**List of FY24 WPI AVMI-ARC Projects (7)**

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| **N** | **Title** | **PI, co-PI,**  **Team Members** | **QUAD Members** | |
| **GVSC** | **Industry** |
| 1. | Simple Terramechanics-based Tire and Soil Separation for Tire Behavior Characterization. | Vladimir Vantsevich, PI.  Lee Moradi, co-PI.  Jesse Paldan. | David Gorsich.  Amandeep Singh.  Jordan Whitson. | Ezra Shapiro,  Applied Intuition |
| 2. | Analytical Fundamentals of Digital Image Correlation for Agile Tire Characterization. | Cosme Furlong-Vazquez, PI.  Lee Moradi, co-PI.  Vladimir Vantsevich.  Daniel Ruiz-Cadalso.  Jonathan Luiz.  Jesse Paldan.  Doug Milliken. | Graham Fiorani.  Jordan Ewing.  Nehemiah Mork. | Gene Lukianov,  VRAD Engineering;  Doug Milliken,  Milliken and Associates |
| 3. | UGV-guided Real-time Path Planning for a Vehicle Platoon in Rough Terrains. | Jing Xiao, PI.  Lee Moradi, co-PI.  Constantinos Chamzas. | Michael Cole. | Iain Dodds,  VI Grade.  Ezra Shapiro,  Applied Intuition. |
| 4. | Distributive Maneuver and Stability Control of a Vehicle in Severe Terrain Conditions. | Masood Ghasemi, PI.  Lee Moradi, co-PI. | Michael Cole.  Jordan Whitson. | Ezra Shapiro, Applied Intuition. |
| 5. | Modeling and SimulationFundamentals of Agile Vehicle Maneuvers in Dynamic Environments. | Vladimir Vantsevich, PI.  Lee Moradi, co-PI.  Path Patel, co-PI.  Yan Wang | David Gorsich.  Amandeep Singh.  Jordan Whitson. | Gene Lukianov - VRAD Engineering, LLC |
| 6. | Verified Planning for Autonomous Vehicles in Dynamic Environments. | Kevin Leahy, PI.  Vladimir Vantsevich, co-PI. | Michael Cole. | Ezra Shapiro,  Applied Intuition |
| 7. | Autonomous Multi-UAV Reconnaissance in Complex Environments. | Carlo Pinciroli, co-PI.  Lee Moradi, co-PI. | Matt Castanier.  Talia Sebastian.  Graham Fiorani.  Jon Smereka.  Jordan Ewing. | Iain Dodds,  VI Grade |

**List of FY24 WPI AVMI-GVSC Projects (13)**

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| **N** | **Title** | **PI, co-PI, Team Members** | **QUAD Members** | |
| **GVSC** | **Industry** |
| 1. | Development of Discrete Element Model of Complex Terramechanics for Tire/Soil Tire/Soil Dynamic Interaction with Validation in the Soil Test Bin and Using DIC data from AVMI-GVSC2-2024 Project. | Mehari Tekeste, PI.  Vladimir Vantsevich, co-PI.  Lee Moradi, co-PI.  Jesse Paldan. | Mike Pozolo.  Graham Dyble. | Doug Milliken,  Milliken and Associates |
| 2. | Development of DIC Research Method and Experimental Study of 3D-Dimension Tire Agile Dynamics. | Cosme Furlong-Vazquez, PI.  Lee-Moradi, co-PI.  Vladimir Vantsevich.  Jesse Paldan.  Daniel Ruiz-Cadalso.  Jonathan Luiz.  Doug Milliken.  Gene Lukianov. | David Gorsich.  Jordan Ewing.  Jordan Whitson.  Nehemiah Mork. | Doug Milliken,  Milliken and Associates.  Calspan.  Trilion. |
| 3. | Time - and Frequency-domain Tire/Soil Characterization Using Discrete Element Model of Complex Terramechanics from ARC-GVSC1-2024 Project. | Zhu Mao, PI.  Vladimir Vantsevich, co-PI.  Jesse Paldan. | Amandeep Singh. | Gene Lukianov,  VRAD Engineering.  Doug Milliken,  Milliken and Associates |
| 4. | Exteroceptive Sensor Modeling, Simulation, and Virtualization: LIDAR, RADAR, Cameras with Application to UGV Simulation and Integration in the DE Ecosystem Simulator. UAV Control Simulation and Integration in Virtual Reality. | Amir Shirkhodaie, PI.  Fenghui Yao, co-PI.  Lee Moradi, co-PI.  **Tennessee State University.** | Jon Smereka.  John Kaniarz  Jordan Ewing |  |
| 5. | Inverse Kinematics and Dynamics Fundamentals for Establishing Agile Air-Ground Vehicle Formations and Identifying Foe Intended Maneuver and Action. | Vladimir Vantsevich, PI.  Lee Moradi, co-PI.  Alexandre Opeiko. | David Gorsich.  Jon Smereka.  Vivian Nguyen. | Gene Lukianov,  VRAD Engineering. |
| 6. | Computational Simulation of Agile Maneuvers and Software integration in the DE Ecosystem Simulator. | Ezra Shapiro, **Applied Intuition, PI**.  Lee Moradi, co-PI.  Vladimir Vantsevich, co-PI.  Parth Patel. | Tom Stanko.  Mike Cole.  John Kaniarz  Jordan Ewing |  |
| 7. | Advanced Autonomous Reconnaissance Using AI-Driven Tiny Drones for Navigation in Harsh Conditions. | Nitin Sanket, PI.  Lee Moradi, co-PI. | Jon Smereka.  Jordan Ewing. | Ezra Shapiro,  Applied Intuition. |
| 8. | Digital Twin of Bradley Fighting Vehicle: Development, Modeling, Simulation, and Integration in the ASL DE Ecosystem Simulator. | Thomas Laboda/**Waltonen, PI**.  Lee Moradi, co-PI.  Parth Patel. | Matt Castanier.  Brian Butrico.  Oleg Sapunkov. |  |
| 9. | Communication Modeling, Simulation and Integration in the DE Ecosystem Simulator. | Alex Wyglinski, PI.  Lee Moradi, co-PI. | Brian Butrico. | Iain Dodds,  VI Grade. |
| 10. | Sound System Modeling, Simulation and Integration in the DE Ecosystem Simulator. | Frederick W. Bianchi, PI.  Lee Moradi, co-PI. | Nathan Tison.  Brendan Milosavljevic.  Nehemiah Mork. | Iain Dodds,  VI Grade. |
| 11. | Development and Integration of Hardware and Software Components of the DE Ecosystem Simulator. | Xinming Huang, PI.  Lee Moradi, co-PI.  Vladimir Vantsevich, co-PI.  Parth Patel. | Mark Brudnak.  John Kaniarz.  Phillip Frederick.  Victor Paul. | Iain Dodds,  VI Grade. |
| 12. | Development of Digital Twin of e-Motor and Integration in the DE Ecosystem Simulator. | Mohsen Aligoudarzi/**Drive System Design, PI.**  Masood Ghasemi, co-PI.  Lee Moradi, co-PI.  Eric Engerman | Miriam Figueroa-Santos.  Jordan Whitson.  Eduardo Cerame.  Brendan Milosavljevic. | Ezra Shapiro,  Applied Intuition. |
| 13. | AI-based Modeling, Simulation, and Visualization of a Chemical Sensor to Sense Mines during a Course of UGV Motion. | Yuxiang Liu, PI.,  Lin Cheng, co-PI/UMD,  Lee Moradi, co-PI. | Talia Marie  Sebastian. | Ezra Shapiro,  Applied Intuition. |

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