

Applying UAS to Support the Safety Management of Wildlife Hazards to Aviation

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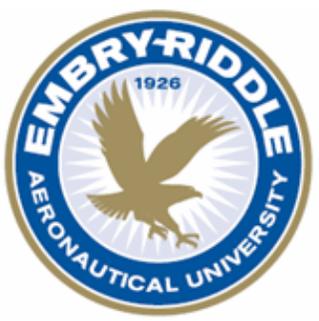


✈️ Robert Sliwinski, - Qualified Airport Wildlife Biologist (Christopher B. Burke Engineering, Ltd.)





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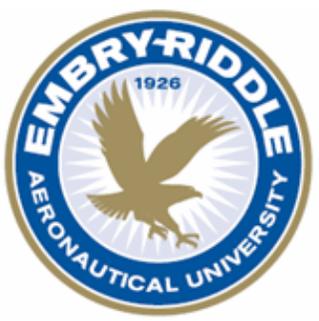
✈ Background

- ✈ Title 4 C.F.R. Part 139 airports are required to conduct a Wildlife Hazard Assessment (WHA) when certain “wildlife events” occur on or near the airport
- ✈ A WHA should be conducted by a qualified airport wildlife biologist



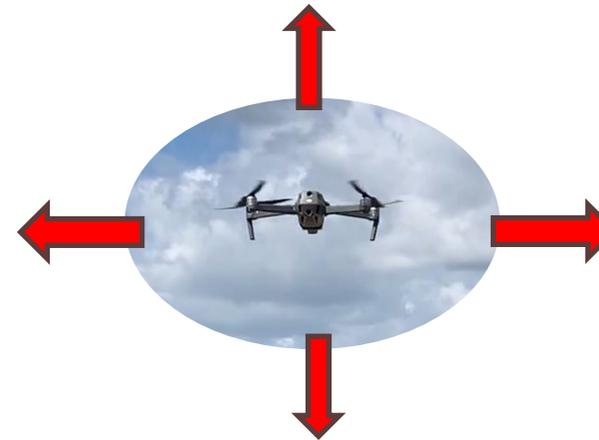


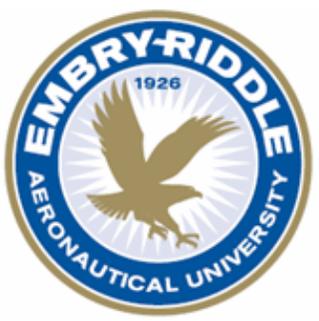
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✈ Purpose of this Ongoing Study

- ✈ To investigate how UAS technologies could be safely and effectively applied to identify hazardous wildlife species to aviation operations as well as potential wildlife hazard attractants within the airport jurisdiction

