

Yevgeniy Yesilevskiy

Curriculum Vitae

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Education

- 2013– **The University of Michigan, Ann Arbor, MI.**
2018 Ph.D., Mechanical Engineering
- Dissertation Topic: Understanding and Improving Locomotion, The Simultaneous Optimization of Motion and Morphology in Legged Robots
 - Advisor: Dr. C. David Remy
 - Committee: Dr. Jessy Grizzle, Dr. Keith Buffinton, Dr. Gregory Hulbert
- M.S., Mechanical Engineering, June 2016,
2009– **The Cooper Union, New York City, NY.**
2013 Bachelor of Engineering *summa cum laude*, May 2013,

Teaching - Columbia University

- 2019– **Mechanical Engineering Professor, COLUMBIA UNIVERSITY, New York City, NY.**
Present Senior Lecturer in the Discipline of Innovation and Design in the department of Mechanical Engineering. My main responsibilities include teaching courses that focus on design and innovation. In particular, those courses that have an active, project-based focus. Additional responsibilities include identifying needs for curriculum and course enhancement within the Mechanical Engineering department, and developing new teaching modules and initiatives to address them.

○ Courses Taught

- Mechanical Engineering Courses
 - MECE 3018: Mechanical Engineering Lab 1
 - MECE 3408: Computer Graphics & Design
 - MECE 3409: Machine Design
 - MECE 3411: Fundamentals of Engineering
 - MECE 3311: Heat Transfer
 - MECE 3420: Engineering Design - Concept/Design Generating
 - MECE 3430: Engineering Design (Second half of Senior Design Capstone Course)
 - MECE 4300: Graduate Design
- Multiple Disciplines
 - ENGI 4507: Fundamental Design Tools (MBAxMS program)
 - ENGI 4200: Global Engineering Concepts
- Columbia Engineering Summer High School Academic Program for Engineers (SHAPE)
 - Innovation and Design
 - Advanced Robotics

○ Course Design & Improvement

- Project Kits
 - Led the effort to develop extensive project kits during the COVID-19 pandemic. Kids were sent to students to use in the 2020-2021 school year in all of their mechanical engineering hands-on,

project-based courses. The kits included 3D printers for all senior mechanical engineers, as well as extensive mechanical and electrical equipment. Additional information:

- <https://www.youtube.com/watch?v=0afJE73QZ9g&t=1s>.
- <https://www.magazine.columbia.edu/article/laboratory-fit-lockdown>
- Coordinated the development of kits for all mechanical engineering courses.
- Worked closely with Environmental Health & Safety to ensure appropriate safety protocols and protective equipment were provided for students.
- Aided in the development of a 3D printer troubleshooting document for students.

– **MECE 3018: Lab I**

- Received a \$10,000 Provost Innovative Course Design award for the proposal titled *Introducing Experimental Design to Promote Active Learning*. Modified the course to push students towards increased autonomy in creating their own experiments.
- Presented on the results at the 2022 American Society of Engineering Education (ASEE) Conference
- Met weekly with the Columbia Center for Teaching and Learning for progress check-ins, created surveys, and oversaw focus group guides to track the efficacy of modifications on student learning outcomes. Filed for IRB approval for the study as lead PI.
- Worked closely with Professor James Hone on the hand-off of the course to him, including collaborating on a new experimental design to teach students how to characterize a motor's speed-torque curve.

– **ENGI E4507: Fundamental Design Tools**

- Created a new course for Columbia's Dual MBA/Executive MS: Engineering & Applied Science program.
- The course covers fundamental engineering design tools for creating and testing physical products. Topics include sketching, computer-aided design, 3D printing, circuit design, microcontrollers (Arduino, ESP8266, and Raspberry Pi), internet of things, and machine learning.
- Working in teams, student groups use Raspberry Pis to train a machine learning algorithm to do on-board object detection of different recyclable items (at a small model scale). The Pi in turn wirelessly transmits the type of item to an Arduino that controls a student-designed and constructed servo-actuated robotic arm. The robotic arm proceeds to sort the item into the correct bin.
- Course media:
 - <https://youtu.be/tB2d0nn9MxY?si=o-AHqMZ3bTq0ExIU>
 - <https://www.me.columbia.edu/news/robotics-roi>

– **MECE 3311: Heat Transfer**

- Introduced, for the first time in its teaching at Columbia, numerical methods such as Euler integration and Finite Element Analysis to update the course to reflect modern mechanical engineering practices.
- Created new homework assignments for the course to ensure students were considering each topic carefully. In particular, assignments required students to use fundamental theory to validate and contextualize their simulation results.

