MICHAEL J. THOMPSON

Linkedin: https://www.linkedin.com/in/michael-thompson-9253b636/
Website: https://sites.google.com/view/michael-thompson/home

SUMMARY

14 years' experience in aero thermal mechanical computational fluid dynamics; three patents pending; summa cum laude;
Seeking full-time position in mechanical engineering; have in depth knowledge and research experience of:

- CFD / Fluid Mechanics
- Hydraulics,Instrumentation
- UAVS / MAVS
- Air Flow Management
- Hardware Design
- Manufacturing
- Design Optimization
- DOE
- Controls
- Renewable Energy
- Wind Energy
- Power Plants
- Spray Injection
- Turbulence
- Aero. Structures
- Numerical Methods

EDUCATION

- Master of Science in Mechanical Engineering (GPA:3.93/4.0); Arizona State University, Tempe, AZ **05/17**
- Bachelor of Science in Mechanical Engineering; Arizona State University, Tempe, AZ **05/12**

MS / PhD THESIS **08/12 – 05/17**

- Modeling Analysis Control and Design of Micro Air Vehicles

PATENTS - PENDING

1. **Honeywell Aerospace** **02/19**
Inventors: Michael Thompson, Jacob Harding etc; Invention Title: Novel Sand extraction Instrumentation Probe for Gas Turbine Engines
2. **Ford Motor Co.** **07/16**
inventors: Michael Thompson, Kevin Richard John Ellwood, Jomar Mendoza; Invention Title: Decreasing drag on a door surface; patent committee manufacturing.
3. **University of Alabama** **05/11**
Patent No. 8,113,469; inventors: Lang; Amy Warncke, Michael Thompson; Invention Title: Passive micro-roughness array for drag; modification; developed CFD Simulations in the new scientific discovery in drag reduction by adding micro-roughness slits for butterflies (2% royalties); invited to present at American Physical Society (APS) Conference

TECHNICAL SKILLS & CERTIFICATIONS

- **CAD Software skills:** CREO 5.0/Windchill (Sargent), NX 10- UniGraphics (Honeywell), Solidworks (GECO), CATIA V5 (Ford);
- **CFD/FEA Simulation Software skills:** ANSYS-FLUENT 15-19.2 (Sargent, Honeywell, Ford, ASU); FEA: ANSYS-Mechanical 15-19.2
- **Controls Software skills:** MATLAB/Simulink/LabVIEW (ASU); Statistical Analysis: JMP/Emulator (Intel); Computing Skills: LaTeX
- **Training certs:** To view a detailed list of publications & trainings, please visit this website:
https://sites.google.com/a/asu.edu/michael-thompson/publications

PROFESSIONAL EXPERIENCE

Stride Career Prep Inc. K12, Arizona Virtual Academy (AZVA), Online, Phoenix, AZ
Career and Technical Education (CTE) Engineering Technology Teacher **08/23 – Present**

- Taught aerothermal engineering analysis using ANSYS Fluent, guiding students in model validation through NASA and General Motors wind tunnel data correlation and assessing aerodynamic loads on an F18 Jet and C8 Corvette to ensure design integrity and performance. F18 Jet data can be found here and the C8 Corvette data can be found here on Grabcad.
- Taught principles, design, and applied engineering courses, preparing students to obtain a career in engineering, oversaw 80 students
- Developed and taught CAD and drawing blueprint models (Examples listed here on GrabCAD)
- Developed a Google Classroom platform for classroom management and an educational website for career portfolio presentations.

Central Arizona Valley Institute of Technology (CAVIT) School District, Coolidge, AZ **07/22 – 05/24**
Drone Instructor Teacher

- Taught Drone Technology (1 year) course twice, preparing students to obtain a career with drone certification (Part 107), oversaw 21
- First year 8/9 students certified and second year 9/12 students earned their career drone certification (Part 107)
- Developed a unique curriculum for the students to pass the part 107 exam, developed a Google Classroom & class website for students
- Taught students how to fly drones (Mavic 3E) and airplanes (Microsoft Flight Simulator) and simulated flying with Zephyr simulator
- Taught students how to create drone cinematography and videography using Clipchamp video software
- Conducted real world scenarios: tower inspections, roof inspections, obstacle courses, real estate and community outreach at CHS.
- Taught students how to design using CAD and create blueprint drawings for drones and remote controllers with ANSYS SpaceClaim.

