Pryce Hundley

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EXPERIENCE

Mechanical Engineer - *Full Time* Jan. 2025 - Present
Federal Aviation Administration (FAA) *Ft. Worth, TX*

- Designed mechanical system integrations in AutoCAD for the modernization of airspace infrastructure
- Managed over $1 million in FAA facility upgrade projects, driving mechanical system design, CAD development, and on-site implementation to ensure safety and performance compliance
- Applied mechanical engineering principles to resolve complex design challenges, delivering compliant solutions critical to public safety and airspace system reliability
- Created technical design packages to communicate mechanical design intent to contractors and FAA stakeholders

Founder - *Part Time* Dec. 2024 - Present
FlowNet - C++, OpenFOAM, JavaScript, NodeJS, Docker, Three.js *Remote*

- Developing a web-based computational fluid dynamics (CFD) platform targeted at students and CFD enthusiasts.
- Discretized the Navier-Stokes equations from scratch by implementing the finite difference method in a C++ backend, enabling real-time, incompressible flow simulations directly in the browser
- Developed numerical solvers to compute pressure, velocity fields, and drag coefficients from custom user inputs
- Integrated OpenFOAM solvers icoFoam and simpleFoam with my interface to give users a wide range of options
- Combined CFD computations with animated visualizations to let users explore real-time aerodynamic behavior

Mechanical Simulation Lead Fall 2023 - Spring 2024
TxDOT Sponsored University Capstone - SolidWorks, Python *College Station, TX*

- Led simulation development for a real-time cable barrier status detection device to improve roadway safety
- Implemented finite element analysis on the designed device to ensure structural stability in the event of collision
- Developed python algorithms to determine force tolerances through simulating vehicle impact energy
- Achieved 95% accuracy in detecting cable barrier impacts by refining detection algorithms with observed data

EDUCATION

Texas A&M University - College of Engineering College Station, TX
Bachelor of Science, Interdisciplinary Engineering, Minor in Mathematics *May, 2024*

Relevant Coursework

- **Mechanical Engineering:** Fluid Mechanics, Heat Transfer, Thermodynamics, Thermal Fluids Analysis, Statics
- **Computer Science:** Data Structures, Machine Learning, AI, Analysis of Algorithms, Computer Graphics
- **Mathematics:** Partial Differential Equations, Real Analysis, Group Theory, Tensor Calculus, Differential Geometry

PROJECTS

CFD Analysis of SpaceX Merlin Engine Nozzles - *OpenFOAM*

- Produced complete CFD simulations to understand the importance of choked flow in a de Laval nozzle geometry
- Evaluated the effects of varying chamber pressure of the Merlin engine on flow patterns, velocity, and pressure

Analysis of Four Stroke Gasoline Engine - *Excel, Python*

- Created an ideal gas mixture property calculator in Python to compute values for analyzing a four stroke engine
- Calculated cycle efficiency, fuel rate, power, net cycle work etc. from inputted specifications of the vehicle

Urban Heat Island Analysis - *Python, DJI Drone*

- Analyzed drone collected atmospheric data to relate surface material and altitude to psychrometric properties
- Developed a regression for temperature and dew point as a function of altitude for each tested surface material

Ray Tracer - *C++*

- Developed a fully functional ray tracer that is able to render complex scenes by simulating the behavior of light
- Implemented linear algebra concepts of vector space transformations and inner products to compute scene values

TECHNICAL SKILLS

Programming Languages/Frameworks

- C++, Python, Java, JavaScript, NodeJS, Docker, NumPy, EJS, MongoDB, SQL, Git, Github, OpenGL

Technologies

- AutoCAD, ANSYS Fluent, OpenFOAM, MATLAB, Autodesk Inventor, SolidWorks