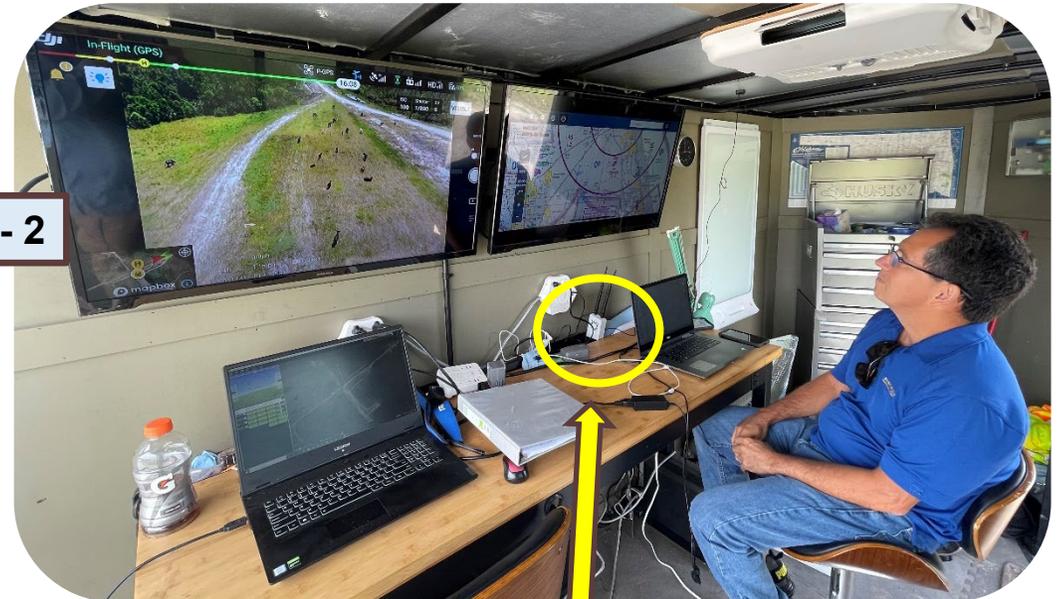
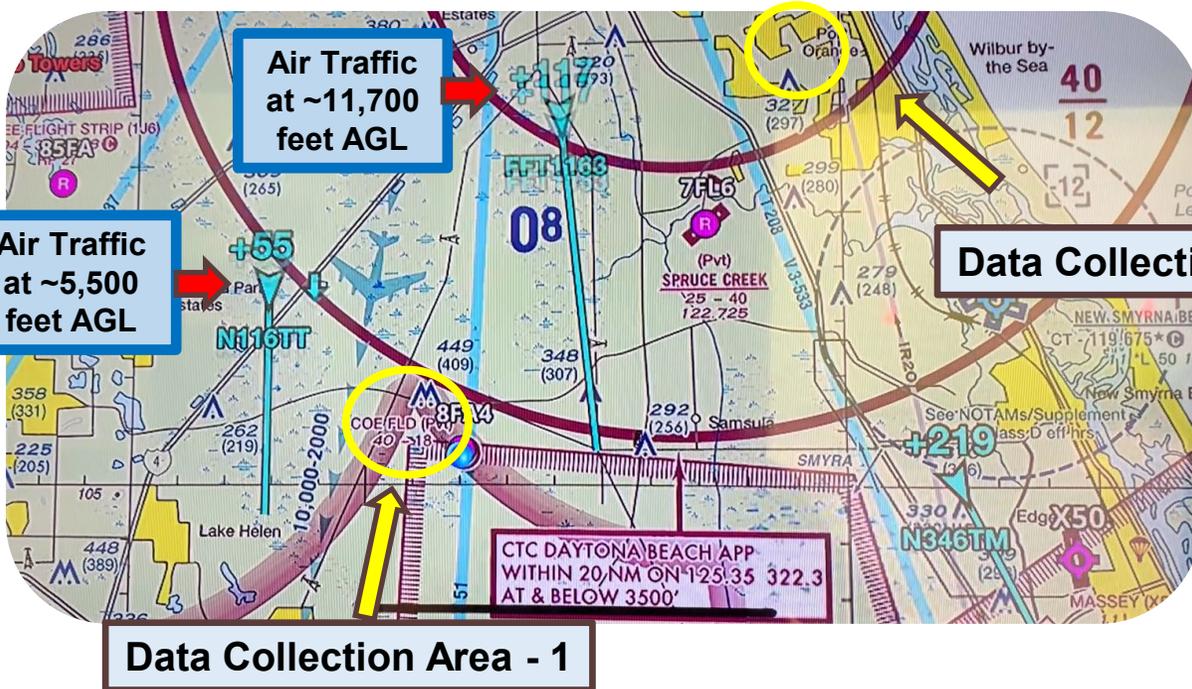




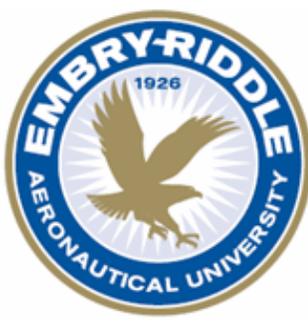
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✈️ Concept of Operations

