical System Shunt Switch Using Chatoyant," *Analog Integrated Circuits and Signal Processing* (2005), 44:1-18.
17. I. Avdeev, M. Gyimesi, M. Lovell and D. Ostergaard, "Strongly Coupled 3-D Finite Element Transducer," *Journal of Micromechanics and Microengineering* (2004), 14:1491-1502.
18. M. Gyimesi, I. Avdeev and D. Ostergaard, "Finite Element Simulation of Micro Electro Mechanical Systems (MEMS) by Strongly Coupled Electro Mechanical Transducers," *IEEE Transactions on Magnetics* (2004), 40(2):557-560.
19. I.V. Avdeev, M.R. Lovell and D. Onipede, Jr., "Modeling In-Plane Misalignments in Lateral Comdrive Transducers," *Journal of Micromechanics and Microengineering* (2003), 13:809-815.
20. J.S. Vipperman, D. Li, I. Avdeev and S.A. Lane, "Investigation of the Sound Transmission into an Advanced Grid-Stiffened Structure," *Journal of Vibration and Acoustics* (2003), 125(3):257-266.
21. I.V. Avdeev, A.I. Borovkov, O.L. Kiylo, M.R. Lovell and D. Onipede Jr., "Mixed 2D and Beam Formulation for Modelling Sandwich Structures," *International Journal for Computer-Aided Engineering and Software* (2002), 19(4):451-466.
22. A.I. Borovkov, I.V. Avdeev and A.V. Artemyev, "Finite Element Stress and Vibration Analysis of Sandwich and Multilayered Beams," *Sandwich Construction – IV, EMAS Publishing* (1998), 1:303-314.

BOOK CHAPTERS:

1. "Tribological and Mechanical Design Considerations for Wave Energy Collecting Devices," Andrew Fronek, Michael Nosonovsky, Ben Barger and Ilya Avdeev in *Green Tribology: Green Energy and Technology*, pp. 607-619, Springer, 2012 (invited).
2. "Dynamic Radiography Imaging as a Tool in the Design and Validation of a Novel Intelligent Amputee Socket," George Papaioannou, Dimitris Tsiokos, Goeran Fiedler, Christos Mitrogiannis, Ilya Avdeev, Jake Wood, and Ray McKinney in *Computational Vision and Medical Image Processing: Recent Trends*, pp. 91-112, Springer, 2010 (invited).

INVITED LECTURES AND PRESENTATIONS:

1. Invited panelist, How Wisconsin I-Corps programs can help your business, Wisconsin Tech Summit, March 20, 2023, Green Bay, WI.
2. I. Avdeev, "Academic Innovation and Entrepreneurship at UWM: Lessons Learned from the NSF I-Corps Program," Invited Speaker, 2020 MERC Milwaukee Engineering Research Conference, February 27-28, 2020, Milwaukee, WI.
3. I. Avdeev, "A Primer on Reduced Order Models (ROMs)," Connected Systems Summit, UWM, April 4, 2018, Milwaukee, WI.
4. Invited panelist (Industrial Internet of Things), Launch Wisconsin Conference, October 2016, Green Bay, WI.
5. Invited speaker, 2016 NSF Minority Faculty Development Workshop: 21st Century Mindsets and Strategies for Career Advancement, September 2016, Berkeley, CA.
6. I. Avdeev, "Importance of Entrepreneurial Thinking in Engineering Education," Keynote Address to the Regional Materials and Manufacturing Network Annual Meeting, May 2, 2016, Milwaukee, WI.
7. S. Tello, B. O'Toole, I. Avdeev and T. Katona, "Pathways Partners: Entrepreneurial change across campuses," Panelist, 2015 VentureWell Open Conference, March 20-21, 2015, Washington, D.C.
8. Panelist, M-WERC November Member Meeting, November 2015, Argonne National Laboratory, Lemont, IL.
9. Panelist, Pathways to Innovation Team Leaders Meeting, January, 2015, Stanford University, Palo Alto, CA.
10. Panelist/Presenter, M-WERC Open Innovation Forum, December 2014, Milwaukee, WI.
11. Panelist, 3rd Annual Deshpande Symposium for Innovation and Entrepreneurship in Higher Education, June 2014, Lowell, MA.
12. Panelist, Milwaukee Business Journal's Eureka Roundtable, May 2014, Milwaukee, WI.
13. Panelist, BizTimes Get Smarter Conference, October 2013, Milwaukee, WI.
14. I. Avdeev "UWM Student Startup Challenge," Keynote presentation, September 2013, Rockwell Leadership Conference, Milwaukee, WI.
15. I. Avdeev and N. Stern "Slow Innovation," May 2013, **TEDx** Milwaukee, Milwaukee, WI.

16. I. Avdeev "Advanced Manufacturing and Design Laboratory," March 2013, The UWM Foundation Board Meeting, Milwaukee, WI.
17. I. Avdeev "UWM Student Startup Challenge," August 2012, The UWM Tech/Mobile/Start-up Retreat, Milwaukee, WI.
18. I. Avdeev "Price-Babson Symposium for Entrepreneurship Educators (SEE): An Overview," May 2012, CEAS Faculty Seminar, Milwaukee, WI.
19. I. Avdeev and T.-C. Jen "UWM Tech. Entrepreneurship Hub," UWM Research Foundation Board Meeting, March 2012, Milwaukee, WI.
20. I. Avdeev and T.-C. Jen "UWM Technology Entrepreneurship Hub: A Pilot Project," UWM Academic Deans Council, February 2012, Milwaukee, WI.
21. I. Avdeev "Design for Sustainability," ME Senior Project Seminar, October 2011, Milwaukee, WI.
22. I. Avdeev "Modeling and Simulation in Gear Research," First Southeast Wisconsin Gear Summit, May 2010, Milwaukee, WI.
23. I. Avdeev "Modeling of High Strain Rate Behavior," TACOM Meeting, April 2010, Milwaukee, WI.