– **MECE 3409: Machine Design**

- Modernized the course by restructuring the emphasis from fracture mechanics to practical design. Students learn how to integrate dynamics, electronics, programming, controls, and machining into a mechanical system through the course project. For that project, they build four-bar linkages tasked with pressing arcade buttons at specific locations in a sequence as fast as possible.
- Students go through the entire machine design process, from basic geometric planning, to manufacturing, to transmission creation, to wiring and sensing, to controls and actuation.
- The first iteration of the project can be seen here: <https://www.youtube.com/watch?v=7LHcRChSRJE>

– **MECE 3420/3430: Senior Design**

- Restructured the course as it transitioned from a 4-credit to 6-credit class. Focused the first semester on user-centered design generation and low-fidelity prototyping. Focused the second semester on analysis and refined prototypes.

- Introduced a number of new topics to teach skills needed for their projects that are not covered elsewhere in the department. Examples include:
 - Additional finite element analysis in Solidworks.
 - Dynamic simulations in Solidworks.
 - Numerical simulations and optimization in MATLAB.
 - Impact simulations in Ansys.
 - App development in Processing and Blynk.
- Led the transition to an online version during the COVID-19 pandemic. Introduced a business plan component and pitch video as alternative deliverables.
- Worked with multiple teams to discuss provisional patent applications and competition entries as they push their projects forward beyond graduation. Two recent teams participated in the Millard Chan '99 Technology Challenge. **Milkshakers** won the \$15,000 2nd place prize for their mastitis treatment device. **Swerv** won the \$10,000 3rd place prize for their energy recovery ventilator.
- **MECE E3411 Review of Fundamentals of Mechanical Engineering**
 - Updated all materials to introduce a problem-based focus in class.
- **MECE E3408 Computer Graphics & Design**
 - Introduced Design Challenges within each problem set that call on students to design and model new parts to meet a given set of criteria, rather than simply following existing measurements.
 - Challenges include designing a portion of a robotic leg that must interface with design constraints on an existing robot, designing a phone holder that must interface with provided bicycle handlebar dimensions, and an attachment to modify an existing sink to have a motion-sensor triggered faucet.
- **MECE E4058 Mechatronics & Embedded Microcomputers**
 - Developed new hardware for the class taught by Enrico Zordan to improve availability of working case studies for students. Fixed all existing PIC microcontroller solenoid setups for their second case study. Developed novel case studies for magnetic levitation, stepper motor control, and DC motor control.
- **ENGI E4200 Global Engineering Concepts**
 - Created a new graduate course that introduced students to contemporary cases in engineering that impact the world. Each week, taught a new topic related to engineering in a global context. The course culminated in a final project in which students chose a company and created a proposal for or against global expansion.
- **MECE E4300 Graduate Design**
 - Developed a new course where Graduate students conduct research to develop a novel, in a patent sense, mechanical engineering solution to a real problem. The course guides students through the design process as they find a problem, conceptualize a solution, and build a proof-of-concept prototype.
- **MECE E3998 Independent Projects in Mechanical Engineering**
 - Working with junior and senior undergraduate Electrical Engineering students **John Paul Salvatore and Jordany Acosta Capellan** as they collaborate with a Mechanical Engineering Senior Design team on an open-source lithography machine.
 - Working with senior undergraduate student **Dongjun Lee** as he conceptualizes, designs, and prototypes a novel cup-carrying device.
 - Worked with senior undergraduate Biomedical Engineering student **Aileen Liu** as she collaborated with a Mechanical Engineering Machine Design team.
 - Worked with master's student **Andrew Zheng** as he updated the design of his Senior Design project, a latte art pouring robot, using rigorous robotic theory in kinematics, dynamics, and material selection.
 - Worked with master's student **Angella Baigorria** as she develops a robotic hopping leg using an ODrive motor control board.
 - Oversaw the Bancroft Research Scholar work done by Computer Science & Film student **Ernest Hunter-Doradea** as he researches the development of a novel hoverboard.