- ✈️ Methods of operations & safety risk management
- ✈️ Our team has utilized a trailer with different pieces of equipment →
- ✈️ Partnership with Christopher B. Burke Engineering – Ltd (QAWB)



ADS-B Flight Box

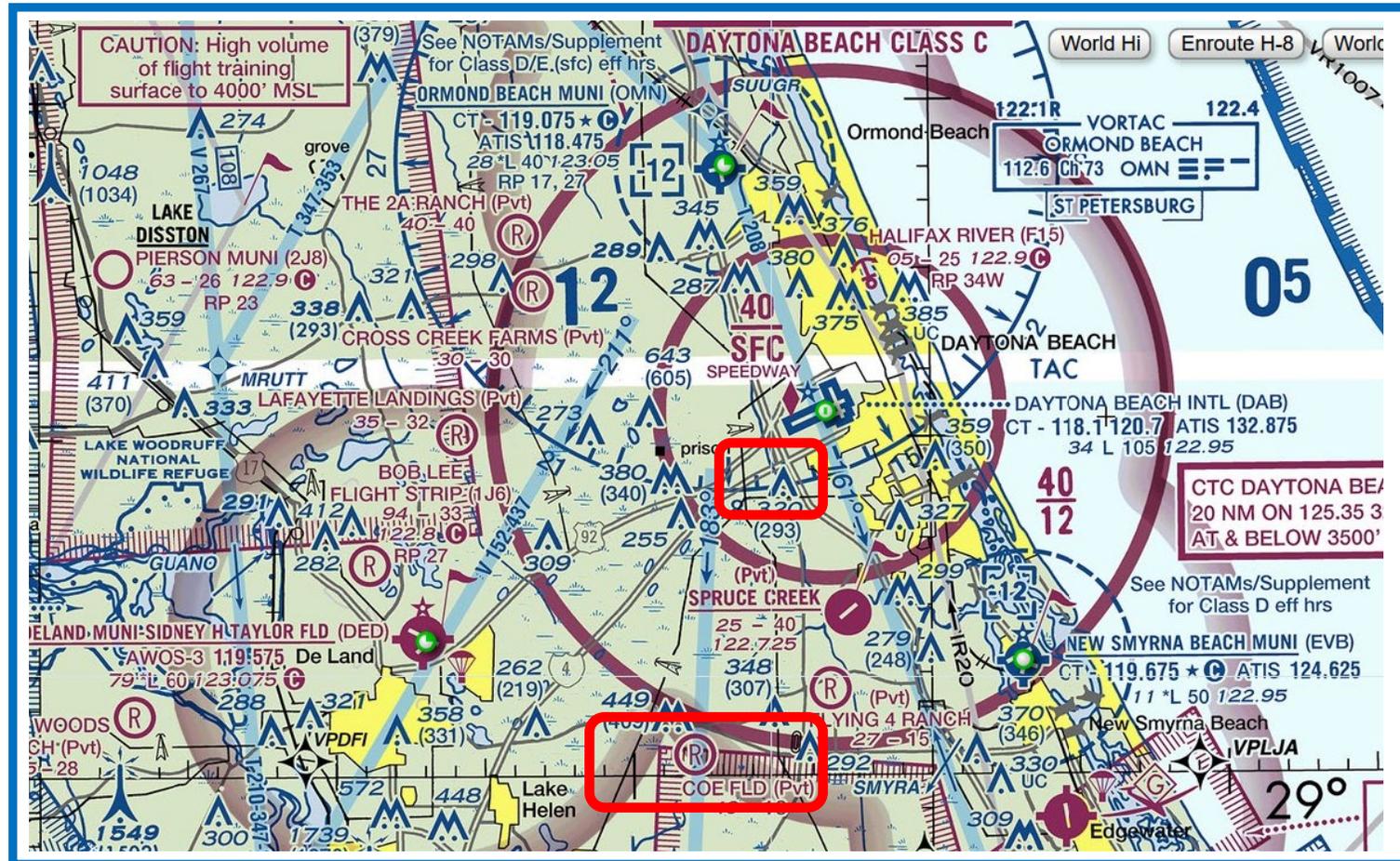
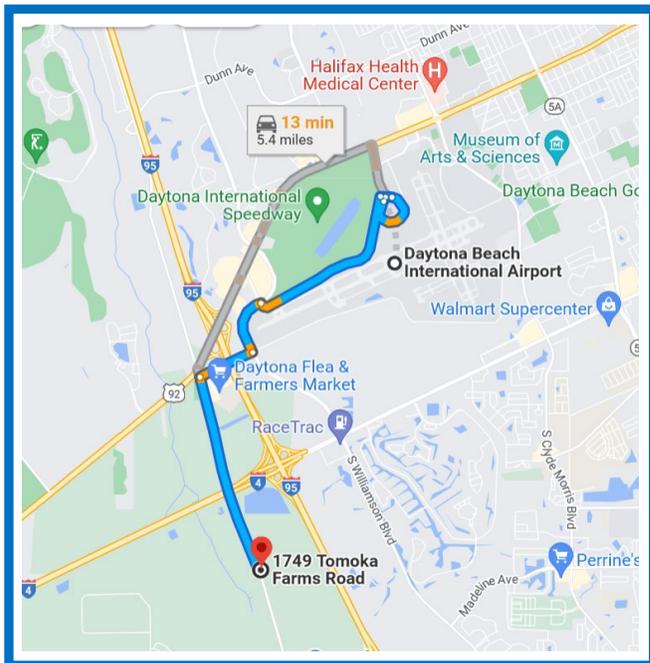