SELECTED CONFERENCE ABSTRACTS AND PROCEEDINGS:

1. M. Maring, E. Lambert, L. Minshew, A. Beierle and I. Avdeev, "Using human-centered design to connect medical students, healthcare providers, and the communities they wish to serve through development of a mobile maternal health clinic," AMA 2023 Conference (accepted abstract)
2. L. Minshew, A. Talsma, J. Holt and I. Avdeev, "Community-engaged design thinking for medical education," AMEE 2023 Conference, Glasgow, August 2023.
3. J. Schmitt, I. Avdeev, B. Thompson, and M. Decker, "Using Human-Centered Design and Entrepreneurial-Minded Learning Methodologies to Develop Innovative Ideas in Medical Education," 2020 International Association of Medical Science Educators (IAMSE) 24th Annual National Conference (accepted abstract)
4. J. Schmitt, I. Avdeev, B. Thompson, and M. Decker, "Traditional medical education is not preparing today's medical students for success in an evolving health care system: Using a human-centered approach to develop ideas on how to innovate medical education," 2020 American Association of Medical Colleges (AAMC) Learn-Serve-Lead Annual Meeting.
5. I. Avdeev, B. Thompson, N. Stern and N. Green "Teaching Lean Launch to Medical Students – Dead on Arrival," Workshop at VentureWell Open Conference, March 2018, Washington, D.C.
6. A. Francis, I. Avdeev, C. Berceau, H. Martins, L. Steinbach, J. Mursch, and V. Kanack, "Phantom Battery Pack for Destructive Testing of Li-Ion Batteries," ASME 2016 International Mechanical Engineering Congress and Exposition, pp. V014T07A008-V014T07A008.
7. M. Gilaki, A. Francis, D. Bautista, and I. Avdeev, "Progress Toward Understanding Catastrophic Failure of Electric Vehicle Li-Ion Batteries: Multi-Physics Modeling," ASME 2016 International Mechanical Engineering Congress and Exposition, pp. V014T07A009-V014T07A009.
8. I. Avdeev, "New Umbilical Cord Clamp for Increased Control and Reliability," Milwaukee Quick Pitch – First Look Forum, May 5, 2016, Milwaukee, WI.

9. I. Avdeev, "Automotive Energy Storage Systems: Multiscale Approach to Design for Safety," Milwaukee Engineering Research Conference, May 5-7, 2016, Milwaukee, WI.
10. I. Avdeev, N. Stern and B. Thompson, "Changing Campus Culture of Innovation and Entrepreneurial Thinking: Ripple Effect of Campus Change-Makers," VentureWell Open Conference, March 20-21, 2015, Washington, D.C.
11. A. Francis and I. Avdeev "Model Order Reduction for Design of Torsional Disk Couplings," ASME/IMECE2014, November 14-20, 2014, Montreal, Canada.
12. M. Gilaki and I. Avdeev "Comparing High-Performance Computing Techniques for Modeling Structural Impact on Battery Cells," ASME/IMECE2014, November 14-20, 2014, Montreal, Canada.
13. M. Gilaki and I. Avdeev "Structural Homogenization in Energy Storage Systems," 11th World Congress on Computational Mechanics, July 20-25, 2014, Barcelona, Spain.
14. I. Avdeev, M. Martinsen and A. Francis "Modeling Multilayer Polymer Battery Separator's Structural Response," Battery Congress, June 11-12, 2014, Troy, Michigan, USA.
15. A. Francis and I. Avdeev "Sensitivity of Mechanical Properties to Print Parameters in FDM Fabricated Parts," Abstracts ASME/IMECE2013, November 15-21, 2013, San Diego, California, USA.
16. I. Avdeev, M. Martinsen and A. Francis "Mechanical Characterization and Constitutive Modeling of Polymer Separators," Abstracts ASME/IMECE2013, November 15-21, 2013, San Diego, California, USA.
17. I. Avdeev and M. Gilaki "Modeling Longitudinal and Transverse Impact in Cylindrical Battery Cells," Abstracts ASME/IMECE2013, November 15-21, 2013, San Diego, California, USA.
18. M. Shams, I. Avdeev, A. Amirjanov, K. Sobolev and A. Hastert "Modeling Mechanical Response of Concrete Designed with Multiscale Packing Algorithm," Abstracts ASME/IMECE2013, November 15-21, 2013, San Diego, California, USA.
19. M. Gilaki and I. Avdeev, "Homogenization of Structural Material Properties in Cylindrical Lithium-Ion Battery Cells," Abstracts of the 12th U.S. National Congress on Computational Mechanics, July 22-25, 2013, Raleigh, North Carolina, USA.
20. M. Shams, I. Avdeev, K. Sobolev, A. Amirjanov, and A. Hastert, "Multiscale Modeling of Particulate Composites: Concrete Aggregate Packing," Abstracts of the 12th U.S. National Congress on Computational Mechanics, July 22-25, 2013, Raleigh, North Carolina, USA.
21. I. Avdeev, N. Stern and B. Thompson "Changing Entrepreneurial Culture of Southeastern Wisconsin: From E-Team Network to Student Startup Challenge," Proceedings of Open 2013: NCIIA's 17th Annual Conference, March 22-23, 2013, Washington, DC, USA.
22. I. Avdeev and M. Gilaki "Explicit Dynamic Simulation of Impact in Cylindrical Lithium-Ion Cells," Proceedings of ASME/IMECE2012, November 9-15, 2012, Houston, Texas, USA.
23. I. Avdeev and P. Doval "Coupled-Physics Modeling of Lithium-ion Battery Cylindrical Cell Microstructure," Proceedings of ASME/IMECE2012, November 9-15, 2012, Houston, Texas, USA.
24. I. Avdeev, M. Martinsen and A. Francis "Materials Testing of Lithium Ion Battery Components for Use in Finite Element Analysis," Proceedings of ASME/IMECE2012, November 9-15, 2012, Houston, Texas, USA.

