

Report Information				
Award Type	Award Number	Prime DUNS	Calendar Year / Quarter	Final Report
Grant	0855182	066470972	2010 / 3	No

Award Recipient Information	
<b>Recipient DUNS Number</b> 066470972	<b>Recipient Address 1</b> 107 SAMFORD HALL
<b>Recipient Account Number</b> 219038	<b>Recipient Address 2</b>
<b>Recipient Congressional District</b> 02	<b>Recipient City</b> AUBURN
<b>Parent DUNS Number</b> 066470972	<b>Recipient State</b> AL
<b>Recipient Type</b> 2U.95.G6.M8.OH.VW	<b>Recipient ZIP Code + 4</b> 368490001
<b>Recipient Legal Name</b> AUBURN UNIVERSITY	<b>Recipient Country</b> USA
<b>Recipient DBA Name</b>	

Project / Award Information	
<b>Funding Agency Code</b> 4900	<b>Total Number of Sub Awards less than \$25,000/award</b> 0
<b>Awarding Agency Code</b> 4900	<b>Total Amount Sub Awards less than \$25,000/award</b> 0.00
<b>Program Source (TAS) Code</b> 49-0101	<b>Total Number of Sub Awards to Individuals</b> 0
<b>Sub Account Number for Program Source</b>	<b>Total Amount of Sub Awards to Individuals</b> 0.00
<b>CFDA Number</b> 47.082	<b>Total Number of Payments to Vendors less than \$25,000/award</b> 13
<b>Amount of Award</b> 189284.00	<b>Total Amount of Payments to Vendors less than \$25,000/award</b> 884.09
<b>Award Date</b> 08/01/2009	
<b>Award Description</b> Collaborative Research: CRI-RUI: II-New Attract: Aerial and Terrestrial Testbed for Research in Aerospace, Computing and Mathematics - The objective of this project is to inspire students at Tuskegee University and Auburn University in mathematics, aerospace science engineering, and networking by inviting them to contribute to a grand project: fly safely and efficiently, in a limited space, a fleet of autonomous UAVs on a cooperative mission with terrestrial vehicles. While the project may take over five years to complete, the scope of this proposal is to set up in two years the required research infrastructure with the collaboration of undergraduate and graduate students.	

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**Project Information**

Project Name or Project/ Program Title	Quarterly Activities/ Project Description	Activity Codes (NAICS or NTEE-NPC) (up to 10)
Collaborative Research: CRI- RUJ: II-New Attract: Aerial and Terrestrial Testbed for Research in Aerospace, Computing and Mathematics	<p>1) Implement and evaluate the collision/conflict avoidance: the idea is to evaluate this algorithm through simulation first. The open source ROS platform will be used.</p> <p>2) Evaluate the autopilot for the cheap Multiplex using simulation. Simulation allows the team to train on manual control of the UAVs. Should something go wrong, we have to take control of the plane and land it safely. &gt;&gt; This task is complete.</p> <p>3) Test and evaluate the mesh network infrastructure &gt;&gt; This task is complete</p> <p>4) Acquire more powerful engines and better batteries to increase the duration of flight up to one hour. &gt;&gt; This task is not fully completed. We succeeded so far to fly the UAV for up to 26 minutes (under windy conditions).</p> <p>5) Develop at Auburn a UAV similar to the Procerus plane. The idea is to acquire the same frame as the procerus and equip it ourselves with off the shelf equipment and with in house software. &gt;&gt; This task is not completed.</p> <p>6) Fly four to six UAVs autonomously &gt;&gt; Not completed.</p> <p>7) Complete the design of a 3D collision avoidance algorithm. We plan to evaluate it through simulation before testing with</p>	<p><b>Activity Code 1</b> B43 - NTEE</p> <p><b>Activity Code 2</b></p> <p><b>Activity Code 3</b></p> <p><b>Activity Code 4</b></p> <p><b>Activity Code 5</b></p> <p><b>Activity Code 6</b></p> <p><b>Activity Code 7</b></p> <p><b>Activity Code 8</b></p> <p><b>Activity Code 9</b></p> <p><b>Activity Code 10</b></p>

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- on flying UAVs.
- 8) Complete building 6 UAVs
- 9) Train all members on team to manually fly the UAVs.
- 10) Fly autonomously 6 UAVs.

**Project Status** Less than 50% completed  
**Total Federal Amount ARRA Funds Received/ Invoiced** 51759.55  
**Number of Jobs** 1.25  
**Description of Jobs Created** Faculty, Graduate Assistants and Student Workers  
**Total Federal Amount of ARRA Expenditure** 55722.79  
**Total Federal ARRA Infrastructure Expenditure** 0.00  
**Infrastructure Purpose and Rationale**

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**Infrastructure Contact**

<b>Name</b>	<b>Street Address 1</b>
<b>Email</b>	<b>Street Address 2</b>
<b>Phone</b>	<b>Street Address 3</b>
<b>Ext</b>	<b>City</b>
	<b>State</b>
	<b>ZIP Code + 4</b>

**Primary Place of Performance**

<b>Address 1</b>	107 Dunstan Hall
<b>Address 2</b>	
<b>City</b>	Auburn University
<b>Country Code</b>	US
<b>State</b>	AL
<b>ZIP Code + 4</b>	36849 - 0001
<b>Congressional District</b>	02

**Recipient Highly Compensated Officers**

<b>Prime Recipient Indication of Reporting Applicability</b>	No	<b>Officer 3 Name</b>	
<b>Officer 1 Name</b>		<b>Officer 3 Compensation</b>	
<b>Officer 1 Compensation</b>		<b>Officer 4 Name</b>	
<b>Officer 2 Name</b>		<b>Officer 4 Compensation</b>	
<b>Officer 2 Compensation</b>		<b>Officer 5 Name</b>	
		<b>Officer 5 Compensation</b>	

**Report Audit Trail**

<b>Created By</b>	Cindy Selman
<b>Date Created</b>	10/06/2010 04:08 PM
<b>Last Updated By</b>	Cindy Selman
<b>Last Updated On</b>	10/06/2010 04:08 PM