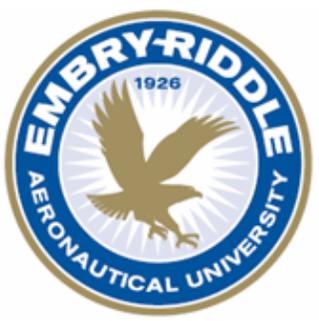
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✈️ Concept of Operations – Data collection areas

✈️ Data initially collected at Coe Field (8FA4)

✈️ Currently at a location ~3NM south of KDAB (Class C Airspace)





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✈️ Airborne Data Collection

- ✈️ Automatically in a basic grid pattern
- ✈️ Manually
- ✈️ DJI Mavic 2 Enterprise (first phase of the project)
- ✈️ DJI Matrice 210



Grid Pattern

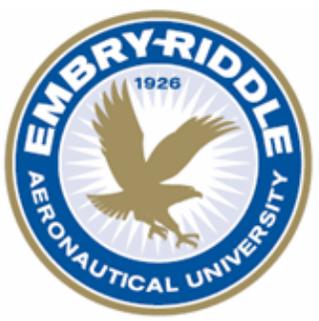


Manual Flight





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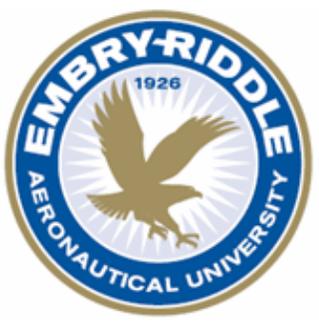
✈ Preliminary Findings

✈ Mammals





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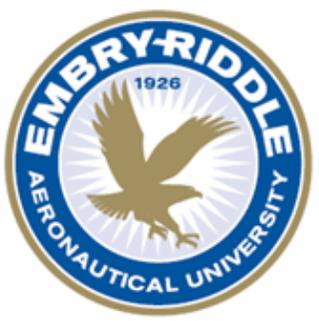
✈ Preliminary Findings

✈ Cattle Egrets → 736 strikes (1990-2021)



