Curriculum Vitae

Jason N. Gross, Ph. D., Professor and Chair
Department of Mechanical, Materials and Aerospace Engineering (MMAE)
Benjamin M. Statler College of Engineering and Mineral Resources
West Virginia University (WVU)
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1 Education

Ph.D. in Aerospace Engineering, West Virginia University, August 2011.
Research Advisor: Dr. Marcello R. Napolitano
Dissertation Title "*Sensor Fusion Based Fault-Tolerant Attitude Estimation for Small Unmanned Aerial Vehicles*"

B.S. in Aerospace Engineering, West Virginia University, December 2007.

B.S. in Mechanical Engineering, West Virginia University, December 2007.
Summa Cum Laude, Graduate of the University Honors College
Honors Thesis Title: "*Low Outgassing Photogrammetry Targets for Spacecraft Alignment"*

2 Professional Experience

West Virginia University, Department of Mechanical, Materials and Aerospace Engineering, Morgantown, WV
Professor, August 2024 - Present
Chairperson, October 2022- Present
Interim Chairperson, January 2022- October 2022
Associate Chair for Research, January 2021- October 2022
Associate Professor, August 2019-August 2024
Assistant Professor, January 2014-August 2019

Air Force Institute of Technology, Autonomy & Navigation Technology Center, Wright Patterson Air Force Base, Dayton, OH
AFOSR Summer Faculty Fellow, June 2015 – August 2015

California Institute of Technology, NASA Jet Propulsion Laboratory, Pasadena CA
Near Earth Tracking Applications Group
Technologist II, August 2011-December 2013

West Virginia University, Dept. of Mechanical & Aerospace Engineering*, *Morgantown WV
Graduate Research Assistant, Flight Controls Systems Lab
PI: Dr. Marcello R. Napolitano, January 2008- August 2011

NASA Independent Validation & Verification Facility, Fairmont WV
Consultant, Summer 2009

West Virginia University, Dept. of Mechanical & Aerospace Engineering, Morgantown WV
Course Instructor, January 2008- May 2008

NASA Goddard Spaceflight Center, Greenbelt MD
Consultant, October 2007

NASA Goddard Spaceflight Center, Greenbelt MD
NASA Academy Summer Internship, Summer 2007
Summer Internship Program, Summer 2006

3 Honors and Awards

- ***2024-2025 Richard T. Feller Outstanding Alumni Award, Presented by the West Virginia University Student Government Association April 22, 2025***
- ***Scouting America North Star Award, Presented by the Mountaineer Area Council, March 22, 2025***
- ***2024 recipient of the Per Enge Early Achievement Award, Institute of Navigation, January 30, 2025***
    - *The purpose of this award is to recognize an individual for an outstanding achievement related to the art and science of positioning, navigation and/or timing early in their career (35 years or younger in the year of the achievement) with highest consideration given to the following criteria in descending order of importance:*
        - *An innovation or invention (which has been successfully demonstrated) or a novel equipment/system development relating to positioning, navigation, or timing.*
        - *An outstanding method for use in positioning, navigation, or timing.*
        - *Outstanding research or study relating to positioning, navigation, or timing*

- ***2024 recipient of the Samuel M. Burka Award, Institute of Navigation, January 30, 2025***
    - *To recognize outstanding achievement in the preparation of papers advancing the art and science of positioning, navigation, and timing.*
- ***AIAA Associate Fellow, January 10, 2024***
    - *For contributions to aerospace engineering education, research in space robotics and unmanned aerial vehicles, and aerospace-related academic service.*

- ***West Virginia State Journal's Generation Next: 40 under 40 Award, June 15, 2023***
- ***Space Robotics Challenge Phase 2 a NASA Centennial Challenge, 6th place winner, $30,000 (6th of 22 finalists from 114 registered teams), Team Leader,*** September 2021
- ***Outstanding Researcher- Senior Level (1 of 4 in college), Statler College, West Virginia University,*** April 2021
- ***Semi-Finalist (1 of 8 across WVU) for West Virginia University Distinction in Mentoring Graduate Students in Research Award***, April 2021
- ***Space Robotics Challenge Phase 2 a NASA Centennial Challenge, Competition Round Qualification Award, $15,000 (only 6 of 114 registered teams to secured the top qualification prize), Team Leader,*** 2020-2021
- ***Excellent Reviewer, AIAA Journal of Guidance, Control and Dynamics,*** 2020
- ***Recipient of West Virginia University Values Coin,*** 2019
- ***Academies of Distinguished Alumni Teaching Award of the West Virginia University Statler College Department of Mechanical and Aerospace Engineering***, 2019
- ***Best Presentation in Session at ION GNSS+ 2017 (****PhD student R. Watson was first author & presenter****)***, 2017
- ***Outstanding Teacher (1 of 5 in college), Statler College, West Virginia University,*** April 2017
- ***1st Place NASA Sample Return Robot Centennial Challenge, $750,000*** *(Dr. Yu Gu was the primary faculty advisor and team leader, I served as one of the faculty co-advisors), 2016*
- ***New Researcher of the Year, Statler College, West Virginia University,*** April 2016
- ***Best Paper of IEEE/ION PLANS Track B: Perception of Autonomous and Semi-Autonomous Systems (****first author, MSAE student J. Strader****),*** 2016
- ***WVU Big XII Faculty Fellowship to University of Texas at Austin Radionavigation Lab*****,** 2015
- ***National Geospatial-Intelligence Agency New Investigator Program Award (NGA NIP)*****,** 2015
- ***AFOSR Summer Faculty Fellowship (SFFP),*** 2015
- ***Level-2 Award NASA Sample Return Robot Centennial Challenge, $100,000*** *(Dr. Yu Gu was the primary faculty advisor and team leader, I served as one of the faculty co-advisors), 2015*
- ***NASA Group Achievement Award***, 2013
  Awarded to AirMoss Instrument Team: ***"****For achievement in developing P-band polarimetric imaging radar capability*"
- ***NASA TechBrief*** , 2011
  "Low Outgassing Photogrammetry Targets for Use in Outer Space"
- ***NASA Academy Robert H. Goddard Outstanding Research Award,*** 2007.
- ***WVU STEM Supplemental Dissertation Fellowship*** 2011.
- ***NASA WV Space Grant Graduate Research Fellowship*** 2010, 2011.
- ***WVU Mountain Honorary*** (Ranking Honorary), 2007
- ***WVU Student Body President***, 2006-2007

4 Publications: Patents

1. Bar-Sever, Y., Bertiger, W., Dorsey, A., Harvey, N., Lu, Miller, K., Miller, M., Romans, L. , Sibthorpe, A., Weiss, J., Fernandez, M., **Gross J.** "Real-Time and Post-Processed Orbit Determination and Positioning" U.S. Patent No 9,057, 780 B2 (Granted June 18, 2015) .

5 Publications: Journal & Magazine Articles

1. Yerebakan, M., Gu, Y., **Gross, J.**, Hu, B., "Evaluation of Biomechanical and Mental Workload during Human-Robot Collaborative Pollination Task", Human Factors, Feb. 2025, Vol. 67, No 2 . https://doi.org/10.1177/00187208241254696

2. Akhihiero, D., Olawoye, U., Das, S., **Gross, J.N.** "Cooperative Localization for GNSS-Denied Subterranean Navigation: A UAV-UGV Team Approach", NAVIGATION: Journal of the Institute of Navigation, December 2024, Vol 71, No. 4 https://doi.org/10.33012/navi.677

3. Taylor, C., Gross., J N. "Factor Graphs for Navigation Applications: A Tutorial", NAVIGATION: Journal of the Institute of Navigation, September 2024, Vol. 71, No. 3, https://doi.org/10.33012/navi.653

4. Kilic, C., Guiterrez, E., **Gross, J.N.**, "Evaluation of the Benefits of Zero Velocity Update in Decentralized EKF-Based Cooperative Localization Algorithms for GNSS-Denied Multi-Robot Systems", NAVIGATION: Journal of the Institute of Navigation, December 2023, Vol. 70, No. 4 navi.608; DOI: https://doi.org/10.33012/navi.608

5. Das, S., **Gross, J. N.** "Analysis Scale-Variant Robust Kernel Optimization for Non-linear Least Squares Problems" IEEE Transactions on Aerospace Electronics Systems, Vol. 59, No. 6, pp. 7529 - 7538, 2023 10.1109/TAES.2023.3290142

6. Martinez, B., Kilic, C., Tatsch, C., Pereira, B., **Gross, J. N.** "Multi-Robot Cooperation for Lunar In-Situ Resource Utilization" Frontiers in Robotics and AI, Vol. 10, 2023. https://doi.org/10.3389/frobt.2023.1149080

7. Pooley, A., Gao, M., Sharma, A., Barnaby, S., Gu, Y., **Gross, J. N.** "Analysis of Thermal Soaring via Hawk-inspired Swarm Interaction" Biomimetics, Vol. 8, No. 1, 124, 25 pgs, 2023. https://doi.org/10.3390/biomimetics8010124

8. Martinez, B., Lima, R., Samarakoon, K., Rathjen, J., **Gross, J.N.**, Periera, G., "Oxpecker: A Tethered UAV for Inspection of Stone-Mine Pillars". Drones, Vol. 7, No. 2. #73, 26 pgs, 2023. https://doi.org/10.3390/drones7020073

9. Kilic C., Gu, Y., **Gross, J.N.** "Proprioceptive Slip Detection for Planetary Rovers in Perceptually Degraded Extraterrestrial Environments" Field Robotics, Vol., 2, pp. 1754-1778., 2022. https://doi.org/10.55417/fr.2022054

10. Kilic C., Martinez B.R.Jr., Tatsch C., Beard J., Strader J., Das S., Ross D., Gu Y., Pereira G.A.S., and **Gross J.N**., "NASA Space Robotics Challenge 2 Qualification Round: An Approach to Autonomous Lunar Rover Operations", IEEE Aerospace and Electronic Systems Society Magazine, Vol. 36, No. 12, 2021 https://doi.org/10.1109/MAES.2021.3115897