- Worked with senior undergraduate student **Jayden Dore** as he creates an electric vehicle model in Matlab Simulink.
- Worked with senior undergraduate student **Veronika Zam** as she develops and prototypes a novel drone design.
- Worked with senior undergraduate student **Emiliano Villicana Brugada** as he develops a novel robotic platform.
- Worked with senior undergraduate student **Avery Rambour** to develop simulation tools so that students can base their linkage designs in Machine Design off of predicted torque values.
- Worked with senior undergraduate student **Achilles Batista** as he develops a novel device to automatically sort drill bits by size.
- Worked with master's student **Ethan Shek** as he develops a novel compliant mechanism.
- Worked with senior undergraduate students **Nachum Twersky, Uri Spiro, and Daniel Glick** as they develop a novel large-scale 4-legged robot designed to cost under \$1000.
- Worked with senior undergraduate student **Rafael Barcan** as he extended on his senior design project, an oil-leak pipe-inspection robot. Guided him through developing an LQR controller to improve stability of the robot as it traversed the oil pipe.
- Worked with master's student **Catherine Schmidtberger** as she created project materials for a proposed Internet of Mechanical Things course.
- Worked with master's student **Nicholas Hall** as he developed a novel invention for golf training. Guided Nicholas through the ideation, business plan, and prototype development phases.
- Worked with senior undergraduate student **Joaquin Zavala** to oversee his work developing engineering toys for children to play with. Projects included a tower built of magnetic connection pieces and a marble run.
- Worked with senior undergraduate **Nadine Wong** to develop novel labs for the junior level Lab II course.
- **Columbia Summer High School Academic Program for Engineers (SHAPE).**
 - Developed and taught two new 3-week courses, **Innovation and Design**, as well as **Advanced Robotics**.
 - During the pandemic, developed project kit budgets for the courses. Students were sent electronics and other prototyping materials to provide a hands-on learning experience.
 - Post-pandemic, reorganized both classes for in-person teaching.
 - In **Innovation and Design**, students utilize 3D modeling, 3D printing, and circuitry to create an initial prototype for a novel invention.
 - In **Advanced Robotics**, students sketch, design, 3D model, 3D Print, and program a servo-actuated 4-legged walking robot
 - Developed internal survey to track efficacy of the program in improving student learning outcomes.

Departmental and School Activities - Columbia University

o Lab Director of Professor Mary Boyce's Soft Materials Lab

- Lab technician for all equipment, including:
 - Stratasys Polyjet J826 multi-material printer
 - Zwick material testing machine
 - Instron material testing machine
 - Waterjet
 - Digital Image Correlation
 - Camera equipment for recording trials
- Responsible for setting up, maintaining, and teaching the use of lab equipment.
- Responsible for developing user guides to allow students to understand and utilize lab equipment.

- Responsible for developing safety protocols and ensuring compliance with Columbia's Environmental Health & Safety team.
- **Faculty Search Committees**
 - Robotics Faculty Position
 - Worked with robotics professors in the department to review applications, interview, and make hiring decisions for open robotics positions.
 - 2021-2022 Robotics Faculty Position Member
 - 2024-2025 Robotics Faculty Position Member
 - Lecturer Position
 - Chair of the 2025-2026 Lecturer search
 - Reviewed applications, prepared all materials for faculty candidate interviews, and coordinated scheduling of interviews.
- **DEI**
 - Departmental representative to the Engineering School DEI Faculty Committee (2023-2024 academic year).
 - Attend monthly meetings to give updates on departmental progress and discuss school-wide DEI initiatives
 - Member of Mechanical Engineering DEI Committee (2020-2024)
 - Responsible for voting and working on DEI initiatives in the department.
 - Led the effort to develop a mini-grant for students to be able to attend conferences they could not otherwise afford. Worked with the departmental financial officer to create an application process to cover up to \$300 in conference expenses for up to 10 students.
- **FaceShieldOne**
 - Lead designer and project head for FaceShieldOne, a plastic face shield that can be rapidly cut out of single sheets of plastic for rapid manufacture. I designed the face shield after an urgent call for protective equipment from the New York Presbyterian hospital network at the height of the Covid-19 pandemic in New York City.
 - The New York Presbyterian hospital network ordered **two million units** of the design. I worked closely with hospital officials, clinicians, and the manufacturer to coordinate a hospital approved manufacturing process.
 - Met multiple times with ConEd officials to coordinate their manufacture of the design. ConEd produced an additional 40,000 FaceShieldOne units.
 - Working with two laboratory technicians, manufactured 16,000 units using the waterjet in the Columbia Makerspace for immediate delivery to hospitals in urgent need.
 - Worked with Columbia Technology Ventures to file a provisional patent application and develop a free click-license for the design.
 - Media:
 - Health Matters <https://tinyurl.com/yw7hp6jm>
 - Columbia Magazine – <https://tinyurl.com/yc5xu4dp>
 - Columbia University Neighbors – <https://tinyurl.com/2p9hcxed>
 - ConEd – <https://tinyurl.com/ynj3nb79>
- **Additional Covid-19 Efforts**
 - Member of the Copan Swab Working group. Worked with multiple professors on an alternative nasopharyngeal swab after the Copan company could not meet demand.

