



# 2015 Student UAS Competition Awards Banquet

20 June 2015

SUAS Competition  
Goods and Other  
Ranking  
Prizes



<http://www.seafarer-auvsi.org>



# 13TH ANNUAL AUVSI STUDENT UAS COMPETITION June 17-21, 2015 Webster Field, Maryland



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# 2015 SUAS Event Photo





# SUAS Competition Overview

- Used for basis of College course work
- Registration Opens when Rules Released
- Registration Closes in mid-Dec
- Deliverables
  - Fact-Sheet & Flight Plan
  - Base Access Information
  - Technical Journal Paper
  - Proof-of-Flight Video
- Flight Readiness Review (FRR) Presentations
- Flight-Mission Demonstration



# General Team Stats

- 55 Schools Registered
  - 28 US, 21 International and 6 High Schools
- 39 competed for Technical Journal Papers
  - 21 US, 14 International and 4 High Schools
- 34 competed on-site for FRR Presentations
  - 18 US, 12 International and 4 High Schools
- 32 competed for Flight-Mission Demonstration
  - 16 US, 12 International and 4 High Schools



# Judges and Scoring

- Stable of >100 Judges and 3 Scores
- Judges Per Phase
  - 48 Judges for Journals
  - 26 Judges for FRR Presentations
  - 25 Judges for Flight-Mission Demonstration
    - Judges from MD, VA, FL, NY, CA
    - Additional Boundary Judges from Civil Air Patrol



# Detailed Mission Stats

- 39 Participation
- 30 Flights (out of 32 teams)
- 16 Autonomous Takeoffs
- 12 Autonomous Landings
- 16 Autonomous Navigations
- 16 Locate/Classify Targets
- 0 QRC Targets
- 5 Secret Message
- 3 Auto Target Classify
- 2 Actionable Intelligence
- 0 Off-Axis Target
- 2 Pop-Up Emergent Target (Farmer)
- 2 SRIC (Autonomous Picture Upload)
- 0 IR Targets
- 5 Air Drop
- 8 Interoperability
- 1 Stationary Sense and Avoid
- 0 Moving Sense and Avoid

# Humorous Heard by Judges

- Is “North” the Latitude and “West” the Longitude?
- Just in Time – Calvert HS done with <10 Sec remaining (for both Flight & Post Processing)
- Tiki Torch Antenna award goes to M.S. Ramaiah
- “Line up going “North”. Later Uhhh, which way is “North”? Later, call it “North West”. Later, “South West”.
- Target ID guy; “I’m about color blind. I may not be the right person for this job”



# Goods

- Rules seemed to be well accepted
- 39 Journals, 34 FRRs, 32 Safety & RF Checks; GREAT!
- Record number of flights attempted Day 1 (27 tried)
- Best completion time of any prior competition
- Only 7 time-out-in-pits
- Lowest number of mishaps
- Most autonomous searches ever (does not = success)
- Multiple “concurrent” frequency were successful
- Egg drop was fun, just not enough attempts
- New Interoperability/Sense and Avoid worked Great!

# Others

- The PRIMARY tasks are all about autonomy
- Many teams were *unprepared* to fly autonomous
- SRIC log in was successful, but few pic uploads
- Few attempted the Emergent target or IR targets
- Nobody got QR Code target, or IR targets
- Teams still need to practice better RF/EMI design
- New Sense and Avoid tasks offer real challenges
- This year's Journals will be posted on website
- If you can do Geolocation you'd probably win big!