11. Kilic, C., Ohi, N., Gu, Y., **Gross, J. N.,** "Slip-Based Autonomous ZUPT through Gaussian Process to Improve Planetary Rover Proprioceptive Localization", IEEE Robotics and Automation Letters, Vol. 6, No. 3, 2021. https://doi.org/10.1109/LRA.2021.3068893

12. De Petrillo, M., Beard, J., Gu, Y., **Gross, J. N.**, "Search Planning of a UAV/UGV Team with Localization Uncertainty in a Subterranean Environment", IEEE Aerospace and Electronic Systems Magazine, Vol 36, No. 6, pp 6-16. 2021 https://doi.org/10.1109/MAES.2021.3065041

13. Tian, P., Chao, H., Rhudy, M., **Gross, J. N.**, We, H., "Wind Sensing and Estimation Using Small Fixed-Wing UAVs: A Survey" Journal of Aerospace Information Systems (AIAA), (2021). https://doi.org/10.2514/1.I010885

14. Wang, K., Allahvirdi-Zadeh, A., El-Mowafy, A., **Gross, J.N.,** "A Sensitivity Study of POD Using Dual-Frequency GPS for CubeSats Data Limitation and Resources", Remote Sensing, Vol. 12, No. 13, 2020. https://doi.org/10.3390/rs12132107

15. Watson, R. M., **Gross, J.N.**, Taylor, C.N., Leishman, R.C., "Robust Incremental State Estimation Through Covariance Adaptation", IEEE Robotics and Automation Letters, Vol 5., No. 5, pp. 3737 - 3744 , April 2020. https://doi.org/10.1109/LRA.2020.2979655

16. Watson, R. M., **Gross, J. N.**, Taylor, C. N., Leishman, R. C., "Enabling Robust State Estimation through Measurement Error Covariance Adaptation". IEEE Transactions on Aerospace and Electronic Systems, 2019. Vol. 56 , No. 3 , pp. 2026-2040, June 2020. https://doi.org/10.1109/TAES.2019.2941103

17. Kassas, Z. M., Closas, P, and **Gross, J.** "Navigation Systems Panel Report, Navigation Systems for Autonomous and Semi-Autonomous Vehicles: Current Trends and Future Challenges." IEEE Aerospace and Electronic Systems Magazine Vol. 34, No. 5 (2019), pp 82-84. (Invited Review Paper) https://doi.org/10.1109/MAES.2019.2906971

18. **Gross, J.N.**, Kilic, C., Humphreys, T., "Maximum-Likelihood Power-Distortion Monitoring for GNSS Signal Authentication", IEEE Transactions on Aerospace and Electronic Systems, Vol. 55, No. 1, Feb 2019 pp 469-475 https://doi.org/10.1109/TAES.2018.2848318

19. Sivaneri, V., **Gross, J. N.**, "Flight-Testing of a Cooperative UGV-to-UAV Strategy for Improved Positioning in Challenging GNSS Environments", Aerospace Science and Technology, Vol. 82-82, pp. 575-582, 2018. https://doi.org/10.1016/j.ast.2018.09.035

20. Gu, Y., Strader, J., Ohi, N., Harper, S., Lassak, K., Yang, C., Kogan, L., Hu, B., Gramlich, M., Kavi, R., **Gross, J. N.,** "Robot Foraging: Autonomous Sample Return in a Large Outdoor Environment" IEEE Robotics and Automation Magazine, Vol. 25 , No. 3 , Sept. 2018 https://doi.org/10.1109/MRA.2018.2803174

21. Wesson, K.,D., **Gross, J.N.**, Humphreys, T.E., Evans, B.L., "GNSS Signal Authentication via Power and Distortion Monitoring" IEEE Transactions on Aerospace and Electronic Systems, Vol. 54., No. 8, pp. 739-754, April 2018. https://doi.org/10.1109/TAES.2017.2765258

22. Tehrani, N., **Gross, J. N.,** "Performance Trades for Multiantenna GNSS Multi-Sensor Attitude Determination Systems", International Journal of Aerospace Engineering, Vol. 2018, 12 pgs. https://doi.org/10.1155/2018/4871239

23. Sivaneri, V., **Gross, J.**, "UGV-to-UAV Cooperative Ranging for Robust Navigation in GNSS-Challenged Environments" Aerospace Science and Technology, Vol. 71, pp. 245-255 , 2017. https://doi.org/10.1016/j.ast.2017.09.024

24. Watson, R., **Gross, J.**, Bar-Sever, Y., Bertiger, W., Haines, B. "Flight Data Assessment of Tightly-Coupled PPP/INS using Real-Time Products", IEEE Aerospace and Electronic Systems Magazine, Vol. 32, No. 8, pp. 10-21. 2017. https://doi.org/10.1109/MAES.2017.160169

25. Gu, Y., Ohi, N., Lassak, K., Strader, J., Kogan, L., Hypes, A., Harper, S., Hu, B., Gramlich, M., Kavi, R., Watson, R., Cheng, M., **Gross, J.** "Cataglyphis: An Autonomous Sample Return Rover", Journal of Field Robotics, July 2017. http://dx.doi.org/10.1002/rob.21737

26. Rhudy, M., Gu, Y. **Gross, J.**, Chao, H., "Onboard Wind Velocity Estimation Comparison for Unmanned Aircraft Systems", IEEE Transactions on Aerospace and Electronic Systems, Vol. 53, No. 1, pp. 55-66, Feb. 2017. https://doi.org/10.1109/TAES.2017.2649218

27. Chao, H., Gu, Y., **Gross, J.,** Rhudy, M., Napolitano, M., "Flight-Test Evaluation of Navigation Information in Wide-Field Optical Flow", AIAA Journal of Aerospace Information Systems, Vol. 13, No. 11, pp. 419-432, 2016. https://doi.org/10.2514/1.I010482

28. **Gross, J.,** Watson, R., D'Urso, S., Gu, Y., "Flight-Test Evaluation of Kinematic Precise Point Positioning of Small UAVs," International Journal of Aerospace Engineering, Vol. 2016, 11 pgs. http://dx.doi.org/10.1155/2016/1259893

29. **Gross, J**., Gu, Y., Rhudy M. "Fixed-Wing UAV Attitude Estimation Using Single Antenna GPS Signal Strength Measurements", Aerospace, Vol. 3 No. 2:14, 2016. http://dx.doi.org/10.3390/aerospace3020014

30. Gu, Y., **Gross, J.**, Rhudy, M., Lassak, K, "A Fault-Tolerant Multiple Sensor Fusion Approach Applied to UAV Attitude Estimation," International Journal of Aerospace Engineering, 12 pgs. Vol. 2016. http://dx.doi.org/10.1155/2016/6217428

31. Rhudy, M. B., Gu, Y., Chao, H., **Gross, J.** "Unmanned Aerial Vehicle Navigation Using Wide-Field Optical Flow and Inertial Sensors", Journal of Robotics, Article ID 251379, 12 pages, Vol. 2015. http://dx.doi.org/10.1155/2015/251379

32. **Gross, J.**, Gu, Y., Rhudy, M. "Robust UAV Relative Navigation with DGPS, INS and Peer-to-Peer Radio Ranging", IEEE Transactions on Automation Science and Engineering, Vol 12, No. 3, pp. 935-944, 2015. https://doi.org/10.1109/TASE.2014.2383357

33. Rhudy, M., Gu, Y., **Gross, J.**, Gururajan, S., and Napolitano, M.. "Sensitivity Analysis of Extended and Unscented Kalman Filters for Attitude Estimation," AIAA Journal of Aerospace Information Systems, vol. 10, no. 3, pp. 131–143, 2013. https://doi.org/10.2514/1.54899

34. **Gross, J**., Gu, Y., Rhudy, M., Gururajan, S., Napolitano, M. "Flight Test Evaluation of Sensor Fusion Algorithms for Attitude Estimation" IEEE Transactions on Aerospace Electronic Systems, Vol. 48 Is. 3, July, 2012. https://doi.org/10.1109/TAES.2012.6237583

35. Rhudy, M. Gu, Y**., Gross, J.**, Napolitano, M. "Evaluation of Matrix Square Root Operations for UKF within a UAV GPS/INS Sensor Fusion Application," International Journal of Navigation and Observation, vol. 2011, Article ID 416828, 11 pages, 2011. http://dx.doi.org/10.1155/2011/416828

6 Publications: Book Chapters

1. Gu, Y. **Gross, J**., Barchesky, F., Chao, H, Napolitano M. "Avionics Design for a Sub-Scale Fault-Tolerant Flight Control Test-Bed" Recent Advances in Aircraft Technology, Ramesh K. Agarwal (Ed.), ISBN: 978-953-51-0150-5 DOI: 10.5772/38260

7 Publications: Trade Magazines

1. Das, S., Watson, R., **Gross, J.N.** "What is a Factor Graph?" Inside GNSS Magazine, GNSS Solutions Column, Nov-Dec 2021 Issue https://insidegnss.com/q-what-is-a-factor-graph/

8 Publications: Conference Proceedings (Full Length Paper)

1. Smith, T., Rijal, M., Tatsch, C., Butts, M., Beard, J., Cook, R., Chu, A., Gross, J., Gu, Y, "Design of Stickbug: a Six-Armed Precision Pollination Robot" 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024), Abu Dabi, UAE, October 2024 https://arxiv.org/pdf/2404.03489

2. Gonzalez, M., **Gross, J. N.**, "Model Parameter Optimization for GNSS Point Positioning in a Kinematic Ocean Buoy Application" *Proceedings of the 36th Annual International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+), Denver, CO, Sept., 2023.* https://doi.org/10.33012/2023.19182