25. I. Avdeev and P. Doval "Investigation of Riding Position Effects on Time-Trial Bicycle Drag Coefficient at Different Yaw Angles," Proceedings of ASME/IMECE2012, November 9-15, 2012, Houston, Texas, USA.
26. I. Avdeev, M. Shams and A. Hastert "Stress Analysis of Peripheral Stents Using Photogrammetric Deformation Tracking," Proceedings of ASME/IMECE2012, November 9-15, 2012, Houston, Texas, USA.
27. I. Avdeev and A. Scudder "Infrared Fracture Detection of Bare Metal Stents," Abstracts of WCCM 2012, 8-13 July, 2012, Sao Paulo, Brazil.
28. I. Avdeev, A. Scudder, M. Shams and A. Hastert, "Thermoelectric Fracture Detection in Bare Metal Stents," Abstracts of ASME 2011 Applied Mechanics and Materials Conference, May 30 – June 1, 2011, Chicago, Illinois, USA.
29. I. Avdeev, M. Shams, A. Hastert and A. Scudder, "Photogrammetry Driven Finite Element Analysis of Vascular Implants," Abstracts ASME 2011 Applied Mechanics and Materials Conference, May 30 – June 1, 2011, Chicago, Illinois, USA.
30. I. Avdeev, M. Shams, A. Hastert and A. Scudder, "Photogrammetric Tracking of Stent Deformations," Abstracts of the 11th U.S. National Congress on Computational Mechanics, July 25-28, 2011, Minneapolis, Minnesota, USA.
31. R. Amano, I. Avdeev, P. M. M. Das, and M. Shams, "Flow and Structural Analysis of a Straight and Swept Blade Near Stall Region," ASME 2011 Power Conference, July 12-14, 2011, Denver, CO, USA.
32. M. Shams, A. Hastert and I. Avdeev "Motion Tracking and Mechanical Analysis of Peripheral Vascular Stents," Proceedings of The Eighth IASTED International Conference on Biomedical Engineering, February 16-18, 2011, Innsbruck, Austria.
33. R. Amano, I. Avdeev, R. Malloy and M.Z. Shams "Power Performance Tests on a Different Wind Rotor Blade Design," ASME 2010 Power Conference, July 13-15, 2010, Chicago, IL.
34. M.Z. Shams and I.V. Avdeev "Modeling Vascular Stents: Coupling Solid with Reduced Order FE Models," Proceedings of WCCM/APCOM 2010, July 19-23, 2010, Sydney, Australia.
35. I. Avdeev and M. Lovell "On Modeling Electric Fields for Microscale Cell Manipulation," Proceedings of 9th International Conference on Information Technology and Applications in Biomedicine (ITAB-2009), November 4-7, 2009, Larnaca, Cyprus.

EDITORIALS, REVIEWS, AND INTERVIEWS BY OTHERS:

- "Get A Sneak Peek of UWM's New Lubar Entrepreneurship Center," Radio Interview: Ilya Avdeev, Brian Thompson & Tom Luljak, UWUM: Milwaukee Public Radio, 4/25/2019
<https://www.wuwm.com/post/get-sneak-peek-uwms-new-lubar-entrepreneurship-center#stream/0>
- "Transforming Ideas Into Action: UWM's Student Start-Up Challenge," Radio Interview: Ilya Avdeev, Brian Thompson and Katrina Carriveau & Tom Luljak, UWUM: Milwaukee Public Radio, 2/20/2014

<http://uwvm.com/post/transforming-ideas-action-uwms-student-start-challenge>

- “The Student Startup Challenge,” Radio Interview: Ilya Avdeev & Tom Luljak, UWUM: Milwaukee Public Radio, 1/17/2013:
<http://uwvm.com/post/student-startup-challenge>
- “Ilya Avdeev on Innovation and Entrepreneurs,” UWM Engineering & Applied Science YouTube Channel, 6/20/2014:
<https://www.youtube.com/watch?v=Kzs8R2QWpqY&list=PLnl6a9M7QRzy4Qxh5eNH0RrcFlkx>
- “Product Realization: Concept to Prototype,” UWM Engineering & Applied Science YouTube Channel, 6/10/2014:
<https://www.youtube.com/watch?v=wRnT3QS83jI&list=UUaN8Kp-loSW1ZFgB8FQoPNg>
- “A human-centered approach to training physicians,” by Laura Otto, 2/22/20,
<https://uwm.edu/news/uwm-partnership-features-human-centered-approach-to-training-physicians/>
- “Milwaukee doctor imagines better umbilical cord clamp,” by Kathleen Gallagher, Milwaukee Journal Sentinel, 05/04/2016:
<http://www.jsonline.com/business/local-doctor-imagines-better-umbilical-cord-clamp-b99719387z1-378170651.html>
- “UWM’s Student Startup Challenge selects 10 winners,” by Kathleen Gallagher, Milwaukee Journal Sentinel, 08/20/2014:
<http://www.jsonline.com/business/uwms-student-startup-challenge-selects-10-winners-b99334198z1-272008141.html>
- “Innovation is happening, now spread the news,” by Alison Bauter, Milwaukee Business Journal, 05/30/2014:
<http://www.bizjournals.com/milwaukee/print-edition/2014/05/30/innovation-is-happening-now-spread-the-news.html?page=all>
- “Pathways to Innovation program spreading entrepreneurship education,” by Kylie Jue, The Stanford Daily, 03/03/2014:
<http://www.stanforddaily.com/2014/03/03/pathways-to-innovation-program-spreading-entrepreneurship-education/>
- “Moving medical imaging to the next level,” by Laura Hunt, 2014 UWM Research Report:
<http://www5.uwm.edu/researchreport/2014/01/14/moving-medical-imaging-to-the-next-level/>
- “How to teach innovation UWM style,” by Laura Hunt, 2014 UWM Research Report:
<http://www5.uwm.edu/researchreport/2014/01/14/how-to-teach-innovation-uwm-style/>
- “Quest: Owning a business while still in college,” by Laura Hunt, 2014 UWM Research Report:
<http://www5.uwm.edu/researchreport/2014/01/14/quest-owning-a-business-while-still-in-college/>
- “UWM program aims to create entrepreneurial students,” by Dan Shafer, BizTimes Milwaukee, 12/16/2013:

<http://www.biztimes.com/article/20131216/MAGAZINE03/312139986/0/SEARCH>

- “UWM start-up contest throws cash behind entrepreneurs' ideas,” by Rick Romell, Milwaukee Journal Sentinel, 10/6/2012:

<http://www.jsonline.com/business/uwm-startup-contest-throws-cash-behind-entrepreneurs-ideas-n0722kk-172903231.html>

- “Start Me Up!” by Laura Hunt, University of Wisconsin-Milwaukee News, 9/17/2012:

<http://www5.uwm.edu/news/2012/09/28/start-me-up/#.UGdMYBgyD2I>

EXTERNAL FUNDING (TOTAL: \$3,293,982, AVDEEV'S SHARE: \$3,034,828):

