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Purdue, AnalySwift launch CompositesAI platform to democratize air mobility structure design

CompositesAI integrates with AnalySwift’s VABS and SwiftComp software to streamline the design, simulation and performance evaluation of composite structures – especially rotor blades, shells and panels.

MARKETS

ADVANCED AIR MOBILITY

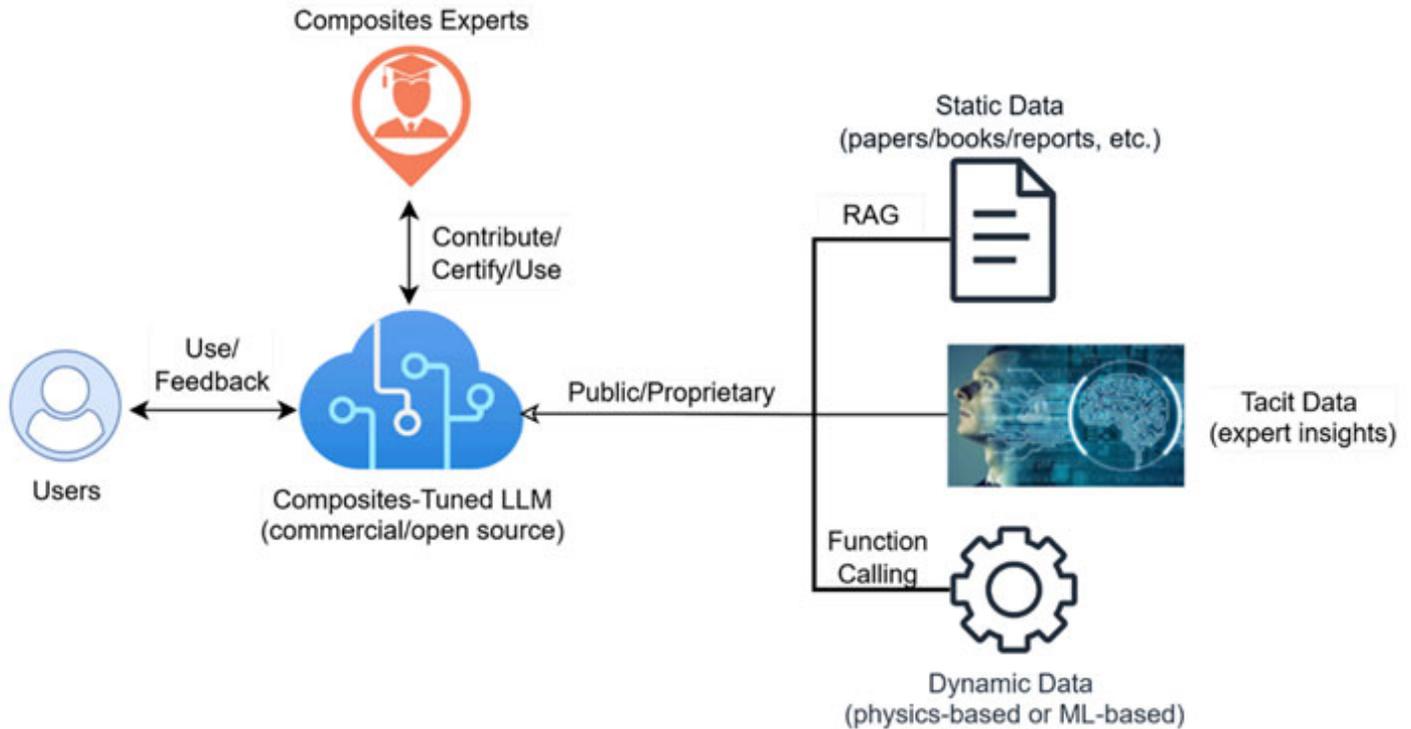
DESIGN & TOOLING

DESIGN/SIMULATION



Edited by: GRACE STUBBINS 

Senior Managing Editor, *CompositesWorld* and *Products Finishing*



Source | Wenbin Yu

AnalySwift LLC (West Lafayette, Ind., U.S.) has partnered with Purdue University (West Lafayette) researchers to create CompositesAI, an AI platform that will help users more quickly create and analyze composite products designed with other AnalySwift software solutions. Designers and engineers can use the free platform at CompositesAI.com.

AnalySwift offers software for the burgeoning air mobility industry to design composite rotor blades and propellers, components common to these vehicles. As air mobility companies mature, says CEO Allan Wood, many engineers encounter difficulty in modeling complex multi-material, multilayer rotor blades.

“They [the air mobility industry] need blades with very specific shapes and performance characteristics such as inertial, elastic and strength properties,” Wood explains. “While air mobility engineers may have strong knowledge of composite materials and structures, blades often require specialized experience, which meant outsourcing this key component or hiring blade engineers. CompositesAI, paired with AnalySwift’s blade modeling software, VABS, helps overcome this challenge.”

As an example, an engineer could describe a helicopter or air mobility blade in natural language through the platform. “CompositesAI translates that language into the specialized input files needed to design the blade with VABS,” Wood explains. “This helps engineers more quickly develop products without requiring detailed technical knowledge related to using AnalySwift’s tools, VABS and SwiftComp.”

AnalySwift partnered with Wenbin Yu on the CompositesAI project. Yu is the Milton Clauser Professor of Aeronautics and Astronautics at Purdue’s College of Engineering and AnalySwift’s chief technology officer.

The CompositesAI project focused on four objectives:

- Train CompositesAI to be an AI-powered tech support system for AnalySwift products.
- Develop a feedback mechanism so users can provide questions and answers to further improve the performance of CompositesAI.

- Develop an AI-human interactive platform so AnalySwift engineers can collaborate with CompositesAI to answer customers and automatically collect answers to further improve CompositesAI.
- Develop application programming interfaces so input files can be easily generated and companion software can be invoked for AnalySwift products.

Yu says CompositesAI is initially focused on rotor blades for air mobility, helicopters, unmanned aerial vehicles, drones and wind turbines, but its uses will expand.

“It will soon be able to handle other composite structures such as plates, shells, panels and other 3D structures used by engineers in designing the next generation of aerospace, defense, energy, medical and sporting goods applications,” he notes. “Once fully developed, CompositesAI will be capable of handling all aspects of composites with the precision of validated engineering software and authority of world-leading experts.”

AnalySwift has partnered with Indiana-based Applied Research Institute, an economic development organization whose innovation voucher program provided matching funding to further the objectives of the partnership with Purdue. AnalySwift licenses some of its innovations through the Purdue Innovates Office of Technology Commercialization.