3. Olawoye, U., **Gross, J.**, "UAV Position Estimation using a LiDAR-based 3D Object Detection Method" IEEE/ION PLANS, pp. 46-51, Monterey, CA, April 2023 https://doi.org/10.1109/PLANS53410.2023.10139979

4. De Petrillo, M., Ross, D., **Gross, J. N.**, "Gaussian Process for Learning Environment Impacts on Localization Accuracy of a UAV with respect to UGV for Search Planning" IEEE/ION PLANS, pp. 260-271, Monterey, CA, April 2023 https://doi.org/10.1109/PLANS53410.2023.10139936

5. Floyd, J., Perhinschi, M., **Gross, J.**, Heubsch, W., "Conceptual Development of a Simulation Environment for Missiles Under Damaged States" 2023 AIAA SciTech Conference and Exhibit, National Harbor, MD, Jan 2023. https://doi.org/10.2514/6.2023-0732

6. Guitierrez, E., Kilic, C., **Gross, J. N.**, "Pseudo-Measurements in a Decentralized Cooperative Localization" *Proceedings of the 35th Annual International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+), Denver, CO, Sept., 2022.* https://doi.org/10.33012/2022.18555

7. Smith, T., Guitierrez, E., Bredu, J., Gu, Y, **Gross, J.N.** "Active Cooperative Localization of Swarm Robots using Adaptive Boid's Rules" Proceedings of the 35th Annual International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+), Denver, CO, Sept., 2022. https://doi.org/10.33012/2022.18560

8. Samarakoon, K., Pereira, G., **Gross, J.N.** "Impact of the Trajectory on the Performance of RGB-D SLAM Executed by a UAV in a Subterranean Environment" *Proceedings of the*

International Conference on Unmanned Aerial Systems (ICUAS) 2022. Dubrovnik, Croatia, June 21-24, 2022. 10.1109/ICUAS54217.2022.9836199

9. Curtis, R., Nursat Dooty, E., Ali Raisa, S., **Gross, J.**, Gu Yu. "Human-Swarm Interaction Robotics as Context for Training Diverse Undergraduate Researchers", *Proceedings of American Society of Engineering Education (ASEE) Annual Conference,* 2022 https://doi.org/10.33012/2021.17938

10. Kilic, C., Das, S., Gutierrez, E., Watson, R., and **Gross, J.N. "**ZUPT aided GNSS Factor Graph with Inertial Navigation Integration for Wheeled Robots" *Proceedings of the 34th Annual International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+)*, St. Louis, MO/Virtual, Sept., 2021. https://doi.org/10.33012/2021.18064

11. Das, S., Kilic, C., Watson, R., **Gross, J.N. "**A Comparison of Robust Kalman Filters for Improving Wheel-Inertial Odometry in Planetary Rovers" *Proceedings of the 34th Annual International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+)*, St. Louis, MO/Virtual, Sept., 2021. https://doi.org/10.33012/2021.17938

12. Ross, D., De Petrillo, M., Strader, J., **Gross, J.N.** "Uncertainty Estimation for Stereo Visual Odometry " *Proceedings of the 34th Annual International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+)*, St. Louis, MO/Virtual, Sept., 2021. https://doi.org/10.33012/2021.18063

13. Watson, R., **Gross, J.N,**, Taylor, C., Leishman, R. "Uncertainty Model Estimation in an Augmented Data Space for Robust State Estimation", *Proceedings of the 33rd Annual International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+)*, Virtual, Sept., 2020. https://doi.org/10.33012/2020.17560

14. Dhanaraj, N., Hewitt, N., Edmonds-Estes, C., Jarman, R., Seo, J., Gunner, H., Hatfield, A., Jonshon, T., Yifru, L., Maffeo, J., Pereira, G., **Gross, J.**, Gu, Y. "Adaptable Plaform for Interactive Swarm Robotics (APIS): A Human-Sward Interactions Research Tesbed" 2019 IEEE International Conference on Advanced Robotics (ICAR), Belo-Horizonte, Brazil, Dec. 2019 https://doi.org/10.1109/ICAR46387.2019.8981628

15. **Gross, J.N.,** De Petrillo, M., Beard, J., Nichols, H.,Swiger, T., …, & Griffin, C., "Field-Testing of a UAV-UGV Team for GNSS-Denied Navigation in Subterranean Environments" *Proceedings of the 32nd Annual International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+)*, Miami, FL, Sept., 2019. pp. 2112-2124 https://doi.org/10.33012/2019.16912

16. Yang, C., Watson, R., **Gross, J. N.**, Gu, Y. "Localization Algorithm Design and Evaluation for an Autonomous Pollination Robot" *Proceedings of the 32nd Annual International Technical*

Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+), Miami, FL, Sept., 2019. pp. 2702-2710. https://doi.org/10.33012/2019.17099

17. Kilic, C., **Gross, J. N.,** Ohi, N., Watson, R., Strader, J., Swiger, T., ... & Gu, Y.. "Improved Planetary Rover Inertial Navigation and Wheel Odometry Performance through Periodic Use of Zero-Type Constraints". *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Macau, China, Nov. 2019. https://doi.org/10.1109/IROS40897.2019.8967634

18. Rhudy, M. B., **Gross, J. N.**, Gu, Y. "Stochastic Wind Modeling and Estimation for Unmanned Aircraft Systems". *AIAA Aviation 2019 Forum* (p. 3111). Reno, NV, June 2019

19. Ohi, N., Lassak, K., Watson, R., Strader, J., Yixin, D., Yang, C., Hedrick, G., Nguyen, J., Harper, S., Reynolds, D., Kilic., C., Hikes, J., Mills, S., Castle, C., Waterland, N., **Gross, J.**, Park, Y-L., Li, X., Gu, Y., "Design of an Autonomous Precision Pollination Robot", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Madrid, Spain, Oct. 2018. https://doi.org/10.1109/IROS.2018.8594444

20. Watson, R., Taylor, C., Leishman, R., **Gross, J.** "Batch Measurement Error Covariance Estimation for Robust Localization" Proceedings of the 31st International Technical Meeting Satellite Division of the Institute of Navigation (ION GNSS+), Miami, FL, Sept. 2018. pp. 2429-2439. https://doi.org/10.33012/2018.15974

21. Watson, R., **Gross, J.** "Evaluation of Precise Point Positioning Convergence with an Incremental Graph Optimizer", IEEE/ION Position, Location, and Navigation Symposium, Monterey, CA, April 24-26, 2018. https://doi.org/10.1109/PLANS.2018.8373431

22. Lantto, S., **Gross, J.** "Precise Orbit Determination Using Duty Cycled GPS Observations", Proceedings of the 2018 AIAA Modeling and Simulation Technologies Conference - SciTech Forum 2018, Kissimee, FL, Jan 8-12, 2018. https://doi.org/10.2514/6.2018-1393

23. Watson, R., **Gross, J.** "Robust Navigation in GNSS Degraded Environment Using Graph Optimization" Proceedings of the 30th International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+ 2017), Portland, OR, Sept. 25-29 2017. https://doi.org/10.33012/2017.15164

24. Rhudy, M., **Gross, J.**, Gu, Y. "Determination of Stochastic Wind Speed Model Parameters Using Allan Deviation Approach", Proceedings of the 2017 AIAA Modeling and Simulation Technologies Conference – AVIATION 2017, Denver, CO, Jun. 2017.

25. Tehrani, N., **Gross, J.,** "Characterization of Multi-Antenna GNSS, Multi-Sensor Attitude Determination for Stratospheric Balloon Platforms", Proceedings of the 2017 AIAA Modeling and Simulation Technologies Conference – SciTech 2017, Grapevine, TX, Jan. 2017.

26. D' Urso, S., **Gross, J., "**Sensitivity of Unmanned Aerial Vehicle Model-Aided Navigation" Proceedings of the 2017 AIAA Modeling and Simulation Technologies Conference – SciTech 2017, Grapevine, TX, Jan. 2017.

27. **Gross, J.** Humphreys, T., "GNSS Spoofing, Jamming, and Multipath Interference Classification using a Maximum-Likelihood Multi-Tap Multipath Estimator", Proceedings of the 2017 Institute of Navigation International Technical Meeting (ION-ITM 2017), Monterey, CA, Feb. 2017.

28. Sivaneri, V., **Gross, J.**, "Cooperative Navigation between a Ground Vehicle and an Unmanned Aerial Vehicle in GNSS-Challenged Environments" Proceedings of the 29th International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS+ 2016), Portland, OR, Sept. 12-16 2016.

29. Hardy, J., Strader, J., **Gross, J**., Gu,Y., Keck, M., Douglas, J., Taylor, C. "Unmanned Aerial Vehicle Relative Navigation in GPS Denied Environments", IEEE/ION PLANS, Savannah, GA, Apr. 2016

30. Strader, J., Gu, Y., **Gross, J.**, De Pertrillo, M., Hardy, J. "Cooperative Relative Localization for Moving UAVs with Single Link Range Measurements" IEEE/ION PLANS, Savannah, GA, Apr. 2016

31. **Gross, J.,** Watson, R., Sivaneri, V., Bar-Sever, Y., Haines, B, Bertiger, W.. "Integration of Inertial Navigation into Real-Time GIPSY-x (RTGx)" Proceedings of the 28th International Technical Meeting of The Satellite Division of the Institute of Navigation (ION GNSS+ 2015), Tampa FL. Sept. 2015. pp. 2560-2569.

32. Watson, R., Sivaneri, V., **Gross, J.** "Performance Evaluation of Tightly-Coupled GNSS Precise Point Positioning Inertial Navigation System Integration in a Simulation Environment" Proceedings of the AIAA Guidance Navigation and Control Conference (GNC), San Diego, CA. Jan. 2016

33. **Gross**, J., Keesee, A., Christian, J., Gu, Y., Scime, E., Komjathy, A., Lightsey, E.G., Pollock, C. "The CuSPED Mission: CubeSat for GNSS Sounding of the Ionosphere-Plasmasphere Electron Density" Proceedings of the 2016 AIAA SciTech Forum, San Diego, CA, Jan. 2016.