RBC - Sargent Aerospace and Defense, Tucson, AZ **2/19 – 10/21**
R&D Engineer

- Performed coupled CFD/FEA (vibro-acoustic) analysis of hydraulic components (i.e restrictors, directional control valves, electro-servo valves and orifice plates) using ANSYS FLUENT & Harmonic response in ANSYS Mechanical.
- Created 3D CAD from 3D scan data (Reverse Engineering/Modeling)
- Tested various hydraulic valves and components on the production shop and evaluated test data;
- Responsible for designing and developing directional control & Servo hydraulics valves;
- Received Training from Bright talk seminars on ANSYS updates; Received Training from Coursera on FSI; Received BK Connect vibration analysis training; Received fundamental of industrial hydraulics training from Eaton; Received ANSYS training from PADT; Received Geometric Dimensioning and Tolerance (GD&T) analysis training from Technical Documentation of Consultants of Arizona, Inc.; Received leadership and influence, communication strategies, and conflict resolution training from New Horizons.

Honeywell Aerospace, 111 S 34th St. Phoenix, AZ **01/18 – 02/19**
Mechanical Instrumentation Engineer, ETS, Honeywell EID: H254971

- Instrumentation Engineer for development engines & rigs spanning the entire Honeywell gas-turbine engine product line: APU's, turbofan, turboshaft, and turboprop propulsion; Patent pending on CFD analysis for instrumentation design of sand extraction probe for engine compressor engine
- Instrumented engines for flight tests (A-stamp), rigs and engines in test cells such as: Honeywell Turbo Fan (HTF) engine, Turbo Fan Engine (TFE), Honeywell Gas Turbine (HGT) for various platforms such as: Bombardier Challenger Commercial Aircraft Corporation of China, Ltd. (Comac) and others with thermocouples, strain gages (static stress and dynamic for alternating stress), pressure transducers and accelerometers
- Designed and developed novel rake CFD simulations instrumented on engines near inlet/outlet/end of combustor; Oversaw installations of low/high temperature leads; Reviewed drawings in NX – Unigraphics for components and assemblies prior to release; Developed tests using Dewesoft X3 data acquisition recordings for strain gages (static stress and dynamic for alternating stress); Calibrated accelerometers, cold/hot capacitor probes, and Coupon (metal plate) color change spray paint thermo tests in high temp ovens

Senior Computational Fluid Dynamics (CFD) Engineer, Combustors, contract with US tech solutions   07/17 – 01/18
- Performed aero thermal CFD simulations of combustion systems using ANSYS Fluent for Improved Performance Technology Engine (IPTE) turboprop program via AFRL contract; developed innovative combustor cooling schemes to develop full-life combustors; performed aero, stress, lifting, and hot/cold deflection analyses; Performed thermo-mechanical design of combustion systems using NX, ANSYS and Client internal lifting methods;
- Developed innovative combustor designs that is resilient to high thermal loads; contributed to the development of combustion design methodology and multi-dimensional aerodynamic, conducted successful CFD combustion tests in support of combustor design validations

GECO Inc., Mesa, AZ   01/17 – 07/17
Mechanical Hardware Engineer
- Designed avionic fixtures and test hardware using SolidWorks for U.S Army Tactical Open Government-Owned Architecture (TOGA) controller; simulated tests using VibrationView software on the Apache Helicopter Ethernet Routing Device (ERD)
- Developed bill of materials (BOMs); developed test set hardware for Boeing aircraft; obtained certificates on operating a shaker table from vibration Research University; provided support for hardware design to achieve required regulatory and safety certification based on MIL-STD 810 G and F
- Wrote proposals, performed thermal testing, and vibration tests.

