In support of a pending award from the U.S. Army Ground Vehicle Systems Center, the University of Alabama at Birmingham’s School of Engineering has seven open Ph.D. student positions in the Interdisciplinary Engineering Program.

During this 4-year program, novel fundamental research topics will be developed and applied in a variety of laboratories, virtual, and real-world settings for demonstration of increased capabilities for autonomous ground vehicles in operationally relevant terrain and off-road environments. The successful candidates will have an exceptional opportunity to build their professional career in close collaboration with UAB faculty members, researchers and engineers of different professions, and private industries – working together and complementing each other on designing and establishing a unique research and engineering laboratory facility on autonomous ground vehicle mobility in terrain conditions.

Interested candidates should apply via UAB TargetX system [https://www.uab.edu/graduate/admissions](https://www.uab.edu/graduate/admissions) and additionally email a single PDF:

1. CV with their academic achievements and clear indication of accomplishments or motivation in a position of their interest. The names and contact information of three references should be included in the CV, and
2. A cover letter with a statement of purpose in a particular position to Dr. Vladimir Vantsevich, Principal Investigator and Professor of Mechanical Engineering vantsevi@uab.edu, and copy to Dr. Gregg M. Janowski, Director, Interdisciplinary Engineering Ph.D. Program and Professor of Materials Science and Engineering janowski@uab.edu.

Place PhD Student Position – XXXXXX in the subject line of your email. Reference Number for the Position of Interest is XXXXXX. In case a candidate might want to be considered for two positions, they may place two reference numbers. However, an applicant is not allowed to include more than two reference numbers in his/her application.

A successful candidate’s prior educational background should be appropriate for the particular student position. Applicants must satisfy the admission requirements of the Interdisciplinary Engineering Ph.D. Program.

(7) Ph.D. Student Position Openings

Reference Number: NAI-2
The admitted PhD Student will conduct his/her dissertation research work in the area of bio-inspired adaptive autonomous systems, which can self-organize their sub-systems and embody the properties of the sub-systems as dynamic combinations that are adaptable to unknown environments. Bio-inspiration areas include, but not limited to neuroscience, DNA building blocks, and supramolecular DNA assembly, etc. The application will include autonomous vehicle systems.

Reference Number: PVS-1
The admitted PhD Student will conduct his/her dissertation research work in developing machine/deep learning methods to advance cyber-physical sensors in adversarial environments to improve resilience and signal accuracy of the sensors. A specific application of this research will be modeling, simulating, prototyping and testing a new rotational kinematics sensor.
Reference Number: PVS-2
The admitted PhD Student will conduct his/her dissertation research work on exteroceptive sensors for the use in autonomous vehicles and autonomous vehicle simulations. Specific directions are flexible and may elaborate in one of the following areas: navigation, perception, localization, look-ahead landscape/terrain identification, weather assessment, and terrain trafficability assessment in-real time.

Reference Number: PVS-3
The admitted PhD Student will conduct his/her dissertation research work in the area of digital image correlation. Specific directions are flexible and may exploit initial data collection of 3D-deformations of composite bodies, and post-processing algorithms on data inspection and extraction techniques to provide visualizations of volumetric imaging and data export sets. The application area is tire deformations.

Reference Number: ASD-1
The admitted PhD Student will conduct his/her dissertation research work on developing multi-criteria optimization methods for autonomous mobility improvements in uncertain terrain conditions. Specific directions are to relate the vehicle trajectory path real-time planning and the power distribution among the wheels for autonomous vehicle mobility performance, maneuver, and energy efficiency.

Reference Number: ASD-2
The admitted PhD Student will conduct his/her dissertation research work on developing methods for making rational decisions based on several interrelated objectives and their analysis and human-machine interaction. The developed methods will be applied to conceptual design of autonomous and manned vehicles for mobility, maneuver, and energy efficiency.

Reference Number: ASD-3
The admitted PhD Student will conduct his/her dissertation research work in the area of multi-agent systems that are capable for to self-organize themselves by decoupling their actions and setting up a collaborative dynamics to improve the system’s performance. Specific directions are to apply to autonomous vehicles with individual wheel electric drives for the purpose of terrain mobility, maneuver, and energy efficiency.