- Advised multiple teams participating in the Columbia DIY Ventilator Challenge on their ventilator designs.
- Worked with members of Carleton Labs to develop an alternative oxygen DISS splitter to allow multiple patients to receive oxygen from a single oxygen port after supplies of existing splitters were exhausted.
- Member of the SEAS Education Working Group, a selected collection of professors from all departments in the School of Engineering and Applied Science tasked with developing and giving feedback on the school's educational plan for the 2020-21 COVID-impacted school year.
- Worked with numerous faculty and staff to develop alternative teaching modalities and space considerations to allow for hybrid teaching.
- Advised David Nieto's Summer 2020 Design Challenge team as they worked to develop a reusable menstrual pad system.

○ **Undergraduate Committee**

- Responsible for voting on approving course changes, approving additions to the undergraduate curriculum, developing undergraduate initiatives, and deciding on award recipients.
- Researched Onshape for the Computer Graphics & Design course to accommodate the rapidly growing student population.
- Member of the Lab II subcommittee, tasked with developing experiments and re-envisioning the junior-level Lab II course.
- Participate yearly in the departmental grade review with Kristin Myers to decide actions to take for academically troubled students.
- Work with the department to organize in-person graduation events. This includes serving as the MC for the Senior Dinner.
- Participate in departmental combined plan orientation, junior/senior orientation, declaration social for sophomores, and the Academic Resources Fair.
- Developed equitable final exam guidelines for the department once courses transitioned to online during the Covid-19 pandemic.
- Undergraduate student advisor for numerous sophomores, juniors, and seniors.
- Updated mechanical engineering minor requirements in the course bulletin.
- Organized Junior Advising Night that allowed junior students to meet their faculty advisors at a relaxed dinner, allowing for easier future interaction.
- Participated in numerous student events including speaking at an ASME sophomore recruiting night, attending undergraduate town halls, attending the graduate student reception, and participating in PhD recruitment.
- Review master's applications for the Mechanical Engineering department.
- Performed finite element analysis (FEA) and safety review for the Columbia Space Initiative (CSI) at the request Environmental Health & Safety.

○ **Laboratory Committee**

- Responsible for voting on modifications to the teaching laboratory and machine shop.
- Worked with Daniela Durăşn Garcă to modify the Intro to Machining course. The class is switching towards a flipped classroom model to help accommodate a larger student population and improve learning outcomes.
- Led initiative to purchase two new mills and one new lathe for the space.
- Led initiative to purchase fifteen new 3D printers for the space.
- Led initiative to clear old equipment from the space to make room for new apparatuses.

- **PhD Committee Member**

- Chawin Ophaswongse
- Isirame Omofuma
- John Whitehead
- Hayley McClintock
- Fitsum Ermias Petros
- Xupeng Ai
- Priya Kulkarni

- **Competition/Course Judging**

- Three Minute Thesis Competition
- Final presentations for Professor Harry West's Human Centered Design course.

- **Courses Taken**

- Fall 2020 - SEAS Hybrid & Online Teaching Institute asynchronous course.
- Fall 2020 - IP for Entrepreneurs

- **Additional Efforts**

- Met on multiple occasions with the architectural firm overseeing Columbia's Site 6 new engineering building development to discuss teaching spaces and makerspaces.
- Worked with Kristin Myers, Harry West, and Emily-Anne McCormack on efforts to create a standardized student project portfolio structure.
- Presented a Machine Shop hiring plan to the Dean of Engineering based on statistical compilation of historical department data and information in comparable departments.
- Presented a proposal at the departmental strategy meeting to push towards increased active and project-based education for the department's future undergraduate education direction.
- Presented on legged robotics research in Sunil Agrawal's Robotics and Biomechanics Seminar Series
- Met with Michael Tarnow and Professor Sarah Hansen to help her plan a modification from fully pre-defined experiments to inquiry-based experiments for her chemistry lab course.
- Worked with hiring committee to hire replacement staff member for the machine shop.
- PhD Orientation Panelist for incoming class of engineering PhD students.
- Worked with faculty focused on teaching graduate mechanical engineering courses to develop proposals for two new graduate math courses: Mathematical Methods for Mechanical Engineers and Numerical Methods and Optimization for ME.
- Spoke at Engineering Student Council Speaker Series on mechanical engineering and legged robotics.

Syracuse University - Teaching and School Activities

2018– **Mechanical Engineering Professor**, SYRACUSE UNIVERSITY, Syracuse, NY.

2019 Served as the Kenneth A. and Mary Ann Shaw Endowed Professor of Practice in Entrepreneurial Leadership. Main responsibilities included heading the Invent@SU program, teaching classes in Mechanical Engineering, and fostering innovation efforts across campus.