- 1) I. Avdeev (PI) and B. Thompson (Co-PI), “I-Corps Hub of Great Lakes Region,” University of Michigan / NSF, \$320,000, January 2022 – December 2026.
- 2) N. Stern (PI), I. Avdeev (Co-PI) and C. Campos-Castillo (Co-PI), “NEA Research Lab (NAIL),” NEA, 149,487, June 2022 – June 2023.
- 3) K. Sobolev (PI), I. Avdeev (Co-PI) and H. Tabatabai (Co-PI), “IUCRC Planning Grant: University of Wisconsin-Milwaukee: Center for Concrete Advanced Network – CAN,” NSF, \$20,000, July 2021 – December 2022.
- 4) I. Avdeev (sole PI), “Developing Human Centered Design and Entrepreneurial Mindset Programs at MCW,” \$23,995, MCW/Kern Institute, September 2021 – August 2022.
- 5) I. Avdeev (sole PI), “Developing Human Centered Design and Entrepreneurial Mindset Programs at MCW,” \$23,995, MCW/Kern Institute, September 2020 – August 2021.
- 6) I. Avdeev (PI) and D. Qu (Co-PI), “Battery Modeling and Digital Twin Support - Phase I,” Martin Defense Group / NAVY, \$188,957, September 2021 – December 2022.
- 7) I. Avdeev (PI) and B. Thompson (Co-PI) “Supplement: I-Corps Sites: Type II – Southeastern I-Corps Site: Enhancing Regional Technology Commercialization,” NSF, \$31,999, September 2018 – December 2021.
- 8) I. Avdeev (sole PI), “Developing Human Centered Design and Entrepreneurial Mindset Programs at MCW,” \$23,995, MCW/Kern Institute, September 2019 – August 2020.
- 9) I. Avdeev (PI), K. Nelson (Co-PI), K. Sobolev (Co-PI) and N. Stern (Co-PI) “UWM Sustainability Challenge Program,” VentureWell, \$30,000, September 2019 – December 2023.
- 10) I. Avdeev (sole PI), “Towards Transformation of Medical Education,” \$23,995, MCW/Kern Institute, September 2018 – August 2019.
- 11) I. Avdeev (PI) and B. Thompson (Co-PI) “I-Corps Sites: Type II – Southeastern I-Corps Site: Enhancing Regional Technology Commercialization,” NSF, \$160,000, September 2018 – December 2022.
- 12) I. Avdeev (PI) and C. Berg (Co-PI) “NSF RET Site: Milwaukee Water-Energy Nexus Education Initiative,” NSF, \$600,000, May 2018 – April 2023.
- 13) B. Thompson (PI) and I. Avdeev (Co-PI) “I-Corps for Health,” WEDC, \$33,000, January 2017 – December 2017.

- 14) I. Avdeev (PI), J. Chen (Co-PI) and B. Thompson (Co-PI) "Supplement: Southeastern Wisconsin I-Corps Site: Enhancing Regional Technology Commercialization," NSF, \$30,000, January 2017 – March 2018.
- 15) I. Avdeev (PI), N. Stern (Co-PI) and B. Thompson (Co-PI) "I-Corps L: Product Realization 2.0 – Multidisciplinary Technology Entrepreneurship Capstone Course," NSF, \$50,000, July 2016 – January 2017.
- 16) I. Avdeev (PI), J. Chen (Co-PI) and B. Thompson (Co-PI) "Southeastern Wisconsin I-Corps Site: Enhancing Regional Technology Commercialization," NSF, \$298,557, April 2015 – March 2019.
- 17) I. Avdeev (sole PI) "Improving Crash Safety of Lithium-Ion Batteries (Phase III)," Johnson Controls, Inc., \$94,185, September 2014 – October 2016.
- 18) I. Avdeev (sole PI) "Reduced Order Model of Torsional Disk Couplings: Static and Eigenvalue Real-Time Analyses," Rexnord Innovation Center, \$48,546, November 2013 – August 2014.
- 19) I. Avdeev (sole PI) "Distributed Algorithms for Embedded Thermo-Mechanical Control," GE Healthcare Catalyst Program, \$54,480, July 2013 – December 2014.
- 20) J. Woehl (PI), I. Avdeev (Co-PI) and W.J. Chang (Co-PI) "Prototyping Platform for Accelerated Chemical Analysis and Drug Discovery at the Single Molecule Level," SE Wisconsin Applied Chemistry Center of Excellence Translational Grant Program, \$100,000, April 2014 – June 2015.
- 21) I. Avdeev (PI), N. Stern (co-PI) and B. Thompson (co-PI) "Establishing a Student Innovation and Entrepreneurship Program at UWM," Growth Agenda for Wisconsin: UW System Institutional Change Grant, \$275,000, July 2013 – July 2016.
- 22) I. Avdeev (sole PI) "Broadening Interdisciplinary Collaboration: from Product Realization to Student E-Teams," Tech Development Fund Award for Entrepreneurship Education, \$14,000, May 2013 – January 2014.
- 23) I. Avdeev (sole PI) "Improving Crash Safety of Lithium-Ion Batteries (Phase II)," Johnson Controls, Inc., \$104,000, April 2013 – July 2014.
- 24) I. Avdeev (PI), N. Stern (co-PI) and B. Thompson (co-PI) "Establishing a Technology Entrepreneurship Program at UW-Milwaukee," National Collegiate Inventors and Innovators Alliance (NCIIA), \$35,000, March 2013 – April 2015.
- 25) I. Avdeev (sole PI) "Developing Methodologies for Building Successful Entrepreneurial Student Teams," Tech Development Fund Award for Entrepreneurship Education, \$15,000, May 2012 – December 2012.
- 26) I. Avdeev (PI) and J. Weisshaar (co-PI) "Improving Crash Safety of Lithium-Ion Batteries (Phase I)," Johnson Controls, Inc., \$99,966, January 2012 – July 2013.
- 27) I. Avdeev (PI), C. Berg (co-PI), M. Lovell (co-PI) and David Yu (former PI) "RET SITE: Milwaukee Regional Energy Education Initiative," NSF, \$374,000, September 2011 – September 2015.
- 28) I. Avdeev (sole PI) "Component Design and Analysis of a Novel Engine System," Kashmerick Systems, \$2,000, October 2011 – February 2011.
- 29) I. Avdeev (sole PI) "Interface Fixture Development for CTD Component Testing," GE Healthcare, \$47,825, January 2011 – July 2011.
- 30) I. Avdeev (PI), D. Arion (co-PI) and M. Lovell (co-PI) "Establishing an E-Team Network in Southeastern Wisconsin," National Collegiate Inventors and Innovators Alliance (NCIIA), \$25,000, January 2010 – December 2013.