34. Morris, J., Zemerick, S., Grubb, M., Lucas, J., Jaridi, M, **Gross**, J.,Ohi, N., Christian, J., Vassiliadis, D., Kadiyala, A., Pachol, M., Dawson, J., Korakakis, D., Bishop, R. "Simulation-To-Flight (STF-1): A Mission to Enable CubeSat Software-based Validation and Verification" Proceedings of the 2016 AIAA SciTech Forum, San Diego, CA, Jan. 2016.

35. **Gross, J**., Gu, Y., Dewberry, B. "Tightly-Coupled GPS/UWB-Ranging for Relative Navigation During Formation Flight" Proceedings of the 27th International Technical Meeting of The Satellite Division of the Institute of Navigation (ION GNSS+ 2014), Tampa FL. Sept. 2014.

36. Jones, K. H., **Gross, J.** "Reducing Size, Weight, and Power (SWaP) of Perception Systems in Small Autonomous Aerial Systems" AIAA Aviation Technology, Integration, and Operations Conference, Atlanta, Georgia, June 2014.

37. Chao, H., Gu, Y., **Gross, J.**, Guo, G., Fravolini, M.L., and Napolitano, M.R., "A Comparative Study of Optical Flow and Traditional Sensors in UAV Navigation," 2013 American Control Conference, Washington, DC, 2013.

38. Romero-Wolf, A., **Gross, J.**, Zarifian, P, Gorham, P., Wessel, S., Saltzberg, D. "The CHIRP Mission Concept: A CubeSat Pathfinder for the Development of Cosmic Ray Astronomy" 33rd Annual International Cosmic Ray Conference, Rio De Janeiro, Brazi, July 2013.

39. Bertiger W., Bar-Sever Y., Bokor, E., Butala, M., Dorsey, A., **Gross, J**., Harvey, N., Lu, W., Miller, K., Miller, M., Romans, L, Sibthorpe, A., Weiss, J.P, Jones, M. Holden, J., Donigan, A., Saha, P. "First Orbit Determination Performance Assessment For The OCX Navigation Software In An Operational Environment" ION GNSS+ Meeting, Nashville, TN, 2012.

40. Rhudy, M., **Gross, J.** Gu, Y. Napolitano M. "Fusion of GPS and Redundant IMU Data for Attitude Estimation" AIAA Guidance, Navigation and Control Conference and Exhibit, Minneapolis, MN, August 2012.

41. **Gross, J.,** Gu, Y., Rhudy, M., Barchesky, F., Napolitano, M. "On-line Modeling and Calibration of Low-Cost Navigation Sensors" AIAA Modeling and Simulation Technologies Conference, Portland, OR, August 2011.

42. Barchesky, F **,Gross, J.**, Gu, Y., Rhudy, M., Gururajan, S., Napolitano, M. "Development of a GPS/INS Sensor Fusion Simulation Environment Using Flight Data" AIAA Modeling and Simulation Technologies Conference, Portland, OR, August 2011.

43. Rhudy, M., Gu, Y., **Gross, J.,** Napolitano, M. "Sensitivity Analysis of EKF and UKF in GPS/INS Sensor Fusion", AIAA Guidance, Navigation and Conference and Exhibit, Portland, OR, August 2011.

44. **Gross, J.**, Gu, Y., Seanor, B., Gururajan, S., Napolitano, M. "A Comparison of Extended Kalman Filter, Sigma-Point Kalman Filter, and Particle Filter in GPS/INS Sensor Fusion", AIAA Guidance Navigation and Controls Conference and Exhibit, Toronto, Canada, August 2010.

45. **Gross, J.**, Gu. Y. , Napolitano, M. "A Systematic Approach for Extended Kalman Filter Tuning and Low-Cost Inertial Sensor Calibration within a GPS/INS Application", AIAA Guidance Navigation and Controls Conference and Exhibit, Toronto, CA, August 2010.

46. **Gross, J.,** Gu, Y., Seanor, B., Gururajan, S., Napolitano, M. "Advanced Research Integrated Avionics System for Fault-Tolerant Flight Research", AIAA Guidance Navigation and Controls Conference and Exhibit, Chicago, Illinois, August 2009

9 Publications: Posters and and/or Abstract Reviewed Presentations at Conferences

1. Hu, B., Yerebakan, M., Gu, Y., Gross, J., "Ergonomics Assessment of a Human-Robot Collaborative Plan Pollination Task", IISE Annual Conference and Expo, New Orelans, LA, 2023

2. Hu., B., Luo, Y., Gu., Y., Gross, J., Hayes, R., "Human movement Dynamics and Muscle Activity When Robotics Rolled into Retail Environments" IISE Annual Conference and Expo, New Orelans, LA, 2023

3. Watson, R., Ohi, N., Harper, S., Kilic, C., Yang, C., Hikes, J., De Petrillo, M., Strader, J., Hedrick, G., Nichols, H., Upton, E. , Kirk, C., Hendricks, K., Reynolds, D., Darr,, J., Bredu, J., Langnese, E. , Gu, Y., **Gross**, **J.** "A Rover and Drone Team for Subterranean Environments: System Design Overview." Robotics Science & Systems Workshop on Challenges and Opportunities for Resilient Collective Intelligence in Subterranean Environments, Pittsburgh PA, June 30, 2018.

4. Budzien, S.A., Powell, S. P., O' Hanlon, B., Humphreys, T., Bishop, R. L., Stephan, A.W., **Gross, J.**, Chakrabarti, S. "*Ionospheric Remote Sensing using GPS Radio Occultation and Ultraviolet Photometry aboard the ISS*", American Geophysical Union Fall Meeting, New Orleans, LA, Dec. 2017.

5. Bertiger, W., Bar-Sever, Y., **Gross, J.**, Miller, M., Romans, L., Sibois, A., Sibthorpe, A., Vallisneri, M., Weiss, J., "*Systematic Errors in Estimation of GPS Clock States*", 2016 International GNSS Service (IGS) Workshop, Sydney, Australia, Jan. 2016.

6. Vassiliadis, D., Christian, J., Keesee, A., Spencer, E., **Gross**, J., Lusk, G. *"Bringing Space Science to the Undergraduate Classroom: NASA's USIP Mission"* Poster Presented at American Geophysical Union Fall Meeting. San Francisco, CA, De. 2015.

7. Ohi, N., **Gross**, J. "*STF-1 CubeSat Mission GNSS Experiment Flight Software Design and Testing"* AIAA Region I Young Professional, Student, and Education Conference 2015 Baltimore, MD, Nov. 2015.

8. Sivaneri, V., Watson, R., **Gross, J.** "*Comparison of Unscented and Extended Kalman Filters for Global Navigation Satellite System Precise Point Positioning/Inertial Navigation"* AIAA Region I Young Professional, Student, and Education Conference 2015 Baltimore, MD, Nov.

2015.

9. Watson, R., Sivaneri, V., **Gross, J.,** *"Performance Evaluation of Tightly-Coupled GNSS Precision Point Positioning Inertial Navigation System Integration*" AIAA Dayton-Cincinnati Aerospace Sciences Symposium (DCASS) Dayton OH 2015

10. Desai, S. D., Bertiger, W. **Gross, J.** Haines, B. Harvey, N., Selle, C., Sibthorpe, A. , Weiss, J.P. "Results from the Reanalysis of Global GPS Data in the IGS08 Reference Frame", AGU Fall Meeting, San Francisco, CA, November 2011.

11. Desai, S, Haines, B., **Gross, J.**, Stowers, D. "Verification and Validation of the GNSS Stations at the Prototype Core Site for NASA's Next Generation Space Geodesy Network" AGU Fall Meeting, San Francisco, CA, November 2013.

12. **Gross, J.**, Sampler, H. Reed, B. "Low-Outgassing Photogrammetry Targets for Use in Outer Space**"** NASA Tech Briefs, August 2011.

10 Invited Seminars, Posters, and/or Presentations

1. Gross, J. "Robotics Localization in Harsh Environments: Underground and Plaetry Robots" & "Opportunities in the MMAE Dept at WVU" , Escuela Superior Politècnica de Chimbroazo (ESPOCH), March 16, 17, 2025
2. Gross, J. "Improved Robotics Localization in Harsh Environments", Purdue University School of Aeronautics and Astronautics Special Seminar, 09/12/2024

3. Gross, J. "Cooperative Robotics for Applications on GNSS Denied Environments" Virginia Commonwealth University Department of Mechanical and Nuclear Engineering Seminar, 03/01/2024

4. Gross, J. "Robot Localization Improvement through Autonomous and Cooperative Motion Constraints" Tufts University Mechanical Engineering Seminar, 10/13/23

5. Gross, J. "Autonomous ZUPTs and Cooperative ZUPTs for Improved Wheeled Rover Localization" Georgia Tech School of Aerospace Engineering Seminar, 2/16/23

6. **Gross, J.**, "Improved Wheeled Rover Localization via Autonomous Pseudo-Measurement Constraints" Invited Seminar, Virginia Tech Aerospace and Ocean Engineering Department, 10/10/2022

7. **Gross, J.**, "Improved Wheeled Rover Localization via Autonomous Pseudo-Measurement Constraints" Invited Seminar, Louisiana State University Mechanical and Industrial Engineering Department, 10/7/2022

8. **Gross J., "**Resilient Robot Localization for Challenging Operational Environments", NIOSH Robotics Interest Forum, June 29, 2022

9. **Gross J., "**Localization and Planning for a UAV/Robot Team in Subterranean Environments", 7th Annual Intelligence Community Academic Research Symposium, September 2021

10. **Gross J.** Localization and Planning for a UAV/Robot Team in Subterranean Environments, NGA Summer Research Seminars, June 2020, Updated Version also presented to 6th Annual Intelligence Community Academic Research Symposium, September 2020

11. **Gross, J.** "Resilient Navigation for Aerial Autonomy", ION CASSCA Workshop, Miami, FL, September 2019

12. **Gross, J.** "Resilient Navigation for Autonomous Vehicles", NASA IV&V Guest Lecture Seminar, Fairmont, WV, December 10, 2018.