- **Courses Taught**

- Introduction to Robotics
- Mechanical Engineering Capstone Design
- Dynamics

○ Invent@SU

- Oversaw all aspects of four sessions of Invent@SU, a six-week invention accelerator based off of the Cooper Union's Invention Factory. Responsibilities include selecting students for the accelerator, mentoring them through their project prototyping, pitching, and aiding in their completion of provisional patent applications.
- Mentored students from Invent@SU, as well as students from all majors, throughout the year as they sought to prototype invention ideas or turn their prototypes into businesses. Students who have continued with their Invent@SU projects have won over **\$165,000** in additional prize money and have multiple 1st, 2nd, and 3rd place finishes across a variety of entrepreneurship competitions.
- Commissioned and helped design an evaluation of the Invent@SU program by the Office of Professional Research & Development at the Syracuse University School of Education. The investigators explored the strengths of the program and suggested improvements based on surveys and focus groups with participants.

○ Course Design & Improvement

- Introduction to Robotics

- Created graduate-level course where twenty students were taught a wide-array of modern robotics topics and competed in a sumo robot competition.
- Media: <https://shorturl.at/ewGyh>
- Media: <https://www.youtube.com/watch?v=6Z7j9R0pRSw>

- Mechanical Engineering Capstone Design

- Oversaw a seventy person class consisting of fourteen teams tied to industry sponsored projects. Responsibilities include project management, team formation, lecture preparation, and report grading.
- Additionally served as the direct faculty mentor for two of the Mechanical Engineering Capstone teams. Responsible for project oversight and coordination with their respective company sponsors: MobilityWorks and Bartell Machinery.
 - The Bartell Machinery project, a tension control mechanism for wire stranding, received the award for top Mechanical Engineering Senior Design project and filed with the company for a patent for their device.

- Dynamics

- Taught two sections of Dynamics during the Spring 2018 semester.
- Implemented MATLAB numerical dynamic simulations modules to allow students to visualize dynamic systems and simulate more complex problems.

○ Departmental and School Activities

- Faculty advisor for the Syracuse Formula SAE team.
- Member of Reza Hamrah's PhD Oral Examination Committee.
- Member of the Entrepreneurship Roundtable, a monthly meeting of innovation-focused faculty across all schools within Syracuse.
- College of Engineering & Computer Science representative for the Innovation and Entrepreneurship Cluster Hire pitch team and search committee. The team, consisting of six faculty representatives from six different schools across the Syracuse Campus, successfully pitched for five new faculty positions focused on expanding the culture and community of student innovation across Syracuse University.
- Member of the Mechanical Engineering Programming Committee. Responsible for voting on approving course changes and additions.
- Served on the hiring committee for a new senior machinist for the College of Engineering & Computer Science.

Additional Roles

- 2015- **Graduate Student Instructor**, ME350 DESIGN AND MANUFACTURING II, Ann Arbor.
- 2016 Taught and facilitated a thirty student recitation section for two semesters. Students built linkages capable of reflecting different lasers onto a target and sorting marbles. Simultaneously built the project a week ahead of the students to find potential project issues.
- Recipient of the *Outstanding Graduate Student Instructor Award*.
 - Recipient of the *Towner Prize for Outstanding Engineering GSI*.
 - Wrote and graded the test questions for the 195 person lecture.
 - Led a mechatronics competition throughout the semester, where students competed to have the best Arduino project.
- 2013- **Reviewer**, REVIEWER OF POTENTIAL CONFERENCE AND JOURNAL PAPERS.
- Present Reviewed papers for IEEE Transactions on Robotics, IEEE Transactions on Mechatronics, IEEE Robotics and Automation Letters, IROS(International Conference on Intelligent Robots and Systems), ICRA(International Conference on Robotics and Automation), Dynamic Walking Conference
- 2014- **Instructor/Teaching Assistant**, ME543 ANALYTICAL AND COMPUTATIONAL DYNAMICS, Ann Arbor.
- 2016 Covered the lectures when Professor C. David Remy was unable to attend.
- 2010- **Instructor/Teaching Assistant**, COOPER UNION PHYSICS DEPARTMENT, New York.
- 2013 Taught a roughly thirty student recitation section for the freshman Mechanics and sophomore Electricity and Magnetism Courses. Made and graded weekly student quizzes, worked through problems with the class to encourage active learning, and provided individual tutoring. Also graded portions of the tests created by the head professor (Alan Wolf). Organized the physics lab and prepared lab materials.

