Shaun Harris | Mechanical Engr.

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Education

Stanford University — **Stanford, CA**
PhD. Mechanical Engineering, Current GPA – 3.7 — *June 2021*

Stanford University — **Stanford, CA**
M.S. Mechanical Engineering, GPA – 3.7 — *Apr 2018*
- Depth in Fluid Mechanics

Utah State University (USU) — **Logan, UT**
B.S. Mechanical Engineering, GPA – 3.95 — *May 2016*
- Summa Cum Laude
- Emphasis: Aerospace
- Minors: Management and Mathematics

Utah State University — **Logan, UT**
A.S. General Studies, GPA – 4.0 — *Aug 2010*

Experience

Center of Turbulence Research — **Stanford, CA**
Graduate Research Student — *01/18 – present*
- Created scripts and code to solve the Orr-Sommerfeld-Squire, and Parabolized Stability equations for study in laminar, transitional, and turbulent fluid flows
- Generated documentation and published on website `https://stanford.edu/~srharris/PSE/index`

Sandia National Laboratories — **Livermore, CA**
Graduate Research Summer Intern — *06/18 – 09/18*
- Simulated computational fluid dynamics multi-componenet repair garage for hydrogen fuel cell vehicle failure analysis
- Created meshes from scratch, calculated boundary conditions, conducted refinement/parameter studies, and analyzed results

Flow Physics and Computation Engineering — **Stanford, CA**
Graduate Research Student — *09/16–11/17*
- Combined LES modeling with weather forecasting data assimilation techniques to enrich scales of LES models using experimental data from high-fidelity 3D PIV system [Harris et al., 2017] [Wu et al., 2018]
- `https://web.stanford.edu/group/ihmegroup/cgi-bin/MatthiasIhme/`

Sandia National Laboratories — **Albuquerque, NM**
Technical Undergraduate Year-Round Intern — *05/15 – 08/16*
- Performed uncertainty quantification, verification, and validation of computation model of thermal batteries [Trembacki et al., 2016] [Roberts et al., 2017]

High Performance Computational Fluid Dynamics Lab (USU) — **Logan, UT**
Undergraduate Computational Fluid Dynamics (CFD) Researcher — *05/14 – 04/16*

- Coded, as part of a team, parts of a CFD strand code (C++ and Fortran) [Tong et al., 2015] [Tong et al., 2018]
- `http://hipercfd.usu.edu/`

Experimental Fluid Dynamics Lab (USU) **Logan, UT**
Undergraduate Research and Creative Opportunities Grant Recipient *1/14 – 12/14*
- Led research and conducted experiment [Harris and Smith, 2014]

Experimental Fluid Dynamics Lab (USU) **Logan, UT**
Undergraduate Research Assistant *12/12 – 03/14*
- Assisted CFD validation experiments for safety analysis of nuclear reactors
- Designed and assembled various parts for particle image velocimetry (PIV) experiment
- `http://efdl.neng.usu.edu/EFDL/EFDL_Home.html`

Synthetic Biomanufacturing Center (USU) **Logan, UT**
Undergraduate Research Assistant *06/10 – 12/10*
- Experimental phase of cohabitating two species in growth reactor for effective bio- diesel algae production
- Presented research finding to professors at conclusion of summer research

Awards

Fall 2016: Stanford Graduate Engineering Fellowship Award

Undergraduate Awards: Academic Excellence Senior (2016), Outstanding Undergraduate Researcher (2015), A-pin award (2014), Outstanding Pre-Professional Award (2014)

Undergraduate Scholarships: George S. & Dolores Doré Eccles Foundation University, Integrated University Program, USU Presidential, and New Century

Spring 2010: High School Salutatorian of 453 students

Skills

Coding: Python, Vim, MatLab, C++, Fortran, Linux OS, batch scripts for HPC, and LabVIEW

Software: ParaView, CUBIT, Solid Works, and Solid Edge

Written: Microsoft Office, LaTeX, and $\approx$ 90 WPM

Technical: hand tools, saws, mills, drill presses, and soldering

Biological: autoclave, optical density machine, centrifuge, flow hoods, and pipets

Leadership and Volunteer

01/15 – Current: Member of the Tau Beta Pi Society

01/14 – 12/17: Member of the American Nuclear Society (ANS)
- Communications Officer (ANS) USU section (Kept meeting minutes and constructed flyers)

01/13 – 11/13: Member of the American Society of Mechanical Engineers (ASME)

01/11 – 12/12: Full-time Service Volunteer for non-profit organization in Atlantic Canada
- Leader over fellow volunteers in door-to-door communications
- Trained and instructed fellow volunteers in presentation effectiveness
- Worked with people providing addiction recovery and life coaching

2008: Eagle Scout

References

Articles

[Tong et al., 2018]Tong, O., Yanagita, Y., Schaap, R., Harris, S., and Katz, A. (2018). High-order strand grid methods for shock turbulence interaction. *International Journal of Computational Fluid Dynamics GCFD - **Accepted***.

[Wu et al., 2018]Wu, H., Labahn, J., Harris, S., and Ihme, M. (2018). Evaluation of the ensemble kalman filter for assimilation of experimental data in large-eddy simulations. *Physical Review Fluids - **Submitted***.

Reports

[Roberts et al., 2017]Roberts, S. A., Harris, S. R., Hetzler, A. C., Piekos, E. S., Schroeder, B. B., and Trembacki, B. L. (2017). Establishing the credibility of the thermally activated battery simulator, full-battery version 4: Verification, validation, and uncertainty quantification. *Sandia Report*, (SAND2017-3397).

Conferences

[Harris et al., 2017]Harris, S., Labahn, J., and Ihme, M. (2017). The coupling of high-speed high resolution experimental data and LES through data assimilation techniques. In *70th Annual Meeting of the APS Division of Fluid Dynamics*.

[Harris and Smith, 2014]Harris, S. and Smith, B. (2014). Olive oil tracer particle size analysis for optical flow investigations in a gas medium. In *67th Annual Meeting of the APS Division of Fluid Dynamics*.

[Tong et al., 2015]Tong, O., Yanagita, Y., Schaap, R., Harris, S., and Katz, A. (2015). High-order strand grid methods for shock turbulence interaction. In *22nd AIAA Computational Fluid Dynamics Conference, Dallas TX*, pages AIAA–Paper AIAA 2015–2283.

[Trembacki et al., 2016]Trembacki, B., Harris, S., Piekos, E., and Roberts, S. (2016). Uncertainty quantification, verification, and validation of a thermal simulation tool for molten salt batteries. In *47th Power Sources Conference, Orlando FL*.