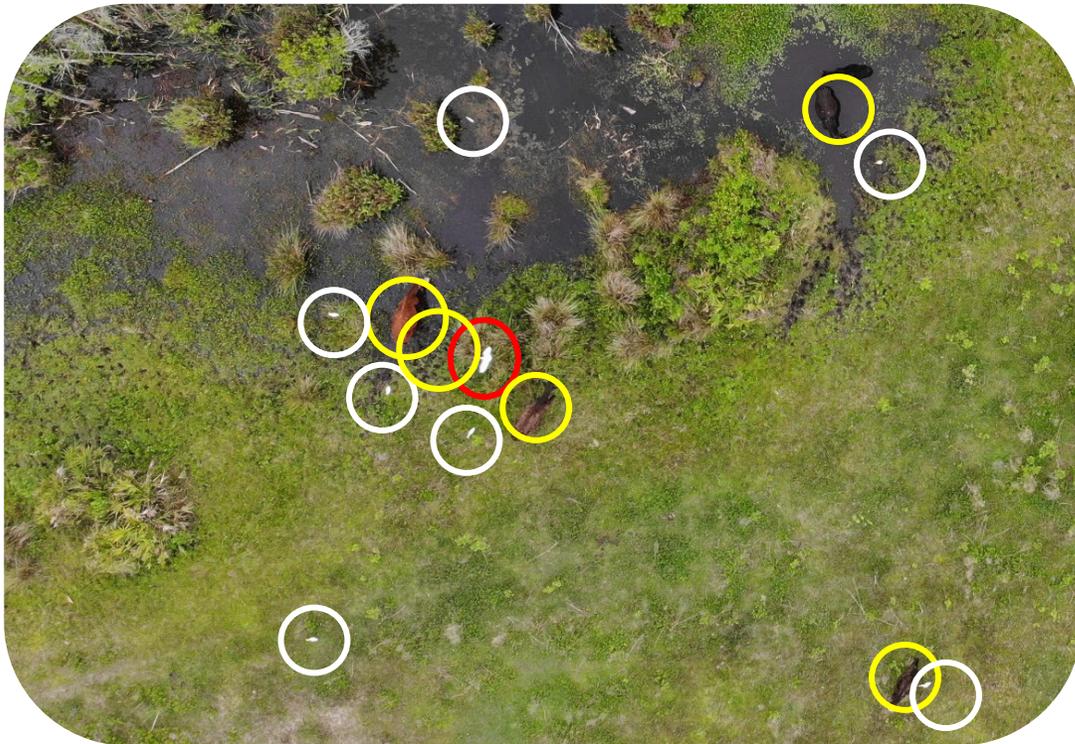


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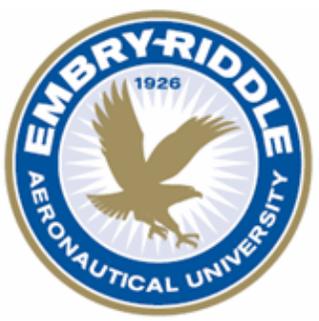
✈️ Preliminary Findings

✈️ White Ibises → 30 strikes (1990-2021)





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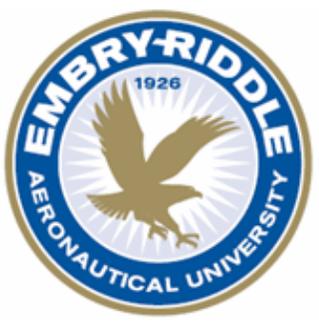
✈ Preliminary Findings

✈ Sandhill Cranes → 188 strikes (1990-2021)





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✈️ Preliminary Findings

✈️ Other wildlife species



Vultures



Ducks



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✈️ Preliminary Findings



Great Egrets



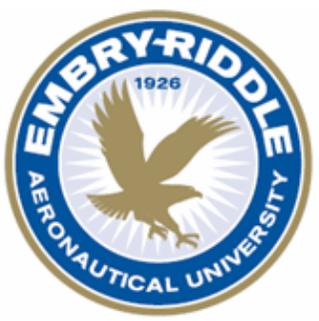
Snowy Egrets & Glossy Ibises



Wood Storks



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✈ Preliminary Findings

✈ *“Land-use practices and habitats are the key factors determining the wildlife species and the size of wildlife populations that are attracted to airport environments” (Cleary & Dolbeer, 2005)*