INTERNAL FUNDING (TOTAL: \$408,520, AVDEEV'S SHARE: \$349,520):

- 1) I. Avdeev (PI), N. Stern (Co-PI), and R. Singh (Co-PI) "Realizing Physics-Based Digital Twin of the Magnemotion Test Bed," \$50,000, Connected Systems Institute, May 2020 – April 2021.
- 2) Tuition Differential Proposal (CEAS): "THE STUDENT INVENTION LAB – A Multi-Disciplinary Makerspace," \$80,820, May 2016.
- 3) Tuition Differential Proposal (CEAS): "Establishing an Open 3-D Scanning and Reverse Engineering Laboratory at CEAS," \$3,900, May 2013.
- 4) Internal Instrumentation Award (CEAS and The Graduate School/UWM): "Dynamic Mechanical Analyzer for Thermo-Mechanical Studies of Advanced Materials," co-PI (PI: Dr. B. Church), \$69,000, March 2013.
- 5) Support for Undergraduate Research Fellows (SURF), \$6,000, 2012-2013.
- 6) CIE Faculty Travel Award, \$300, Summer 2012.
- 7) The Graduate School (UWM), graduate research scholarship supplement for NSF grant: "RET SITE: Milwaukee Regional Energy Education Initiative," \$120,000, 2011-2014.
- 8) CEAS Award: "Student Technology Hub – Pilot," \$50,000, April 2012 – December 2013.
- 9) ETM Research Award/Grant: "Building a Successful Entrepreneurial Multidisciplinary Student Team," PI (co-PI: Dr. J. Miller), \$5,000, April 2012.
- 10) UWM Symposium Travel Award: Price-Babson SEE, \$3,000, January 2012.
- 11) Support for Undergraduate Research Fellows (SURF), \$2,000, Summer 2012.
- 12) Support for Undergraduate Research Fellows (SURF), \$6,000, 2011-2012.
- 13) Support for Undergraduate Research Fellows (SURF), \$6,000, 2010-2011.
- 14) Support for Undergraduate Research Fellows (SURF), \$6,000, 2009-2010.
- 1) CIE Faculty Travel Award, \$500, Spring 2009.

PROPOSALS UNDER REVIEW:

- 2) I. Avdeev (PI), J. Gutzman (Co-PI), K. O'Connor (Co-PI) and J. Silvaggi (Co-PI), "NSF ART: Editing Campus Research DNA by Launching Center for Enabling Research Translation (CERT) at UW-Milwaukee," NSF, \$6,000,000, January 2024 – December 2028.
- 3) K. Sobolev (PI), I. Avdeev (Co-PI), H. Tabatabai (Co-PI), "I/UCRC Phase I University of Wisconsin-Milwaukee: Center for Concrete Advancement Network (CAN)," NSF, \$925,000, January 2023 – December 2025.

PROFESSIONAL ACTIVITIES:

- ASME member.
- Chair/Session Organizer, Dynamics, Vibration, and Control / System Control and Management technical session, ASME 2014 International Mechanical Engineering Congress & Exposition, Montreal, Canada (November 2014).
- Chair/Session Organizer, Energy / Electrochemical Energy Conversion and Storage / Lithium Batteries as well as Advanced Manufacturing / Additive Manufacturing / Process Development II technical sessions, ASME 2013 International Mechanical Engineering Congress & Exposition, San Diego, CA (November 2013).
- Reviewer, NASA Experimental Program to Stimulate Competitive Research (EPSCoR).
- Reviewer/panelist, National Science Foundation.
- Reviewer/panelist, National Collegiate Inventors and Innovators Alliance.
- Reviewer, Journal of Power Sources
- Reviewer, Journal of Mathematics and Computers in Simulation.
- Reviewer, IOP Conference Series: Material Science Engineering Journal.
- Reviewer, Journal of Materials Engineering and Performance.
- Reviewer, Proceedings of the National Conferences on Undergraduate Research.
- Panel Member/Judge: Wisconsin Clean Energy Student Business Plan Competition.
- Panel Member/Judge: CEO Quick Pitch Competition (UWM/Lubar School of Business).
- Member, Organizing Committee and Invited Speaker, First Southeast Wisconsin Gear Summit (Spring 2010).
- Member, Organizing Committee and Invited Speaker, TACOM meeting (Spring 2010).

PATENTS/DISCLOSURES:

- C. Potter, I. Avdeev and A. Francis, "An Enhanced Umbilical Cord Clamp," – provisional patent filed (2015).
- I. Avdeev "Detection of battery chemistry for recycling stream separation," – disclosure (2015).
- I. Avdeev, C. Spor, W. Sun, M. Patchen, R. Strand and J. Rogers "Cordless Drying System with Energy Efficient Fan/Battery Configuration" – disclosure (2014).
- I. Avdeev and R. Bergren "Cordless Smart Drying System" – disclosure (2014).
- W.-J. Chang and I. Avdeev "Simultaneous three-dimensional observation of particles using selective mirror coating and micro-lens structure in microfluidic device" – disclosure (2013).
- I. Avdeev and T. Consi "Optical Scanner for Rapid Measurement of Fish Morphology" – disclosure (2013).
- I. Avdeev, B. Cera and M. Oldani "Hand Free Gloving Device" – disclosure (2013).

TEACHING:**ME-405/IE-405/ART-405: “Product Realization” (U/G), 3.0 credit hours.**

This interdisciplinary course considers the diverse aspects of the product realization process which includes: (1) defining user requirements, (2) ideation and concept generation, (3) rapid prototyping techniques, and 4) the development of a manufacturing plan. Working in multidisciplinary design teams (4-5 students) from engineering and art, students take a product from concept to working prototype. The course culminates in a final presentation of a working prototype to a panel consisting of individuals from industry and academia. Each student team is given \$2,500 budget for prototype development. Project sponsors range from Fortune-500 companies to student start-ups.

ME-463: “Intro to Finite Element Analysis” (U/G), 3.0 credit hours.

In this course, the underlying theory of the Finite Element Method (FEM) is presented in weekly lectures. Students learn mathematical foundations of the finite element method. Students also learn practical modeling skills needed for efficient use of the method. At approximately half way through the course students are asked to choose a product to analyze with the finite element method. The goal of the product analysis (team project) is to learn principles and methods of the FEM in the context of realistic product development.