13. Sivaneri, V., **Gross, J.** "UGV-to-UAV Cooperative Ranging for Robust Navigation in GNSS-Challenged Environments" 3rd Annual Intelligence Community Academic Research Symposium, National Academy of Sciences, Washington, DC, September 2017.

14. Gu, Y, Park, Y-L, Waterland, N., Li, X., **Gross, J.,** "Precision Pollination Robot", Poster Presented at the 2016 Annual National Robotics Initiative Program Meeting, Washington, DC, November, 2016.

15. **Gross, J.***"Multi-Constellation GNSS, Multi-Sensor Precise Point Positioning"* 2nd Annual Intelligence Community Academic Research Symposium, Washington ,DC. September 2016.

16. **Gross, J.** and Watson R., "*Latest Results in PPP/INS Integration in RTGx for Airborne Applications*", NASA Jet Propulsion Laboratory GDGPS Team Update, June 2016.

17. **Gross, J.** and Watson R., "*Advances in GIPSY GNSS/IMU integrated positioning and application to UAVs*", National Geodetic Survey's NOAA Airborne Gravity for Geodesy Summer School, Washington DC, June 2016.

18. **Gross, J.***"Multi-Constellation GNSS, Multi-Sensor Precise Point Positioning Year-1 Update"* National Geospatial-Intelligence Agency, Washington ,DC. June 2016.

19. **Gross, J.***"Multi-Constellation GNSS, Multi-Sensor Precise Point Positioning"* 1st Annual Intelligence Community Academic Research Symposium, Washington ,DC. September 2015.

20. **Gross, J.***"Integrity Ranking within Particles Filters for Multi-GNSS Monitoring"* Closeout Presentation for Air Force Summer Faculty Fellowship at the Air Force Institute of Technology. Wright Patterson Air Force Base, Aug. 2015

21. Watson, R., **Gross, J.** *"Performance Evaluation of Tightly-Coupled GNSS Precision Point Positioning Inertial Navigation System Integration in a Simulation Environment"* Seminar Presented at NASA Jet Propulsion Laboratory Section 335 Advanced Research on Tracking Systems (ARTS) Seminar, Pasadena, CA. May 2015

22. Gu, Y., Park, Y.L, Waterland, N, **Gross, J.** "Precision Pollination Robot" ,USDA NIFA, Washington, DC, December 2014.

23. **Gross, J.** "Robust Relative Navigation with DGPS/INS/UWB During UAV Formation Flight" Institute of Navigation, Dayton, OH, Section, Dayton, OH, November 2014

24. **Gross, J.** Faculty Interview Seminar, West Virginia University, Dept. of Mech. and Aero., Morgantown, WV, October 2013.

25. Romero-Wolf, A, **Gross, J.,** Zarifian, P, "CHIRP CubeSat Mission" Jet Propulsion Laboratory, Pasadena CA, Section 312 Seminar, June 2013

26. **Gross, J.** "Fault Tolerant Attitude Estimation Solutions for Small UAVs" Jet Propulsion Laboratory, Pasadena CA, Section 335 ARTS Seminar, February 2011.

11 Funded Research

Externally Funded Grants & Contracts

Title: West Virginia University Robotics Laboratories for Education, Research, and Outreach **Sponsor:** NASA Award #80NSSC24K1008 **Role:** PI	**Period of Performance:** **Budget**	9/1/24-8/31/25 **$1,000,000**
Title: REU Site: Undergraduate Robotics Research for Rural Appalachia **Sponsor:** NSF Award #2348288 **Role:** PI	**Period of Performance:** **Budget:**	4/15/24 -/3/31/27 **$454,179**

Title: Data Security Challenges for Multi-Agent Cooperative Robotic Systems Sequential Phase 2 **Sponsor:** Air Force STTR Program (AFWERX) **Role:** PI of Research Institution	**Period of Performance:** **Budget:**	9/15/23- 9/14/24 **$249,999 (WVU portion)** **$750,000 (total)**
Title: Design Guidelines for Assessment of Pillar Stability in Underground Room & Pillar Mines from Autonomous Robotic Inspections **Sponsor:** Alpha Foundation **Role:** Co-PI	**Period of Performance** **Budget:**	**12/1/22 - 11/30/24** **$569,149**
Title: Collaborative Research: NRI: Reducing Falling Risk in Robot-Assisted Retail Environments **Sponsor:** NSF NRI 3.0 **Role:** Co-PI	**Period of Performance:** **Budget:**	8/1/22-7/31/25 **$366,796**
Title: Multi-Agent Integration with Android Team Awareness Kit (ATAK) Phase 2 **Sponsor:** Air Force STTR Program (AFWERX) **Role:** Co-PI	**Period of Performance:** **Budget:**	 **$330,000 (WVU portion)** **$1M (total)**
Title: Data Security Challenges for Multi-Agent Cooperative Robotic Systems Phase 2 **Sponsor:** Air Force STTR Program (AFWERX) **Role:** PI of Research Institution	**Period of Performance:** **Budget:**	8/15/21- 11/12/22 **$249,999 (WVU portion)** **$750,000 (total)**
Title: NRI StickBug – an Effective Co-Robot for Precision Pollination **Sponsor:** USDA National Robotics Initiative 3.0 (reviewed by NSF Panel) **Role:** Co-PI	**Period of Performance:** **Budget**	11/1/21 - 10/31/25 **$750,000 (WVU portion)** **$1M (total)**
Title: Characterization, Analysis, and Simulation of Unsteady Aerodynamics and Flight Trajectories for Unstable or Off-Nominal Free-Flight Bodies **Role:** Co-PI	**Period of Performance:** **Budget**	10/1/2020-9/30/2020 **$565,000 (Year 1 funding)**
Title: Data Security Challenges for Multi-Agent Cooperative Robotic Systems **Sponsor:** Air Force STTR Program (AFWERX) **Role:** PI of Research Institution	**Period of Performance:** **Budget**	12/01/20-8/31/21 **$45,000 (WVU portion), $150,000 (total)**

Title: NOAA-West Virginia University (WVU) Collaboration for Developing Inertially-aided GNSS Processing Technology for Positioning of Wave-following, Spherical-hulled Ocean Buoys **Sponsor:** National Oceanic and Atmospheric Administration **Role:** PI	**Period of Performance:** **Budget**	8/17/2020-8/16/2021 **$54,999**
Title: Characterization of Fault Tolerant Behavior and Flight Capabilities Following a Non-Lethal Intercept Strike **Sponsor:** Office of Naval Research **Role:** Co-PI	**Period of Performance:** **Budget**	9/20/19-9/20/20 **$249,996**
Title: Autonomous Robotic Early Warning System for Underground Stone Mining Safety **Sponsor:** Alpha Foundation **Role**: Co-PI	**Period of Performance:** **Budget:**	9/1/19 8/31/22 **$748,968**
Title: REU Site: Undergraduate Robotics Research in Human-Swarm Interaction **Sponsor:** National Science Foundation **Role:** Co-PI	**Period of Performance:**	3/1/19 2/21/22 **$319,310**
Title: Precision Pollination Robot **Sponsor:** USDA National Robotics Initiative (reviewed by NSF Panel) **Role**: Co-PI	**Period of Performance:** **Budget:**	11/15/18 11/14/19 **$355,295** (year 3 funding)
Title: Robust Estimation for Autonomous Navigation in Data Degraded Environments using Factor Graphs **Sponsor:** Air Force Research Lab through MacAulay-Brown Inc. **Role**: PI	**Period of Performance:** **Budget:**	1/1/18 4/30/19 **$39,981**
Title: Autonomous Navigation of Small UAV/UGV Teams in Underground Tunnels **Sponsor:** National Geospatial-Intelligence Agency Academic Research Program (NARP)	**Period of Performance:**	02/15/18 08/14/23

Role: PI	**Budget:**	Base period + 1st & 2nd options awarded at **$599,688**
Title: Technology Development for Robotic Servicing, Autonomous Relative Navigation Task **Sponsor:** NASA GSFC Satellite Servicing Division through Alcyon Tech. Services	**Period of Performance:**	10/1/17 9/30/18
Role: Co-PI	**Budget:**	**$113,116** (for Dr. Gross' task only)
Title: Fast Traversing Autonomous Rover for Mars Sample Collection **Sponsor:** NASA EPSCoR NNH17ZHA002C	**Period of Performance:**	9/16/17 9/16/21
Role: Co-PI	**Budget:**	**$1,125,000** (**$750K** NASA + **$375K** WVU Cost-Share)
Title: Precision Pollination Robot **Sponsor:** USDA National Robotics Initiative (reviewed by NSF Panel)	**Period of Performance:**	11/15/16 11/14/18
Role: Co-PI	**Budget:**	**$709,715**
Title: Integrity Ranking within Particle Filters for Multi-Constellation GNSS **Sponsor:** Air Force Research Lab through MacAulay-Brown Inc.	**Period of Performance:**	6/06/16 4/30/18
Role: PI	**Budget:**	**$100,040**
Title: Enabling Moving Target Hand-off in GPS-Denied Environments **Sponsor:** Air Force Research Lab Phase I STTR	**Period of Performance:**	5/14/15 2/15/16 **$150,000**
Role: PI of Research Institution	**Budget:**	($60,731 WVU portion)
Title: Multi-Constellation GNSS, Multi-Sensor Precise Point Positioning **Sponsor:** National Geospatial-Intelligence Agency Academic Research Program (NARP), New Investigator Program (NIP)	**Period of Performance:**	6/01/15 5/31/18
Role: PI	**Budget:**	**$199,925**
Title: Simulation-To-Flight 1 (STF1) 3U CubeSat Mission **Sponsor:** NASA's CubeSat Launch Initiative (CSLI), NASA IV&V, WVU, WV Space Grant Consortium	**Period of Performance:**	6/1/15 5/31/18
Role: Co-PI	**Budget:**	*CubeSat Launch Services*