# Next Year

- Provide lessons from Your experience from this competition
- Make recommendations for changes to Rules, facilities, etc.
- Rules May or May Not change again – we’re exploring;
  - Focus on RF/EMI Engineering
  - SRIC Message to coordinate Ground Robot activity
  - Refine Physical Delivery Air Drop task
  - Unsure if we will continue with IR targets
  - Consider adding Cyber Security, encryption methods
  - Expand on Sense and Avoid to include Actual Obstacles to Detect\
  - Consider adding Judge’s Telemetry Payload for truth data
- University Day – Call in – It’s FREE (it’s BEFORE Registration)
- Registration will be much stricter to keep SUAS manageable
- Registration window (Including Payment) will Close **mid-Dec**



# 2015 SUAS Team Special Awards

- Best Overall Rotary Wing Award
- Best Overall High School
- Arthur Reyes Memorial Safety Award
- JustJoe Sportsmanship Award
- Dawn Jaeger Tenacity Award (new in 2015)



# Best Overall Rotary Wing Award

- Politehnica University of Bucharest, Romania,  
Team Phoenix



# Best Overall High School Award

- Calvert Hall College High School, UAV Cards



# Arthur Reyes Memorial Safety Award

- Christopher Newport University/IMPRINT,  
Millennium Falcon



# JustJoe Sportsmanship Award

- Cornell University, CUAir





# Dawn Jaeger Tenacity Award

- Hereford High School, Flying Bulls



# 2015 SUAS Team Ranking

- No more individual rankings for SUAS parts:
  - Journal Papers
  - Flight Readiness Review Oral Presentations
  - Flight/Mission Demonstration
- Overall Team Rankings – Top 10
  - Announce 6-10
  - Present 1-5
- All Cash Prize Barrels are scored and awarded
- TOTAL PRIZE MONEY AWARDED = ***\$50,100***

# University of California, Riverside, Unmanned Aerial Systems

- Overall: 10th
  - Journal Paper: 13
  - FRR Presentation: 15
  - Flight-Mission Performance: 8
- Prize Barrels: 4
- Prize Award: \$800



# Embry-Riddle Aeronautical University, ANDRONE

- Overall: 9th
  - Journal Paper: 22
  - FRR Presentation: 2
  - Flight-Mission Performance: 16
- Prize Barrels: 6
- Prize Award: \$2,200



# Munich University of Applied Sciences, Team SAM

- Overall: 8th
  - Journal Paper: 12
  - FRR Presentation: 17
  - Flight-Mission Performance: 7
- Prize Barrels: 11
- Prize Award: \$2,400



# Université de Sherbrooke

- Overall: 7th
  - Journal Paper: 10
  - FRR Presentation: 6
  - Flight-Mission Performance: 13
- Prize Barrels: 5
- Prize Award: \$900



# Anadolu University, Turkey;

## Team Devrim

- Overall: 6th
  - Journal Paper: 6
  - FRR Presentation: 5
  - Flight-Mission Performance: 15
- Prize Barrels: 3
- Prize Award: \$750



# University of Toronto, Aeronautics Team

- Overall: 5th
  - Journal Paper: 9
  - FRR Presentation: 11
  - Flight-Mission Performance: 2
- Prize Barrels: 5
- Prize Award: \$2,150





# Politehnica University of Bucharest, Romania, Team Phoenix

- Overall: 4th
  - Journal Paper: 2
  - FRR Presentation: 12
  - Flight-Mission Performance: 6
- Prize Barrels: 7
- Prize Award: \$3,100



# North Carolina State University (NCSU), Aerial Robotics Club

- Overall: 3<sup>rd</sup>
  - Journal Paper: 4
  - FRR Presentation: 1
  - Flight-Mission Performance: 4
- Prize Barrels: 9
- Prize Award: \$4,850



# Israel Institute of Technology, Team Technion

- Overall: 2<sup>nd</sup>
  - Journal Paper: 1
  - FRR Presentation: 3
  - Flight-Mission Performance: 9
- Prize Barrels: 8
- Prize Award: \$5,250



# M.S. Ramaiah Institute of Technology, Team EDHITHA

- Overall: 1<sup>st</sup>
  - Journal Paper: 5
  - FRR Presentation: 4
  - Flight-Mission Performance: 1
- Prize Barrels: 7
- Prize Award: \$6,900