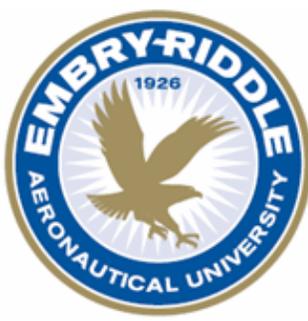






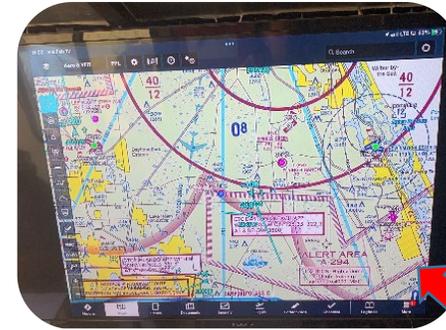


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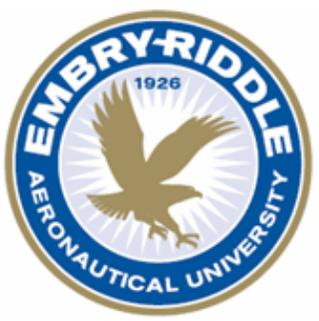
✈ Preliminary Findings

- ✈ Practically no aircraft operations at Coe Field airport
- ✈ Aircraft operations is frequent at KDAB





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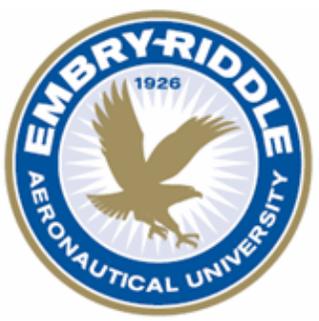
✈️ Conclusions

- ✈️ The safe application of drones during a WHA can help
 - ✈️ Obtain data and information more thoroughly and faster over large areas including
 - ✈️ Areas that are difficult to access by ground-based means
 - ✈️ Areas that are distant from the data collection point(s)
 - ✈️ Identify habitats and land uses affecting the presence and behavior of wildlife
 - ✈️ Observe wildlife species that do not congregate in group(s)
 - ✈️ Obtain vital information that could be later analyzed by a QAWB





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✈️ Next steps

- ✈️ Partner with an airport operator during a WHA
- ✈️ “Experiment” **AI** during the data collection and/or analyses processes

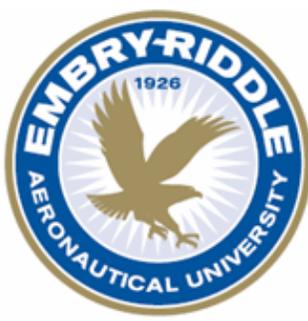


✈️ Obtain feedback and suggestions from the BSC community





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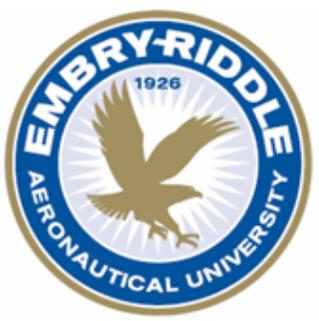


Our Team Includes ERAU-DB Students



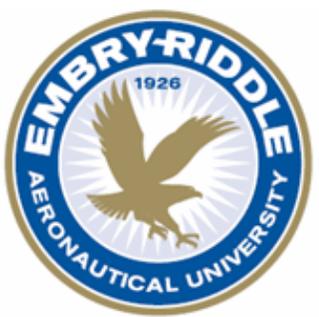


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