Title: Real-Time GIPSY-X Inertial Navigation System Integration	**Period of Performance:**	11/12/14 9/30/19
Sponsor: California Institute of Technology NASA Jet Propulsion Laboratory		
Role: PI	**Budget:**	**$211,847**
Title: TESS Mobile CubeSat Development and Test Environment Task	**Period of Performance:**	7/23/14 10/31/14
Sponsor: Industry-TMC2 through NASA WVSGC		
Role: Co-PI	**Budget:**	**$24,518**
Title: SSCO Technology Development for Robotic Servicing of Orbital Space Assets: Technology Assessment for GPS at GEO and Ground Penetrating Radar to Support ARM	**Period of Performance:**	5/16/14 8/15/14
Sponsor: AS&D (ASRC Federal Space and Defense) /WVRTC Program		
Role: Collaborator	**Budget:**	**$9,444**
Title: GPS Orbit Technologies and Support	**Period of Performance:**	4/11/14 11/12/15
Sponsor: California Institute of Technology NASA Jet Propulsion Laboratory		
Role: PI	**Budget:**	**$15,000**

Internally Funded Grants

Title: SmartAg WV a Pitch to the WVU Academic Innovation Summit **Role:** Co-PI & Pitch Team Member	**Period of Performance:** **Budget**	01/15/22- 01/14/22 **$131,000**
Title: Statler College Support for Participation in the NASA Space Robotics Challenge Phase 2 **Role:** PI, WVU Team Lead	**Period of Performance:** **Budget**	03/01/2020- 08/15/2021 **$100,00**
Title: A Concept Study for the use of Lighter Than Air (LTA) Vehicles for the Next Generation of Sub-Orbital Payloads **Sponsor:** NASA WV Space Grant Consortium + WVU Cost Share **Role**: PI	**Period of Performance:** **Budget:**	5/15/15- 5/14/16 **$40,690**
Title: Development of a Spacecraft Design Laboratory **Sponsor:** NASA WV Space Grant Consortium + WVU Cost Share **Role**: Co-PI	**Period of Performance:** **Budget:**	5/15/15- 5/14/16 **$10,000**

Title: Ultra-Wideband Ranging and Communications to Augment GPS Relative Navigation of UAVs	**Period of Performance:**	5/16/14 5/15/15
Sponsor: NASA WV Space Grant Consortium + WVU Cost Share		
Role: PI	**Budget:**	**$32,822**
Title: INSIGHTS: Inertial Navigation Systems Integrated into the GIPSY-OASIS for High-Accuracy Tightly-Coupled Solutions	**Period of Performance:**	5/16/14 5/15/15
Sponsor: NASA WV Space Grant Consortium + WVU Cost Share		
Role: PI	**Budget:**	**$54,723**

12 Software Development Projects

1. Contributor to JPL's RTGx GNSS Positioning and Orbit Determination Software
2. Power-Distortion GNSS Spoofing/Jamming Detector Software https://github.com/navSecurity/P-D-defense
3. Our Lab's GitHub page with many graduate student-led software repositories associated with publications https://github.com/wvu-navLab

13 Professional Service

Society and Technical Committee Memberships

Senior Member IEEE, Institute of Electronics and Electrical Engineering (IEEE), 2020-Present,
Member IEEE, 2015-2020
Member, IEEE-Aerospace Electronic Systems Society (AESS), 2016-Present
Member of the IEEE-AESS Navigation Systems Panel, May 2018- Present

Member, Institute of Navigation (ION), 2013-Present

Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA), 2024-Present ,
Associate Fellow Citation: "*For contributions to aerospace engineering education, research in space robotics and unmanned aerial vehicles, and aerospace-related academic service".*
Senior Member, 2019-2023
Member, 2008-2019
Associate Member of the AIAA Guidance, Navigation and Control (GNC) Technical Committee, May 2015 – Jan. 2019
Member, AIAA Higher Education Committee, August 2022 – Present

Member, International Association of Geodesy Working Group on GNSS Interference and Spoofing, 2020- 2022

Editorships & Conference Organization

Program Co-Chair (for Research Tracks), Institute of Navigation GNSS+ Conference 2025
***Session Co-Chair**,* Institute of Navigation GNSS+, Sensor Network and Cooperative Navigation, September 2023 (could not attend in person due to university travel restrictions)
Tutorials Chair, IEEE/ION Position Localization and Navigation Symposium (PLANS)**, April 2023**
***Session Co-Chair**,* Institute of Navigation GNSS+, Session E6: Sensor Network and Cooperative Navigation, September 2022
Associate Editor, IEEE Transactions on Aerospace & Electronics Systems, Navigation Technical Area, Jan. 2021-Present
Track Chair, ION GNSS+ 2021, Multi-Sensor Fusion Track
Associate Editor, Frontiers in Robotics and AI – Field Robotics, June 2020- Present
Associate Editor, IEEE Aerospace & Electronics Systems Magazine, Navigation & Positioning Systems, Jan. 2020-Present
Track Chair, ION GNSS+ 2020, Multi-Sensor Fusion Track
Session Co-Chair, Multi-sensor Integrated Systems and Sensor Fusion Technologies, IEEE/ION PLANS 2020
Session Co-Chair, Aided GNSS and Sensor Fusion in Challenging Environments 2, Institute of Navigation GNSS+ Conference 2019
Associate Editor, 2020 AIAA Guidance Navigation & Control Conference
Associate Editor, 2019 IEEE International Conference on Advanced Robotics (ICAR)
Associate Editor, 2019 American Control Conference (AIAA sponsored sessions)
Session Co-Chair, Rendezvous and Proximity Operations, 2019 AIAA 2019 AIAA Guidance Navigation & Control Conference
Technical Area Co-Chair**,** Spacecraft and Launch GNC, 2019 AIAA Guidance Navigation & Control Conference
Session Co-Chair, High Precision GNSS Positioning 2, 2018 Institute of Navigation GNSS+ Conference
Editorial Board, GPS Solutions, Springer, 2017- Current
Associate Editor, 2018 American Control Conference (AIAA sponsored sessions)
Session Co-Chair, 2018 AIAA Guidance Navigation & Control Conference, 2 sessions: Novel Navigation methods
Technical Program Committee, Track B: Satellite Navigation, IEEE TVT Conf. 2017
Associate Editor, 2018 AIAA Guidance Navigation & Control Conference
Associate Editor, 2016 American Control Conference (AIAA sponsored sessions)
Technical Program Committee, Track B: Satellite Navigation, IEEE TVT Conf. 2016
Session Co-Chair, Mitigation of Jamming and Spoofing, 2017 Institute of Navigation International Technical Meeting (2017 ION-ITM)

Journal/Conference Paper Reviewer (selected)

IEEE Robotics and Automation Letters
AIAA Journal of Spacecraft and Rockets;
AIAA Journal of Guidance, Control and Dynamics
Autonomous Robots, Springer;

Aerospace Science & Technology, Elsevier;
GPS Solutions, Springer;
IEEE Transactions on Control Systems Technology;
IEEE Transactions on Aerospace & Electronic Systems;
IEEE Aerospace & Electronic Systems Magazine;
IEEE Transactions on Vehicle Technology;
IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing;
IEEE Transactions on Automation Science & Engineering;
IEEE Signal Processing Letters;
Journal of Aerospace Engineering;
Journal of Aerospace; Journal of Spacecraft & Rockets
Navigation, the Journal of the Institute of Navigation
Sensors; Algorithms; Electronics- MDPI;
IET Science, Measurement & Technology;
AIAA SciTech, GNC;
American Control Conference;
IEEE Conference on Robotics & Automation (ICRA);
IEEE Conference on Unmanned Aerial Systems (ICUAS);
IEEE Vehicle Technology Conference (VTC);

Research Proposal Reviewer

National Science Foundation, Proposal Review, 2020
National Science Foundation, Panel, 2019, 2021
National Science Foundation, Proposal Review, 2019
Kentucky Science & Engineering Foundation (KSEF)
Austrian Science Fund (FWF);
Research North Dakota.
U.S. Department of Homeland Security Center of Excellence

14 University Service

Leadership Roles

Chair, Department Mechanical, Materials & Aerospace Engineering (MMAE), October 2022- Present
Interim Chair, Department Mechanical & Aerospace Engineering, Jan 2021- October 2022

Duties include: overall leadership and management for the department, mentor faculty, develop and implement a vision and strategic plan for the department, use good business and financial management practices, promote good alumni and corporate relations, and nurture and support fundraising activities; including: being advocate of department in front of university administration; leading growth and enhancement of research and teaching; enhancing department curricula; initiating new programs; leading efforts in student recruitment and retention; being an active and effective facilitator in communicating

information from University and College; representing the department at all levels to enhance collaboration and interaction with strategic partners; reaching out to industries and alumni;

The MMAE department houses the Statler College's largest academic programs (three undergraduate programs in mechanical, aerospace, and robotics engineering and 6 graduate programs including MS and PhD in each mechanical, aerospace and materials science) with about 800 student (sophomores through graduate) enrolled in Spring 2025; it houses >40 faculty across ranks in tenure-track, teaching and research tracks, 8 full-time staff. In CY2024 conducted $18M in external sponsored research.

Associate Chair for Research, Department Mechanical & Aerospace Engineering, Jan 2021-October 2022

Duties include: assist department chair in initiating, implementing, and promoting research growth in the department, mentoring junior faculty in research, and coordinating enhanced graduate recruitment.