Publications

Dissertation

- 2018 **Yesilevskiy, Y.**, *Understanding and Improving Locomotion: The Simultaneous Optimization of Motion and Morphology in Legged Robots*, University of Michigan.

Journals

- 2018 **Kashiri, N., Abate, A.,...,Yesilevskiy, Y.,..., et al.**, *An Overview on Principles for Energy Efficient Robot Locomotion*, Frontiers in Robotics and AI.
- 2018 **Gan, Z., Yesilevskiy, Y., Zaytsev, P., Remy, C.D.**, *All Common Bipedal Gaits Emerge From a Single Passive Model*, Journal of The Royal Society Interface.
- 2018 **Yesilevskiy, Y., Yang, W., Remy, C.D.**, *Spine Morphology and Energetics: How Principles From Nature Apply to Robotics*, Bioinspiration & Biomimetics.
- 2018 **Yesilevskiy, Y., Gan, Z., Remy, C.D.**, *Energy-Optimal Hopping in Parallel and Series Elastic 1D Monopeds*, ASME. J. Mechanisms Robotics (2018).
- 2015 **Xi, W.,Yesilevskiy, Y., Remy, C.D.**, *Selecting Gaits for Economical Locomotion of Legged Robots*, International Journal of Research Robotics.

Conference Activities

- 2022 **Robotics Science and Systems (RSS) Conference 2022**, New York City, NY.
One of two local arrangement chairs for the conference held at Columbia University. Organized all volunteers to oversee conference operations and helped with all facets of planning the conference.
- 2021 **Celebration of Teaching and Learning Symposium 2021**, New York City, NY.
Invited panel speaker: *Engaging Students in Lab or Simulation Classes - Adapting to Hybrid and Online Teaching*
- 2020 **Dynamic Walking**.
Attended virtually
- 2020 **American Society of Engineering Education (ASEE)**.
Attended virtually

Conference Publications

- 2022 **Yesilevskiy, Y., Thomas, A.E., Oehrlein, J., Wright, M.A., Tarnow, M.,** *Introducing Experimental Design to Promote Active Learning*, American Society of Engineering Education - ASEE.
- 2021 **Manfredi, L.R., Yesilevskiy, Y., Shablak, S.L., Tornberg, Robert,** *Interdisciplinary Problem Solving: A Case Study Examining Skill Development in an Undergraduate Invention Accelerator Program*, International Design Conference - IDSA.
- 2017 **Yesilevskiy, Y., Yang, W., Remy, C.D.,** *The Energetic Effect of a Flexible Spine in Quadrupedal Robots*, International Conference on Intelligent Robots and Systems (Poster).
- 2017 **Yesilevskiy, Y., Yang, W., Remy, C.D.,** *The Energetic Effect of a Flexible Spine in Quadrupedal Robots*, International Conference on Intelligent Robots and Systems (Poster).
- 2016 **Yesilevskiy, Y., Gan, Z., and Remy, C.D.,** *Optimal Configuration of Series and Parallel Elasticity in a 2D Monoped*, International Conference on Robotics and Automation (Paper & Presentation).
- 2015 **Yesilevskiy, Y.*, Gan, Z*., Xi, W.*, Remy, C.D. (* the authors contributed equally to this work),** *From Simple to Complex Models: Gaits as Oscillations*, 7th International Symposium on Adaptive Motion of Animals and Machines (Poster).
- 2015 **Yesilevskiy, Y., Xi, Weitao, and Remy, C.D.,** *A Comparison of Series and Parallel Elasticity in a Monoped Hopper*, International Conference on Robotics and Automation (Paper & Presentation).

Workshops

- 2017 **Yesilevskiy, Y. and Remy, C.D.,** *The Adaptive Significance of Robotic Gait Selection*, Robotics Science and Systems Conference (Presentation).
- 2017 **Yesilevskiy, Y., Yang, W., and Remy, C.D.,** *Optimizing Motion and Morphology in Legged Robots*, International Conference on Intelligent Robots and Systems (Presentation & Poster).
- 2017 **Yesilevskiy, Y., Yang, W., and Remy, C.D.,** *The Energetic Effect of a Flexible Spine in Quadrupedal Robots*, Dynamic Walking (Presentation).
- 2016 **Yesilevskiy, Y., Gan, Z., Remy, C.D.,** *Exploring the Role of Natural Dynamics in Robotic Walking and Running*, Dynamic Walking (Presentation & Poster).
- 2016 **Gan, Z., Yesilevskiy, Y., Remy, C.D.,** *A SLIP Model with Swing Dynamics Can Predict More Gaits*, Dynamic Walking (Presentation & Poster).
- 2014 **Yesilevskiy, Yevgeniy and Remy, C.D.,** *Series or Parallel Elasticity - Which is Better?*, Dynamic Walking (Poster).