ASU, Tempe, AZ,   08/16 – 05/17
Teacher's Assistant (TA)
- MAE 501, Graduate linear algebra, assisted instructor in grading and teaching the course, oversaw 90 grad students
- MAE 384, Advanced Numerical Methods - MATLAB, assisted instructor in grading/teaching, oversaw 200 undergraduate students

Ford Motor Company, Research and Innovation Center, Dearborn, MI
Computational Fluid Dynamics Engineer Intern, "Grid Refinement Improvement for Vehicles"   06/16 – 08/16
- Defined mesh refinement case study based on full vehicle rotary dip process to determine best practices for mesh settings
- Studied mesh independent pressure and shear forces on geometry representative of vehicles; studied drag/total force on F250 truck door

Computational Fluid Dynamics Engineer Intern   05/15 – 08/15
"Improving the understanding of air flow management during the opening/closing of the draw
die, in manufacturing in Stamping Business Unit (SBU) for improving vehicles"
- Defined (generic & part specific) single point lessons for outer panel vent holes using Catia curvature analysis; Defined roles and responsibilities for outer and inner panel vent holes and review process; updated standards for Lincoln MKZ, Ford Fusion, F-150, F-250
- Documented specific panels on cars and trucks on new 2017 models such as outer panels, hood outer (stretch), hood outer fenders, roofs, decklid outer, tailgate outer, door outer, liftgate outer, body side outer panels; worked on outer panels for the

Computational Fluid Dynamics Engineer Intern   05/14 – 08/14
"Air flow management for Vehicles part II"
- Conducted dynamic mesh non-rigid body transient CFD simulations to predict pressure buildup suction effects
- Evaluated vent hole performance on blank sheet metal such as the diameter, length and adding a radius to vent holes during the upstroke; Confirmed Fords patent through running CFD simulations by adding a radius to vent holes that help to design proper vent holes to decrease pressure on the blank/sheet metal at Tool and Die Stamping plant
- Demonstrated increases in strokes per minute in the stamping press so that no distortion to the panel occurs; Recommended adding a radius to vent holes to decrease pressure on the blank during the upstroke; potential savings $8M

Computational Fluid Dynamics Engineer Intern   06/13 – 08/13
"Air flow management for Vehicles part I"
- Developed solutions to solve problems related to air flow management in stamping tooling at Ford's Tool and Die plant
- Conducted steady state rigid body CFD simulations to predict pressure differential effects in the stamping plant

Salt River Project, Tempe, AZ   08/13 – 12/13
Product Design Engineer
- Performed temperature validation CFD case studies against empirical data provided by Salt River Project;
- Performed thermo-mechanical design of systems using ANSYS-Fluent; developed high thermal loads on turbine engine design

Intel Corporation, Chandler, AZ   08/11 – 11/11
Design of Experiments Engineer Intern, "UPI mark reading process characterization for the Carrier Tape Material"
- Solved issues on Unique Pocket Identification reading mechanisms on the manufacturing floor collecting data for image analysis; Although the UPI mark is present and it meets the current specs (SEMI T10 Standard),

University of Alabama, Tuscaloosa, AL   05/11 – 08/11
Computational Fluid Dynamics Engineer Intern
- Developed passive micro-roughness array for drag modification, gathered aerodynamic data on insects
- Published a conference paper from this CFD work in the American Physical Society (APS) Division of Fluid Dynamics on transient Couette flow over an embedded cavity surface working with professor Dr. Amy Lang, associate professor at University of Alabama

ASU, Tempe, AZ,   08/09 – 08/10
Fulton Undergraduate Research Initiative (FURI), ASU Research Intern
- Developed CFD research models and conducted rotating tank test experiments on climate change
- Published a conference paper from this CFD work in the American Physical Society (APS) Division of Fluid Dynamics on Axially asymmetric rotating tank experiments for thermally forced stationary waves in geophysical fluids

ORGANIZATIONAL LEADERSHIP

IMAV STEM OUTREACH PROGRAM Non-Profit CORPORATION, Phoenix, AZ,   03/17– Present
Founder and President
- Developed 8-week outreach program that involves high school students to participate in building/designing, 3D-printing, testing and analyzing mechanical flapping birds to motivate students to pursue a career in engineering,
- Non-Profit, 501(c)(3) charitable organization, EIN: 83-0651846, website: https://imav.business.site/

Micro Air Vehicle Club (MAV), ASU, Tempe, AZ,   05/14 – 05/17
Founder and President
- Responsible for developing a research club called Micro Air Vehicle (MAV) club at ASU with strong leadership and team skills
- Responsible for innovative drone designs and proposing new aerodynamic body shapes in support of drag reduction

List of Publications
- To view a detailed list of publications, trainings, conference presentations and Curriculum Vitae, please visit this website: https://sites.google.com/view/michael-thompson/publications-trainings?authuser=0