Co-Coordinator of WVU Robotics, 2018-Present

Duties include: Lead and serve on faculty searches for robotics; support robotics seminar series at WVU; plan and implement robotics laboratory facilities development; serve Associate Director of WVU Robotics NSF REU site (2018-2022, renewal as site director 2024-2027)

Additional Service Roles

- Member of the WVU-wide Undergraduate Council which is charged with the review of 5-year program assessment, 2025-2028
- WVU Faculty Senate Representative from Statler College, Elected Term 2020-2023, reelected 2023-2026
- WVU MAE PhD Qualifier Committee Controls & Dynamics Section, Fall 2022
- WVU MAE PhD Qualifier Committee Controls & Dynamics Section, Fall 2021
- WVU MAE Chairperson Search Committee Member, 2021-2022
- WVU Faculty Senate Teaching and Assessment Committee (TACO), 2021-2022
- WVU Research Office Faculty Advisory Committee, Spring 2020- Present
- WVU MAE/LCSEE Robotics Cluster Faculty Search Committee, Chair, 2019, 2020
- WVU MAE Faculty Search Committee, Member, 2018, 2019;
- WVU MAE Faculty Search Committee, Member, 2018;
- WVU MAE PhD Qualifier Committee, Chair of Fluid Mechanics & Aerodynamics Section, Spring 2018
- WVU MAE PhD Qualifier Committee, Member of Fluid Mechanics & Aerodynamics Section, Spring 2018
- WVU MAE PhD Qualifier Committee, Chair of Controls & Dynamics Section, Spring 2017
- WVU MAE Faculty Search Committee, Member, 2017-2018;
- WVU SPACE Student Organization, Faculty Advisor, 2017-Present;
- WVU MAE PhD Qualifier Committee, Member of Aerodynamics & Fluid Mechanics Section, Fall 2016
- WVU MAE PhD Qualifier Committee Member of Controls & Dynamics, Fall 2015

15 Teaching Experience

MAE 202: MAE 202: **Mechanical & Aerospace Sophomore Seminar**, Fall 2024
MAE 216: **Intermediate Programming,** Spring 2024
MAE 411: **Advanced Mechatronics**, Fall 2023
MAE 202: **Mechanical & Aerospace Sophomore Seminar**, ***New Course Development***, Fall 2023
MAE 411: **Advanced Mechatronics**, Fall 2021
MAE 211: **Mechatronics**, Spring 2021
MAE 411: **Advanced Mechatronics**, Fall 2020
MAE 561: **Satellite Navigation**, Spring 2020
MAE 475: **Flight Vehicle Design**, AE Capstone Design Course, Spring 2020
MAE 411: **Advanced Mechatronics**, Fall 2019
MAE 493D: **Spacecraft Design 2** (NASA Sounding Rocket Payload), ***New Course Development***, Spring 2019
MAE 475: **Flight Vehicle Design**, AE Capstone Design Course, Spring 2019
MAE 493B: **Spacecraft Design 1** (NASA Sounding Rocket Payload), ***New Course Development***, Fall 2018
MAE 475: **Flight Vehicle Design**, AE Capstone Design Course, Spring 2018
MAE 211**: Mechatronics**, Fall 2017
MAE 331: **Fluid Mechanics**, Spring 2017

MAE 593I: **Global Positioning System**, Fall 2016
MAE 331: **Fluid Mechanics**, Fall 2016
MAE 293C/493C: **Space Mission Development** (CubeSat Integration), Co-Instructor with Dr. Christian, Spring 2016.
MAE 593I: **Global Positioning System**, Fall 2015
MAE 293C/493C: **Space Mission Development** (CubeSat Integration), ***New Course Development***, Co-Instructor with Dr. Christian, Fall 2015.
MAE 475: **Flight Vehicle Design**, BSAE Capstone Design Course, Spring 2015.
MAE 493J: MAE 593K, CpE 493N, CpE 591F Co-Instructor, with Dr. Gu, Dr. Klinkhachorn, Dr. Cheng, **Planetary Rover Design**, Spring 2015;
MAE 593I: **Global Positioning System**, ***New Course Development***, Fall 2014
MAE 331: **Fluid Mechanics**, Spring 2014
MAE 241: **Engineering Mechanics: Statics**, Spring 2008

16 Student Advising in Research

Completed Graduate Students

Shounak Das, PhD AE, Research Advisor, Committee Chair, Graduation December 2023,
Dissertation Title: "Robust State Estimation Methods for Robotics Applications"
Job Upon Graduation: Qualcomm, Santa Clara, CA

Eduardo Guitierrez, MSME, Research Advisor, Committee Chair, Graduation December 2022
Thesis Title: "Decentralized Cooperative Localization for Challenging Conditions"
Job Upon Graduation: BALYO Robotics Field Engineer, Somerville, MA

Kieren Samarakoon, MSME, Co-Research Advisor, Committee Chair, Graduation August 2022
Thesis Title: "UAV Path Planning and Multi-Modal Localization for Mapping in a Subterranean Environment"
Job Upon Graduation: John Deere, Austin, TX

Maria Gonzalez, MSME, Research Advisor, Committee Chair, Graduation August 2022
Thesis Title: "Post Processing Precise Point Positioning Solutions Using Parameter Optimization"
Job Upon Graduation: Bosch, Michigan

Uthman Olawoye, MSAE, Research Advisor, Committee Chair, Graduation May 2022
Thesis Title: "UAV Position Estimation using a LiDAR-based 3D Object Detection"
Job Upon Graduation: PhD Student at WVU

Matteo De Petrillo, PhD AE, Research Advisor, Committee Chair, Graduation December 2021
Dissertation Title: "Planning Algorithms Under Uncertainty for a Team of a UAV and UGV for Underground Exploration"
Job Upon Graduation: Near Earth Autonomy, Pittsburgh PA

Cagri Kilic, PhD AE, Research Advisor, Committee Chair, Graduation December 2021

Dissertation Title: "Planetary Rover Inertial Navigation Applications: Pseudo-measurements and Wheel-Terrain Interactions"
Job Upon Graduation: Post-Doctoral Fellow at WVU, Now Assistant Professor at Embry Riddle Aeronautical University

Derek Ross MSAE, Research Advisor, Committee Chair, Graduation Summer 2021
Thesis Title: "Uncertainty Estimation in Stereo Visual Odometry"
Job Upon Graduation: Raytheon Missile Systems, AZ

Ryan Watson PhD-AE, Research Advisor, Committee Chair, Graduation December 2019
Dissertation Title: "*Enabling Robust State Estimation Through Covariance Adaptation*"
Summer 2018 Internship: Qualcomm
Job Upon Graduation: Caltech-NASA Jet Propulsion Laboratory, Pasadena, CA

Victor Sivaneri, PhD-AE, Research Advisor, Committee Chair, Graduation May 2018
Dissertation Title: *"UGV-to-UAV Cooperative Ranging for Roust Navigation in GNSS-Challenged Environments"*
NASA WV Space Grant Graduate Fellowship, 2015-2016
Summer 2017 Internship: Air Force Research Lab, Dayton OH
Job Upon Graduation: Air Force Research Lab, Sensors Directorate, Dayton OH

Jacob Hikes, MSAE, Research Advisor, Committee Chair, Graduation December 2018
Thesis Title: *"Calibration of Cameras and LiDAR for Applications in Autonomous Navigation"*
NASA WV Space Grant Graduate Fellowship, 2018
Job Upon Graduation: Northrup Grumman, Rocket City, WV

Shannen Daly, MSAE, Research Advisor, Committee Chair, Graduation August 2018
Thesis Title: "*Implementation of a State-of-the-Art GNSS Receiver Autonomous Integrity Monitoring Technique"*
Summer 2017 & Spring 2018 Internship: NASA MSFC
Job Upon Graduation: Aerospace Corporation, El Segundo, CA

Sean Lantto, MSAE, Research Advisor, Committee Chair, Graduation May 2018
Thesis Title: "*Precise Orbit Determination of a CubeSat Using Duty-Cycles GNSS Observations*"
Awards: NASA WV Space Grant Graduate Fellowship, 2016-2017
Summer 2017 Internship: Air Force Research Lab, Dayton OH
Job Upon Graduation: Rockwell Collins, Cedar Rapids, IA

Nathan Tehrani, MSAE, Research Advisor, Committee Chair, Graduation August 2017
Thesis title "*Characterization and Flight Test of a Multi-Antenna GNSS, Multi-Sensor Attitude Determination Algorithm"*
NASA WV Space Grant Graduate Fellowship, 2016-2017
Job Upon Graduation: NASA GSFC IV&V Facility, Fairmont, WV

Stephane D' Urso, MSAE, Research Advisor, Committee Chair, Graduation August 2017
Thesis title *"Analysis of Model Aided Navigation of Unmanned Aerial Vehicles"*

Job Upon Graduation: PhD Student at WVU in a different group;

Ryan Watson, MSAE, Research Advisor, Committee Chair, Graduation May 2017
Thesis title *"Precise Point Positioning Inertial Navigation Integration for Airborne Kinematic Platforms"*
Summer 2016 Internship: NASA Jet Propulsion Lab;
Summer 2017 Internship: : Air Force Research Lab, Dayton OH
Job Upon Graduation: PhD student at WVU;

Jeremy Hardy, MSAE, Research Advisor, Committee Chair, Graduated December 2016
Thesis title *"Sensitivity Analysis of a Relative Navigation Solution for UAVs in a GNSS-Denied Environment"*
Summer 2016 Internship at Systems & Technology Research in Woburn, MA;
Job Upon Graduation: Engineer at Systems & Technology Research in Woburn, MA;