Research & Project Work

- 2013– **Graduate Student Research Assistant**, ROBOTICS AND MOTION LABORATORY, Ann Arbor.
- 2018 Working under Professor C. David Remy on legged robotics. Conducted research in the simultaneous optimization of gaits, motion, and morphology on realistic simulations of monoped, biped, and quadruped robots. Implemented multiple gaits on the robotic quadruped hardware in the lab, RAMbi.
- 2012 **Junior Research Scientist**, NYU CENTER FOR SOFT MATTER RESEARCH, New York.
- Worked under PhD student Colm Kelleher. Measured the diffusion characteristics of polystyrene particles on a self-created flat oil-water interface. The diffusion characteristics were measured in Matlab using particle tracking software on images from a confocal microscope

- 2008- **Assorted Projects.**
- 2014
- Developed an original puzzle-based game, "Switch," in which the user must switch between first person, third person, and side-scroller perspectives to progress through a level (2014).
 - Designed and built a bicycle lighting system and turn signal set built into pedals (2013).
 - Developed and built a quick heating soldering iron with built-in solder dispensing (2012-2013).
 - Modified a wind tunnel PIV system to analyze air flow in a hypoxia chamber for mice (2012).
 - Designed, machined, and programmed a sumo robot (2012).
 - Designed and built a lensless digital in-line holographic microscope (2011-2012).
 - Built a self-focusing refracting telescope (2010).
 - Programmed a car suspension simulation using Python (2010).
 - Designed and built a two-octave electric recordable piano (2009).
 - Conducted the research study The Complex and Elusive Nature of Contemporary Racism. Semi-finalist winner in the 2009 Intel Science Talent Search (2008-2009).

Mentoring

- 2019- **Student Project Mentor**, Columbia.
- 2020 Worked with Barnard student Mariam Kamerji on the creation of her at home composting device.
- 2018- **Student Project Mentor**, Syracuse.
- 2019 Met with students across all schools on the Syracuse campus and provided guidance on their prototypes, projects, and pitches. Subjects of meetings ranged from microcontroller and rapid prototyping lessons, to patent advice, to pitch critique.
- 2016- **Research Mentor**, Ann Arbor.
- 2018 Met weekly with junior student William Yang to guide him in his research looking at the potential benefits of a flexible spine on quadrupedal locomotion.
- Winner of the Research, Innovation, Service and Entrepreneurship (RISE) program Best Paper Award. Given to the best overall RISE project.
 - Two-time winner of the RISE program best session award in Robotic Systems.
- 2017- **Research Mentor**, Ann Arbor.
- 2018 Guided senior student Nikko Van Cey through a research study that seeks to understand the role of passive, natural motions in legged locomotion.
- 2016- **Student Mentor**, New York City.
- 2017 Spoke weekly with a sophomore student at The Cooper Union named Padraic Mcatee to mentor him through his educational process and career search.
- 2014- **Research Mentor**, Ann Arbor.
- 2015 Met weekly with senior student Brian McCann to guide him as he built a small walking robot. The robot actively shortened its leg length in order to walk down a ramp.
- 2014- **Center for Engineering Diversity & Outreach Mentor**, Ann Arbor.
- 2015 Met weekly with freshman student Jonah Drane to help him get adjusted to the University of Michigan. As his mentor, I would give general advice on school, internships, and also serve as a tutor.

Volunteer Work

- 2022- **Presidential Teaching Award Selection Committee**, Columbia.
- 2023 Member of the selection committee tasked with choosing the winners for the 2023 award.
- 2019- **Towner Prize Selection Committee**, Ann Arbor.
- 2020 Member of the selection committee for the University of Michigan's College of Engineering Towner Prize for Outstanding GSIs. Responsible for reviewing and ranking applications.
- 2016- **Tutor**, Ann Arbor.
- 2018 Tutored students from elementary school to high school in reading and writing at the 826 Michigan tutoring center.

- 2016- **Lab Volunteering Efforts**, Ann Arbor.
 2018 Aided in the organization and running of events with the Ann Arbor Hands on Museum to teach the community about legged locomotion. These included an event in which elementary school students built passive dynamic walkers in order to understand the influence of natural dynamics on legged locomotion.
- 2014- **Judge**, Ann Arbor.
 2015 Watched presentations during the Engineering Graduate Symposium on the independent research performed by undergraduate students in order to declare a winner for best presentation in a given section.
- 2015- **Progressive Inclusive Team Graduate Student Instructor Representative**, Ann Arbor.
 2016 Served as the voice of the teaching assistants on a faculty committee dedicated to improving team inclusiveness and equity in Michigan mechanical engineering courses.
- 2015- **Teaching Volunteer**, Ann Arbor.
 2016 Volunteered with the Michigan Graduate Society of Women Engineers at ADAMS Elementary to teach and oversee fifth grade students as they built a wind-powered water pump.