ME-474: “Intro to Controls” (U/G), 4.0 credit hours.

In this course, fundamentals of control theory are presented in weekly lectures accompanied by weekly laboratory sessions. Some of the topics covered in the class: (1) dynamic models and state representation, (2) Laplace transforms, (3) block diagram reduction and system response, (4) time domain specifications, (5) PID control and root locust, and (6) frequency response. Students learn control theory as well as how to apply it for design of systems. Real-world examples are used throughout the course.

ME-890: “Multi-Physics Modeling” (G), 3.0 credit hours.

A new graduate course covering modeling and computational issues in coupled-field problems. Some of the topics covered in the class: (1) fundamentals of multi-physics problems, (2) electrostatic-structural coupling, (3) thermo-mechanical problems, and (4) fluid-structural interaction. Students periodically prepare presentations from material in journals, or books on selected topics. Practical aspects of solving coupled-field problems using commercial FEA software packages are discussed.

ME-490: “Design Thinking Studio” (U/G), 3.0 credit hours.

In this course students from various disciplines learn to become design thinkers in a studio/workshop format. Several team design sprints are coordinated throughout the semester offering experiential learning opportunities for student to work on teams and re-design various services, products and learning. The curriculum is focused on human-centered design.

ME-490: “Reduced-Order Modeling” (U/G), 3/0 credit hours.

In this course students learn how to mathematically formulate reduced-order modeling schemes; navigate between modeling scales; apply these fundamental principles to a variety of problem spaces; design and build a “Digital Twin” and apply reduced-order modeling to Industrial Internet of Things problems.

Student evaluations:

Term	Course	Number of Evaluations	I. Avdeev	Averages	
				ME	CEAS
Fall 2009	Intro to Finite Elements	31	4.49/5.00	4.11	4.26
Spring 2010	Introduction to Control Systems	45	4.03/5.00	4.07	4.25
Fall 2010	Intro to Finite Elements	29	4.54/5.00	4.19	4.16
Spring 2011	Intro to Finite Elements	29	4.70/5.00	4.18	4.25
Fall 2011	Intro to Finite Elements	37	4.47/5.00	4.24	4.28
	Product Realization	20	4.73/5.00	4.24	4.28
Spring 2012	Intro to Finite Elements	37	4.58/5.00	4.00	4.25
	Product Realization	26	4.85/5.00	4.00	4.25
Fall 2012	Intro to Finite Elements	40	4.31/5.00	3.99	4.24
	Product Realization	25	4.54/5.00	3.99	4.24
Spring 2013	Product Realization	25	4.81/5.00	4.15	4.25
Fall 2013	Product Realization	17	4.88/5.00	3.92	4.20
Spring 2014	Product Realization	30	4.53/5.00	4.32	4.25
Fall 2014	Multi-Physics Modeling	16	4.64/5.00	N/A	N/A
	Product Realization	23	4.64/5.00	N/A	N/A
Fall 2015	Product Realization	N/A	4.66/5.00	N/A	N/A
Spring 2017	Product Realization	25	4.69/5.00	4.41	4.29
Fall 2017	Product Realization	24	4.75/5.00	4.36	4.29
Spring 2018	Product Realization	24	4.67/5.00	4.34	4.23
	Design Thinking Studio	27	4.35/5.00	4.34	4.23
Fall 2018	Design Thinking Studio	12	4.83/5.00	4.23	4.24
Spring 2019	Reduced-Order Modeling	9	4.61/5.00	4.25	4.25
Fall 2019	Design Thinking Studio	15	4.72/5.00	4.55	N/A

INNOVATION WORKSHOPS:

Since assuming role of the Associate Director / Director of Innovation at the Lubar Entrepreneurship Center in 2018, Dr. Avdeev co-designed and co-facilitated **277** non-credit workshops covering various topics of Human-Centered Design, Lean Launch, and Innovation:

	2018	2019	2020	2021	2022	2023*
Number of workshops	36	36	32	81	51	41
Number of unique participants	681	1,919	440	919	990	826
Total number of in-class participants	1,146	2,405	1,053	2,345	1,773	1,089

* January – August 2023

Workshop participants included UWM students, faculty and staff engaged through LEC Pop-Up program and various design or entrepreneurial sprints. NSF I-Corps workshops engaged students and researchers from UWM, MCW, MU, MSOE, CUW, UW-Madison, Northwestern University, Purdue University, Stanford University, Ohio State University as well as community STEM entrepreneurs. Teaching & Learning Studio workshops at Stanford University engaged university educators from around the World. K-12 workshops engaged educators from MPS, Shorewood, New Berlin and Pathways High. Design sprints engaged with healthcare partners and community partners.

2023: 41 workshops / 826 unique participants

Topic / Workshop Title	Date(s)	Participants
MCW/Kern: Mobile Clinic Design Sprint	1/6/23	15
LEC: OUA Staff Training: Recruitment. Reimagined	1/9/23	15
NSF I-Corps: Graduate Student Winter Bootcamp - Day 1	1/17/23	15
MCW/Kern: Mobile Clinic Design Sprint	1/18/23	16
NSF I-Corps: Graduate Student Winter Bootcamp - Day 2	1/18/23	15
NSF I-Corps: Graduate Student Winter Bootcamp - Day 3	1/19/23	15
LEC: OUA Campus Ambassadors: Innovative Tour Techniques	1/20/23	20
MCW/Kern: Mobile Clinic Design Sprint	1/20/23	24
LEC: Taste of Design Thinking (OCCTHPY-151)	2/1/23	22
NSF I-Corps: Spring 2023 Cohort - Session #1	2/20/23	35
LEC: Taste of Design Thinking / Asynchronous (BUSADM 707)	3/5/23	40
NSF I-Corps: Spring 2023 Cohort - Session #2	2/27/23	35
NSF I-Corps: Spring 2023 Cohort - Session #3	3/6/23	35
NSF I-Corps: Spring 2023 Cohort - Session #4	3/13/23	35