Current Graduate Students and Post Docs

Uthman Olawoye, PhD AE, Research Advisor, Committee Chair, Fall 2022- Present
David Akhihiero, PhD AE, Research Advisor, Committee Chair, Fall 2022- Present
Andy Chu, MSME Research Advisor, Committee Chair, Fall 2023-Present
K. Kulbushan, PhD ME, Research C-Advisor, Committee Co-Chair, Fall 2023-Present
H. Hanoon, MS ME, Spring 2024

Graduate Students: Committee Member

Yaohui Ding, MSAE, Graduated Summer 2015
Trevor Caplinger, MSAE, Graduated Summer 2015
Jordan Sell, MSME, Graduated Spring 2015
Alan Didion, MSAE, Graduated Fall 2015
Sean Patrick, MSAE, Graduated Fall 2015
Chris Gioia, PhD AE, Graduated Spring 2016
Jared Strader, MSME, Graduated Summer 2016
Andrew Liounis, MSAE, Graduated Spring 2016
Ehsan Moradi Pari, PhD CSEE, Graduated Spring 2016
Amin Tahmasbi Sarvestani, PhD CSEE, Graduated Fall 2016
Lylia Benhacine, MSAE, Graduated Spring 2017
Shane Haught, MSAE, Graduated Summer 2018
Scott Harper, MSAE, Graduated Fall 2018
Josh Milam, MSAE, Graduated Fall 2018
Mohanad Al Nuami, PhD AE, Graduated Summer 2019
Conner Castel, MSME, Graduated Fall 2019
Alex Hypes, MSME
Theodore Lane, PhD Physics, , Graduated Spring 2020
Kyle Lassak, PhD AE, Graduated Spring 2020
Chizhao Yang, PhD AE, Graduated Fall 2021
Garielle Hedrick, PhD AE, Graduated Fall 2020
Andrew Rhodes, PhD AE, , Graduated Fall 2019

Sinan Imad Sabri, PhD CS, Graduated Spring 2022
Christopher Tatsch, MSME, Graduated Summer 2020
Jared Beard, MSAE, Graduated Summer 2020
Conner Castle, MSAE, Graduated Fall 2019
Jennifer Nguyen, MSAE , Graduated Spring 2020
Danylo Shapovalov, MSAE, Graduated Fall 2020
Quinn Jones, PhD CS
Bernardo Martinez, PhD ME
Al Mahmud, MSME
Jared Strader, PhD ME, Graduated Fall 2021
Rogerio Lima, PhD AE
Nicholas Ohi, PhD AE, Gradated Fall 2023
Lauren Cash, MSME
Joshua Daniell, MSAE
Brock Dolly, MSAE
Richard Licata, PhD AE, Graduated Fall 2022
Nathaniel Michek, PhD AE
Juan Pabon Arias, PhD ME
Jeremy Rathjen, MSME, Graduated Fall 2022
Madhav Rijal, PhD ME
Gerardo Rivera Santos, PhD AE
Eric Swanson, MSME
James Floyd, MSAE

Undergraduate Students: Research Advisor

Caleb Ford, Fall 2022 - Present
Mitchell Zehring, Fall 2021- Summer 2022
Alan Hongpaisan, Fall 2021- Spring 2022
Brock Dolly, BSME/BSAE, Fall 2020
Pranav Werrier, BSME/BSAE, Fall 2020 - Current
Alec Angus, BSME/BSAE, Fall 2020 - Current
Matthew Russell, BSME/BSAE, Summer 2019 - Current
Hayden Nichols, BSME, Spring 2018 – Current
Emily Upton, BSME, Spring 2018- Current
Thomas Swiger, BSME/BSAE, Fall 2018- Summer 2019
Connor Kirk, Summer 2018 WVU STEM-SURE REU Student, Fall 2018- Summer 2019
Akira Yamashita, Washington & Jefferson College Summer Student, Summer 2018
Keelan Hendricks, Summer 2018 WVU STEM-SURE REU Student
Michael Lee, BSME/BSAE, Summer 2017, WVU STEM-SURE REU Student
Adam Roh, BSCE/BSEE, Fall 2016-Winter 2016
Keegan Mueller, BSME, Summer 2016 WVU STEM-SURE REU Student
Sean Lantto, BSAE/BSME, Fall 2015 – Summer 2016

Nicholas Ohi, BSAE/BSME, WV NASA Space Grant Fellowship, Summer 2015 – Spring 2016
Brandon Johnston, BSAE/BSME, Summer 2014 – Spring 2015
Zach Rumble, BSAE/BSME, Summer 2014 – Spring 2015
Timothy Bear, BSAE/BSME, Fall 2014 – Fall 2016

17 Community Outreach

1. Judge at VEX High School Tournament February 2023, February 2023, December 2024, Feb 2025
2. Space Robotics Challenge middle school Sphero robotics challenge, September 26, 2021, Space Center Houston, TX
3. WV STARS Symposium, Morgantown WV, November 16, 2019
4. Judge at WV State Science High School Science & Engineering Fair, Fairmont State University, April 2019
5. Judge at WV State Science High School Science & Engineering Fair, Fairmont State University, April 2018
6. WVU Faculty Dinner Lecture Series, Spring 2017
7. Participation in Mission Automation Collaboration hosted by SOCCOM/SOFWERX
8. Prospective WVU Student UAV Lab Tour (October & November 2016 ~50 students)
9. Judge at WV State Science High School Science & Engineering Fair, Fairmont State University, April 2016
10. WVU STEM SURE Seminar on Seeking Graduate Education, Summer 2015
11. Mentor to High School Senior Capstone Course, David Lituchy, 2015 academic year
12. Referee at WVROX 24-hour FIRST Robotics Competition, August 2014

18 Media Coverage / Appearances (Selected)

1. Creating a new Future: WVU Unveils Undergraduate Degree Program in Robotics, December 2023
2. Gross Elected as AIAA Associate Fellow, October 2023
3. Statler College Professor Jason Gross Selected for Generation Next: 40 under 40, June 2023
4. IEEE/ION PLANS 2023 Focused on the Technologies Advancing PNT, InsideGNSS, April 2023
5. Gross appointed Chair of the Department of Mechanical and Aerospace Engineering, October 2022
6. Researchers developing robots that can detect slip and fall hazards in retail spaces, Safety and Health Magazine and WVU Today, September 2022
7. WVU space robotics research helps Mars rovers find their footing, WVU Today, August 2022
8. Flight simulator donated by WVU alumnus aids education, research at Statler College, WVU Foundation News, August 2022
9. WVU engineers advance U.S. Air Force search and rescue missions in hostile territories with unmanned drones, WVU Today, August 2022
10. Gross Named Interim Chair of Mechanical and Aerospace Engineering, Statler News, January 2022
11. Navigating the Future of Robotics, WVU YouTube, November 2021
12. WVU to launch projects aimed at building resilient communities, WVU Today, November 2021
13. WVU researchers develop new robot pollinator as a backup for declining insect populations, WVU Today, October 2021

14. Teams Develop Code to Coordinate Robots, Win $535,000 in Space Robotics Challenge, NASA Press Release, September 2021
15. WVU Robotics Team Places Sixth in Final Round of NASA Centennial Challenge, Statler News, September 2021
16. US Air Force Selects Kinnami and West Virginia University for Next Generation Information Technology STTR PRNewswire, September, 2021
17. Setting Our Sites on the Moon, Let's Go Engineers Podcast, Episode 1, April 2021
18. Teaching, Research and Advising Awards Announced in WVU's Statler College, April 2021
19. Folding Drone Can Drop Into Inaccessible Mines, Quoted in IEEE Spectrum, Feb, 2021
20. 22 Teams Crack Code, Qualify for final stage of NASA Space Robotics, NASA Press Release, Jan. 2021
21. WVU robotics team qualifies for final round of NASA Centennial Challenge Daily Anthnaeum, Jan 2021
22. Shooting for the Moon: WVU qualifies for final round of NASA Centennial Challenge, WVU Today, Jan 2021
23. A Saving Grace Underground: WVU Engineers to Utilize Robots to Improve Mine Safety, WVU Today, October 11, 2019
24. Robotics at WVU Statler College of Engineering, WVU YouTube Video, August 2019
25. NSF Award to Fund Undergraduate Summer Robotics Research Experience , WVUToday, March 15, 2019
26. WVU Goes to Space!, WVUToday Video on YouTube, June 28, 2018
27. WVU contributing to development of space economy, The West Virginia State Journal, June 13, 2018
28. WVU engineering developing tech for use on farms, underground and beyond, The WV State Journal, December 27, 2017
29. WVU Research Team to Test Effectiveness of Drones, Robots in Underground Tunnels, WVU Today, December 7, 2017
30. WVU to develop software for future NASA Mars rovers, test 3-D printed foams on ISS, WVU Today, July, 2017
31. Teaching, Advising and Research Awards Announced, WVU Statler News, April, 2017
32. Research Online: "GNSS Spoofing, Jamming, and Multipath Interference Classification using a Maximum-Likelihood Multi-Tap Multipath Estimator" GPS World Magazine, Feb. 2017
33. From Mars to a greenhouse near you: WVU team transitions robot from rover to pollinator, WVU Today, November, 2016
34. WVU Students win $750,000 NASA Robotics Challenge, WVU Today, September 2016
35. Navigation Progress for Indoors and UAVs, Tony Murfin, GPS World Magazine, July, 2016
36. WVU Statler College award winners announced WVU Today, April 2016
37. Meet STF-1 WVU Magazine, Spring 2016
38. Seven additional WVU faculty members awarded Big 12 research grants WVU Today, October 2015
39. WVU engineering students honored on Capitol Hill for historic victory in NASA robotics competition WVU Today, September 2015
40. WVU engineering students make history and bring home $100,000 award in NASA robotics competition WVU Today, June 2015
41. NASA Awards $100,000 to Winning Team of Robot Challenge , NASA, June 2015
42. WVU partners with NASA to launch state's first satellite into orbit WVU Today, April 2015
43. WVU's Gross wins National Geospatial Intelligence Agency New Investigator award WVU Today, April 2015