Davis Cole

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Education

Reykjavik University, Iceland School of Energy Jul 2021 – Nov 2021
Master of Science, Sustainable Energy Engineering (incomplete, 1 semester) **GPA: 8.6/10**
University of New Hampshire (UNH), Durham Aug 2017 – May 2021
Bachelor of Science, Mechanical Engineering **GPA: 3.45/4**

- Pi Mu Epsilon (Mathematics Honors Society)
- STEMbassadors (Member)
- American Society of Mechanical Engineers (Treasurer, President)

Skills/Technologies

CAE: Ansys, OpenFOAM, FreeCAD, SolidWorks
Languages: Python, bash, pwsh, C++, LaTeX
Manufacturing: 3D printing, hand soldering, machining
Virtualization: Docker, VMWare, Proxmox
Web: Hugo, Django, nginx, Sass, CSS, HTML
Automation: Ansible, CI/CD (Azure DevOps, GitLab)

Professional Experience

R&D Verification Engineer II Sept 2022 – Present
Ansys Inc., Fluent Testing Team Lebanon, NH

- Leading testing effort for a business-critical cloud feature on short notice
- Contributing to development of an internal, Python-based test runner used for all Ansys fluids products
- Facilitating and maintaining daily regression test suites using Azure DevOps Pipelines
  - Rewrote existing workflow, increasing cycle frequency by 100% and automating several manual processes
  - Identifying and resolving issues by communicating with developers and test engineers
- Upgrading and maintaining test results database front-end (Fluids Testing Portal)
  - Migrated legacy database website features from Perl DBI to Django
  - Implementing quality-of-life enhancements to improve test engineer productivity

Verification & Validation Test Engineer Jan 2022 – Sept 2022
DEKA Research & Development Corp. Manchester, NH

- Linear encoder characterization and test fixture overhaul
  - Evaluated prototype encoder performance to prove concept design and ensure subsystem requirements are met
  - Developed Arduino/Python SPI communications to display linear encoder output in real-time
  - Modified and 3D printed production-line parts for test fixture compatibility
- Upgraded and validated lab environment logging system and analysis tools (C# backend, Python frontend)
- Performed ad hoc testing to determine the effect of system compliance on medical device performance

Mechanical Engineering / Simulation Intern Jun 2020 – May 2021
DEKA Research & Development Corp. Manchester, NH
Utilized CAE methods in open-source software packages to support design team efforts

- Performed root cause analysis of air desorption events within infusion pump tubing using OpenFOAM
- Measured load vs. displacement of tubing, developed equivalent hyperelastic FEA models in Mecway

Projects

Homelab Feb 2023 – Present
Scavenged enterprise hardware to build a virtual environment to test new technologies and practice new skills

- Infrastructure: Rack-mounted Proxmox hypervisor and TrueNAS Scale NAS
- Self-hosted: Hugo blog, Ollama chatbot, GitLab, Home Assistant, game/media servers

dragOverSphere-PyFoam Dec 2021 – Aug 2022
A pet project to leverage PyFoam, an open-source library to help interface with OpenFOAM

- Simulated drag over a sphere for varying Reynolds number using PyFoam parametric study functionality
- Compared results to experimental data
- Deployed findings to GitHub Pages for archival

Capstone Project Lead - Classroom Ventilation Methods to Prevent Particle Transfer Sep 2020 – Jun 2021
University of New Hampshire Durham, NH

- Investigated ventilation and airflow strategies to reduce lateral COVID-19 aerosol transfer in classrooms
- Performed experiments and analyzed test data to validate models
- Developed Fluent CFD models to validate experiments and evaluate transfer prevention methods

YouTube May 2019 – Present
An outlet to experiment with audiovisual equipment setups, create high-quality content, and participate in online discourse

- OpenFOAM/ParaView tutorials
- Anecdotal hardware and software reviews
- 25,802 total views, 194 subscribers