NSF I-Corps: Spring 2023 Cohort - Session #5	3/20/23	35
NSF I-Corps: AgTech I-Corps Info Session #1	4/4/23	20
MCW/Kern: Mobile Screening and Testing Services: Froedtert / Pop Health	4/5/23	20
LEC: Taste of Human-Centered Design (EAS-200)	11/10/22	80
NSF I-Corps: AgTech I-Corps Info Session #2	4/10/23	20
LEC: Design Thinking @ "Gadgets & Gizmos" - Session #1	4/11/23	21
LEC: Taste of Design Thinking / American Indian College Fund	4/11/23	9
NSF I-Corps: NanoTech Jumpstart Regional Course - Session #1	5/12/23	30
NSF I-Corps: NextProf Engineering / Next Innovator: Ideas Worth Pursuing	5/17/23	25
NSF I-Corps: NanoTech Jumpstart Regional Course - Session #2	5/19/23	30
NSF I-Corps: NanoTech Jumpstart Regional Course - Session #3	6/2/23	30
LEC: Air National Guard / Innovation Bootcamp	6/13/23	25
NSF I-Corps: NanoTech Jumpstart Regional Course - Session #4	6/16/23	30
MCW/Kern: TI2-Year-1 / Workshop #1	6/29/23	24
NSF I-Corps: NanoTech Jumpstart Regional Course - Session #5	6/30/23	30
NSF I-Corps: Summer 2023 Cohort - Session #1	7/17/23	25
NSF I-Corps: Summer 2023 Cohort - Session #2	7/24/23	25
Stanford [d.school] / Teaching & Learning Studio: Coach	7/24/23	4
NSF I-Corps: Summer 2023 Cohort - Session #3	7/31/23	25
NSF I-Corps: Summer 2023 Cohort - Session #4	8/7/23	25
NSF I-Corps: Ideas Worth Pursuing / MEEN Inclusive Innovator Summit	8/9/23	20
NSF I-Corps: Summer 2023 Cohort - Session #5	8/14/23	25
MCW/Kern: TI2-Year-1 / Workshop #2	8/17/23	24
NSF I-Corps Graduate Student Winter Bootcamp - Day 1	8/28/23	40
NSF I-Corps Graduate Student Winter Bootcamp - Day 2	8/29/23	40
NSF I-Corps Graduate Student Winter Bootcamp - Day 3	8/30/23	40
LEC: DNP/PhD Nursing Student Orientation: Intro to Innovation	8/23/23	30

SERVICE AS THESIS/DISSERTATION ADVISOR:

- Ming Chen, **MS**, "Digital Twin Model Design for a Test Bed System," (degree 8/23)
- Alex Francis, **PhD**, "Towards Better Understanding of Failure in Lithium-Ion Batteries: Design for Safety," (degree 6/18).

- Mehdi Gilaki, **PhD**, “Design for Safety: Characterization of Structural Impact on Lithium Ion Battery,” (degree 5/17).
- Mason Pingel, **MS**, “Study of Separator Damage Effects on Lithium Ion Battery Cell’s Performance,” (degree 1/18)
- Alex Francis, **MS**, “Experimental, Numerical and Analytical Characterization of Torsional Disk Coupling Systems,” (degree 6/14).
- Samuel Alberts, **MS**, “Mechanics of Bolted Electrical Splices,” (degree 5/13).
- David Revers, **MS**, “Preventing Sheet Metal Wrinkling in Coil Lines,” (degree 12/12).
- Peter Doval, **MS**, “Aerodynamic Analysis and Drag Coefficient Evaluation of Time-Trial Bicycle Riders,” (degree 12/12).
- Michael Martinsen, **MS**, “Material Behavior Characterization of a Thin Film Polymer Used in Lithium-Ion Batteries,” (degree 12/12).
- Austen Scudder, **MS**, “Infrared Fracture Detection of Bare Metal Stents,” (degree 12/11).
- Mir Shams, **MS**, “Motion Tracking and Structural Analysis of Peripheral Vascular Stents,” (degree 5/11).

MENTORING UWM’S UNIVERSITY INNOVATION FELLOWS (UIF): PROGRAM OF THE HASSO PLATTNER INSTITUTE OF DESIGN (D.SCHOOL) AT STANFORD UNIVERSITY:

- Robert Salamon
- Alex Francis
- Carlton Reeves
- Nicole Green
- Amin Mojtahedi
- David Gallegos
- Tahereh Hosseini
- Aaron Davis
- Alycia Doxon
- Tou Jim Lee
- Hoda Ganji
- Mahshid Jalalianhosseini
- Madeline Horinek
- Ilian Iliev
- Kaitlyn Jankowski
- Mitchell Merz
- Justin Davis
- Elizabeth Gallagher
- Loren Nelson
- Collin Roberts
- Caleb Marks
- Rudi Marciniak
- Antonina Johnston
- Allyn Lottouzee
- Manuel Garmendez

SERVICE ON ADVISORY COMMITTEES (PARTIAL LIST):**PhD:**

- Amin Zrandi, PhD (Advisor, Prof. Pillai, Mechanical Engineering)
- Rasoul Hosseini, PhD (Advisor, Prof. Cuzner, Electrical Engineering)
- MD AssaudUz Zaaman, PhD (Advisor, Prof. Rahman, Mechanical Engineering)
- Lindsey Roddy, PhD (Advisor, Prof. Polfuss, Nursing)
- Pradeep Mohan Das, PhD (Advisor: Prof. Amano, Mechanical Engineering)
- Gurjeet Singh, PhD (Advisor: Prof. Beschorner, Industrial Engineering)
- Arjumand Ali, PhD (Advisor: Prof. Dhingra, Mechanical Engineering)
- Sung Cheng Wong, PhD (Advisor: Prof. Jen, Mechanical Engineering)
- Ehsan Mohseni Languri, PhD (Advisor: Prof. Pillai, Mechanical Engineering)
- Reyhaneh Sepehr, PhD (Advisor: Prof. Ranji, Electrical Engineering)
- Deepak Gupta, PhD (Advisor: Prof. Dhingra, Mechanical Engineering)
- Carlton Reeves, PhD (Advisor: Prof. Jen, Mechanical Engineering)
- Scott Muzenski, PhD (Advisor: Prof. Sobolev, Civil Engineering and Mechanics)
- Emil Bautista, PhD (Advisor: Prof. Sobolev, Civil Engineering and Mechanics)
- Bamdad Barari, PhD (Advisor: Prof. Pillai, Mechanical Engineering)

MS:

- Chuanfeng Wang, MS (Advisor: Prof. Nosonovsky, Mechanical Engineering)
- Georgios Nianios, MS (Advisor: Prof. Papaioannou, Civil Engineering and Mechanics)
- Gonzalo A. Rocha Rivero, MS (Advisor: Prof. Church, Materials Engineering)
- Kyle Kalbus, MS (Advisor: Prof. Nidal, Materials Engineering)
- Colin Foster, MS (Advisor: Prof. Armstrong, Electrical Engineering)
- Luis Miguel Giraldez Pizarro MS, (Advisor: Prof. Church, Materials Engineering)
- Md Hayder Ali, MS (Advisor: Prof. Nosonovsky, Mechanical Engineering)
- Hussain Altammar, MS (Advisor: Prof. Dhingra, Mechanical Engineering)
- Christian Larson, MS (Advisor: Prof. Law, Electrical Engineering)
- Logan Crain, MS (Advisor: Prof. Qu, Mechanical Engineering)
- Ehsan Sanatizadeh, MS (Advisor: Prof. Salowitz, Mechanical Engineering)

PROGRAM DEVELOPMENT, IMPLEMENTATION, AND MANAGEMENT:

- Developed new curriculum for NSF I-Corps Site of Southeastern Wisconsin and NSF Hub of Great Lakes Region.
- Developed new curriculum for innovation and human-centered design curriculum implemented at the Lubar Entrepreneurship Center.
- Developed new course “Design Thinking Studio” (ME-490 and ME-890).
- Developed new course “Reduced-Order Modeling” (ME-490).
- Developed new course “Multi-Physics Modeling” (ME-890).
- Developed curriculum for “Intro to Finite Element Analysis” (ME-463) and adopted curriculum for

“Introduction to Control Systems” (ME -474).

- Developed on-line content for ME-463, ME-474 and ME-405 courses (D2L).
- Developed lectures and handouts for ME-463, ME -474, ME-405 and ME-890.

OTHER TEACHING ACTIVITIES:

- Co-instructor at Stanford University’s d.school Teaching & Learning Studio, 2019-present
- Design coach at Stanford University’s d.school Teaching & Learning Studio, 2018-present
- Adjunct Instructor, Academy for Innovation & Entrepreneurship, University of Maryland, 2021-2022.
- Instructor, Jumpstart course, NSF I-Corps Hub of Great Lakes Region, 2021-present.

SERVICE:

Department/College (CEAS) Service:

- Mechanical Engineering / CEAS APC Co-Chair (2018-present)
- Member of CEAS Professional Master’s Program Task Force Group (2014).
- Mechanical Engineering UPC committee member (2009-2014).
- Mechanical Engineering ABET subcommittee member (2009-2010).
- Mechanical Engineering Department’s recording secretary (2009-2010).
- ME Department representative at UWM commencement ceremonies (2009-2013).
- ME Department representative at Order of Engineers ceremonies for graduating CEAS students (2009-2014).
- Organized and coordinated work of the Rapid Prototyping Lab (ANSYS Institute for Industrial Innovation) supporting CEAS academic/research activities (2009-2010).
- Volunteer/judge for the FTC robotics competition (Spring 2010).
- UWM Open House volunteer (Fall 2009, Fall 2010).
- CEAS representative at 2009 Wisconsin State Fair (Summer 2009).
- Preparation and grading Ph.D. qualifying exams (2009 -present).

University Service:

- Member of the CSI Director Search and Screen Committee (2019-2020).
- Member of the Lubar Center for Entrepreneurship: Director Search and Screen Committee (2016).
- Member of the Lubar Center for Entrepreneurship and Welcome Center: Building Planning Committee (2015-2016).
- Member of the Director of Admissions & Recruitment Search Committee (2013).
- Member of the Advisory Board for Design Research Institute (since 2012).

- Founding director of the UWM Student Startup Challenge (since 2012).
- Member of the task force to create Wisconsin Institute for Manufacturing Innovations (WIMI) (since 2012).
- Member of the Design Research Institute's Director Search Committee (2011-2012).
- Member of the Technology Management Task Force (since 2011).
- Member of the Digital Future Research Focus Group (2011).
- Member of the Center for Global Studies Advisory Committee (since 2010).

Community Service:

- Leading community design project of a mobile health clinic in partnership with Froedtert Health and Medical College of Wisconsin.
- Leading outreach on innovation and design thinking at various school districts (Milwaukee Public Schools, Shorewood, New Berlin, Pathways High).
- Coordinating Research Experience for Teachers (RET) site sponsored by NSF – bringing high school science and math teachers to UWM research labs during summers (2012-present).
- NSF/FORTE student mentor (2012).
- Organized a tour of CEAS labs for a group of students from one of the MPS charter middle schools (2010).

NSF I-Corps Hub of Great Lakes Region Service:

- Member of the faculty leads committee.
- Member of the curriculum committee.
- Curriculum designer for Pathways to Impact program.

Other Professional Service:

- Member of Electrochemical Energy Conversion and Storage Technical Committee, Advanced Energy Systems Division, ASME.
- Member of Technical Committee on Computing in Applied Mechanics, Applied Mechanics Division, ASME.
Chair/Session Organizer, Energy/Electrochemical Energy Conversion and Storage/Lithium Batteries technical session, ASME 2013 International Mechanical Engineering Congress & Exposition (November 2013).
- Chair/Session Organizer, Advanced Manufacturing/Additive Manufacturing/Process Development II technical session, ASME 2013 International Mechanical Engineering Congress & Exposition (November 2013).
- Member, Organizing Committee and Invited Speaker, First Southeast Wisconsin Gear Summit, (Link: <http://www4.uwm.edu/ceas/gear/>) (Spring 2010).
- Member, Organizing Committee and Invited Speaker, TACOM meeting (Spring 2010).
- Reviewer, Proceedings of the National Conferences on Undergraduate Research.

Involvement in student activities:

- Advisor, “Life Bus” Johns Hopkins COVID-19 Biomedical Hack-a-Thon (2020)
- Mentor for I-Corps and Student Startup Challenge team`s (2015-present)
- Faculty Advisor / Sponsor for University Innovation Fellows at UWM (2016-present)
- Faculty Advisor for UWM Prototyping Club (2018-present)
- Advisor for UWM-ASME Human Powered Vehicles Student Team (2011).
- Advisor for UWM Collegiate Entrepreneur Organization (2013-present).