Activities & Honors

- 2022 **Winner of the Presidential Award for Outstanding Teaching** given to 5 professors at Columbia University annually to "honor the University's best teachers"
- 2021 **Edward and Carole Kim Faculty Involvement Award** given to "honor a faculty member who is not only an excellent teacher, but who also shows a special, personal commitment to students"
- 2020 Recipient of a \$10,000 **Provost Innovative Course Design award** for the grant proposal titled *Introducing Experimental Design to Promote Active Learning*
- 2018 Recipient of the **Towner Prize for Outstanding Engineering GSI**. The award is given yearly to the top four graduate student instructors in the engineering program.
- 2017 Recipient of the **Outstanding Graduate Student Instructor Award**. The award is given yearly to the top twenty graduate student instructors in the Rackham Graduate School.

Teaching Feedback

Fall
 2019 -
 Present

Columbia.

- "Dr. Yesilevskiy's class made the first ever iteration of this class incredibly engaging and fun, with just the right technical depth for MBAxMS students. The final project was the cherry on top, concluding the class with the task of building a 3D-printed robot that uses AI, computer vision, wifi and single-board computers to sort different types of trash. Dr. Y is a fantastic lecturer and very approachable."
- "Dr. Y worked hard to fit in as much information as possible into the course in a variety of ways, and his new take on the project was fun. Dr. Y is different from every other professor I've had at Columbia. He has a genuine interest in how students understand the material, is very approachable, and willing to talk about anything. I appreciate how he chose to revitalize the machine design project with one of a whole different (and more practical) nature. His humor in class was always appreciated, too. As the project due date approached, Dr. Y spent more and more time in the shop walking around to help or talk to groups. In the last week before the due date, he must have spent 20 hours in the shop doing office hours. Unheard of, and super helpful. I want to take any other classes that he teaches, Something was so different and practical enough that I actually learned. It seemed that he realized after assigning the project that the machining skills of much of our class were poor from only "Intro to machining" and that not everyone had arduino or electrical experience. Id love to take those sorts of classes from Dr. Y, he'd teach them better than the professor currently teaching them does. Thanks for the semester!"
- "It is Dr. Y's first year here at Columbia and he immediately came in and made a good impression on the students. He made an effort to learn every students name and he DID. He engages with everybody in class, cracks jokes, and creates assignments that are both based around theory and hands on. I'm so impressed with his engagement with the students and his willingness to help. When we had our machine design

project due, he was sitting in the lab doing his work alongside the students to ensure they had access to help as we struggled to make encoders and Arduino code work. Dr. Y is definitely a distinguished faculty member in the eyes of the students and is deserving of this award."

- "Every lecture was well organized, and concepts were explained clearly. Professor Yesilevskiy is passionate about teaching, which could be felt by the diverse methods of teaching that he tried in class (lecture, projects, in-class problems). He was also very receptive to feedback from students and tried continuously to adjust according to the feedback he received. After transferring to Columbia as a 3-2 engineering student, I had given up hope on taking a class from a professor who was as passionate about teaching as the professors at my previous institution (a small liberal arts university). Professor Yesilevskiy is a gem, and a small beacon of light for the mechanical engineering department students jaded by professors who are undeniably smart, but lack the same teaching zeal or skills."

Summer **Invent@SU.**
2019

- "This was better than my entire school experience."
- "It was life changing. My brain is now wired differently. I think about things differently."
- "I learned to overcome obstacles. I learned to keep what works and let go what doesn't. I learned problem solving. What I planned in week one wasn't what I ended up with in week six."

Fall/Spring **Syracuse University.**
2019

- "Senior Design has been the best part of my learning experience at Syracuse. It has really forced me to learn more about the design process and related things, such as 3D modeling in the best way possible. The only thing I wish is that our previous courses prepared us more for such a good experience. Professor Yesilevskiy, like Sarimurat was an excellent professor, I really could not have asked for a better team to lead us into senior Design."
- "Professor Yesilevskiy was a very good instructor. As time went on, I feel as though I improved as a student. He was very open to suggestions regarding how he could improve the learning environment. He followed through with every change he said he would make to the learning environment in order to make the content easier to understand. He was very enthusiastic and relatable. 10/10 would recommend."