# Overall Rankings

Rank	School	Award	Overall	Mission	Oral	Journal	Barrels
1	M.S. Ramaiah Institute of Technology, EDHITHA	\$6,900	1	1	4	5	7
2	Israel Institute of Technology, Technion , TAS	\$5,250	2	9	3	1	8
3	North Carolina State University (NCSU), Aerial Robotics	\$4,850	3	4	1	4	9
4	Politehnica University of Bucharest, Romania, Phoenix	\$3,100	4	6	12	2	7
5	University of Toronto, Aeronautics Team	\$2,150	5	2	11	9	5
6	Anadolu University, Turkey; Team Devrim	\$750	6	15	5	6	3
7	Université de Sherbrooke, VAMUdeS	\$900	7	13	6	10	5
8	Munich University of Applied Sciences, Team SAM	\$2,400	8	7	17	12	11
9	Embry-Riddle Aeronautical University, ANDRONE	\$2,200	9	16	2	22	6
10	University of California, Riverside, Unmanned Aerial Systems	\$800	10	8	15	13	4
11	California State University, Fullerton, Titan	\$1,800	11	5	14	21	8
12	Kansas State University, Team SpyKat	\$2,000	12	20	9	3	8
13	Christopher Newport University/IMPRINT	\$1,600	13	17	18	11	3
14	Virginia Commonwealth University (VCU), Rams	\$1,100	14	14	20	18	6
15	University of Texas at Austin, UAV Team	\$1,100	15	12	23	19	6
16	Calvert Hall College High School, UAV Cards	\$1,900	16	3	21	35	6
17	Stevens Institute of Technology, SIT	\$1,000	17	10	19	31	5
18	University of Alberta, Aerial Robotics Group	\$500	18	11	28	23	3
19	Istanbul Technical University, ITUNOM Air Vehicles	\$1,100	19	18	16	26	6
20	Saint Louis University's Rogue Squadron	\$400	20	19	26	20	2
21	Cal Poly Pomona, Broncos	\$600	21	23	22	7	3
22	University of Maryland, College Park, Maryland UAS	\$400	22	22	7	32	2
23	University of California, San Diego (UCSD) AUVSI	\$400	23	25	27	15	2
24	Ecole de Technologie Superieure (Montréal), Dronolab	\$400	24	24	25	29	2
25	Purdue University, IEEE Aerial Robotics Team	\$400	25	21	30	30	2
26	The Gilman (High) School, Gilman UAV	\$400	26	26	32	17	2
27	Mississippi State University, Xipiter SUAS IPT	\$200	27	28	10	25	1
28	RV College of Engineering, Bangalore, India, Project Jatayu	\$1,200	28	29	24	16	6
29	University of Missouri, Mizzou Unmanned Systems Team (MUST)	\$200	29	31	13	24	1
30	Cornell University, CUAir	\$700	30		8	28	1
31	Flint Hills HS Animus Ferus	\$800	31	27	33	34	4
32	Northern India Engineering College, Zeppelin FC-26	\$400	32	30	31	37	2
33	Hereford High School, Flying Bulls	\$1,000	33	39	29	36	5
34	University of California, Los Angeles, UCLA Bruins	\$200	34		34	33	1
35	Rutgers University, Rutgers Autonomous Aircraft Team	\$200	35			8	1
36	Polytechnique Montreal, Smart Bird	\$200	36			14	1
37	Illinois Institute of Technology, Scarlet Hawks	\$200	37			27	1
38	SRM University, Kattankulathur, India, SRM-UAV	\$200	38			38	1
39	University of West Florida (UWF), The Nerd Herd	\$200	39			39	1

# Prize Barrels

Rank	School	Barrels	Participation	Successful Flight	Auto Takeoff	Auto Nav	Auto Landing	Locate/Classify Target	QRC Target	Secret Message	Auto Target Classify	Actionable Intel	Off Axis Target	Emergent Target	Auto SRIC Upload	IR Targets	Air Drop	Interoperability	SDA Stationary Object	SDA Moving Object
1	M.S. Ramaiah Institute of Technology, EDHITHA	7	Y	Y			Y	Y		Y							Y	Y		
2	Israel Institute of Technology, Technion , TAS	8	Y	Y	Y	Y		Y				Y		Y				Y		
3	North Carolina State University (NCSU), Aerial Robotics	9	Y	Y	Y	Y	Y	Y		Y				Y			Y			
4	Politehnica University of Bucharest, Romania, Phoenix	7	Y	Y	Y	Y	Y	Y			Y									
5	University of Toronto, Aeronautics Team	5	Y	Y	Y	Y		Y												
6	Anadolu University, Turkey; Team Devrim	3	Y	Y				Y												
7	Université de Sherbrooke, VAMUdeS	5	Y	Y				Y		Y								Y		
8	Munich University of Applied Sciences, Team SAM	11	Y	Y	Y	Y	Y	Y		Y		Y					Y	Y	Y	
9	Embry-Riddle Aeronautical University, ANDRONE	6	Y	Y	Y	Y	Y	Y												
10	University of California, Riverside, Unmanned Aerial Systems	4	Y	Y	Y	Y														
11	California State University, Fullerton, Titan	8	Y	Y	Y	Y	Y	Y			Y							Y		
12	Kansas State University, Team SpyKat	8	Y	Y	Y	Y	Y	Y			Y				Y					
13	Christopher Newport University/IMPRINT	3	Y	Y														Y		
14	Virginia Commonwealth University (VCU), Rams	6	Y	Y				Y		Y					Y		Y			
15	University of Texas at Austin, UAV Team	6	Y	Y	Y	Y	Y	Y												
16	Calvert Hall College High School, UAV Cards	6	Y	Y	Y	Y	Y	Y												
17	Stevens Institute of Technology, SIT	5	Y	Y	Y	Y	Y													
18	University of Alberta, Aerial Robotics Group	3	Y	Y				Y												
19	Istanbul Technical University, ITUNOM Air Vehicles	6	Y	Y	Y	Y	Y	Y												
20	Saint Louis University's Rogue Squadron	2	Y	Y																
21	Cal Poly Pomona, Broncos	3	Y	Y														Y		
22	University of Maryland, College Park, Maryland UAS	2	Y	Y																
23	University of California, San Diego (UCSD) AUVSI	2	Y	Y																
24	Ecole de Technologie Superieure (Montréal), Dronolab	2	Y	Y																
25	Purdue University, IEEE Aerial Robotics Team	2	Y	Y																
26	The Gilman (High) School, Gilman UAV	2	Y	Y																
27	Mississippi State University, Xipiter SUAS IPT	1	Y																	
28	RV College of Engineering, Bangalore, India, Project Jatayu	6	Y	Y	Y	Y											Y	Y		
29	University of Missouri, Mizzou Unmanned Systems Team (MUST)	1	Y																	
30	Cornell University, CUAir	1	Y																	
31	Flint Hills HS Animus Ferus	4	Y	Y	Y	Y														
32	Northern India Engineering College, Zeppelin FC-26	2	Y	Y																
33	Hereford High School, Flying Bulls	5	Y	Y	Y	Y	Y													
34	University of California, Los Angeles, UCLA Bruins	1	Y																	
35	Rutgers University, Rutgers Autonomous Aircraft Team	1	Y																	
36	Polytechnique Montreal, Smart Bird	1	Y																	
37	Illinois Institute of Technology, Scarlet Hawks	1	Y																	
38	SRM University, Kattankulathur, India, SRM-UAV	1	Y																	
39	University of West Florida (UWF), The Nerd Herd	1	Y																	
	<b>Total</b>	<b>39</b>		<b>30</b>	<b>16</b>	<b>16</b>	<b>12</b>	<b>16</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>8</b>	<b>1</b>	<b>0</b>



# CONGRATULATIONS!



## THANK YOU!

## WE HOPE TO SEE YOU NEXT YEAR!



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