

Suranga Dharmarathne, Ph.D.

R.B. Annis School of Engineering
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APPOINTMENTS

■ Assistant Professor

– R.B. Annis School of Engineering, University of Indianapolis, USA Aug. 2018 – to date

■ Visiting Scholar

– School of Mechanical Engineering, Purdue University, USA March. 2019 – to date

■ Postdoctoral Research Associate

– School of Mechanical Engineering, Purdue University, USA Sept. 2017 – Aug. 2018

■ Postdoctoral Research Associate

– Department of Mechanical Engineering, Texas Tech University, USA Sept. 2015 – Aug. 2017

■ Graduate Research/Teaching Assistant

– Department of Mechanical Engineering, Texas Tech University, USA Sept. 2008 – Aug. 2015

■ Graduate R& D Intern

– General Electric Global Research Center, USA May. 2013 – Aug. 2013

■ Assistant Lecturer

– University of Peradeniya, Sri Lanka May. 2006 – Aug. 2008

EDUCATION

■ Ph.D. in Mechanical Engineering

– Texas Tech University, Lubbock, TX, USA 2015

■ B.Sc. in Mechanical Engineering (*first class honors*)

– University of Peradeniya, Sri Lanka 2005

TEACHING EXPERIENCES

■ Assistant Professor

– University of Indianapolis, USA

- * ENGR 185 Orientation to Engineering F. 2018
- * ENGR 196 Introduction to Engineering F. 2018, Sp. 2019
- * MENG 310 Thermodynamics II F. 2018, F. 2019
- * MENG 360 Fluid Mechanics Sp. 2019
- * MENG 410 Machine Dynamics & Mechanisms F. 2019

■ Graduate Part-Time Instructor

– Texas Tech University, USA

- * ME 4251 Thermal-Fluid Systems Laboratory Sp. 2013

* ME 2322 Engineering Thermodynamics I	Sp., Sm., & F. 2012
* ME 3165 Computational Fluid Dynamics	F. 2011
* GTEC 2351 Introduction to Thermodynamics	F. 2011
* MATH 1550 Precalculus	F. 2010
■ Graduate Teaching Assistant (<i>Discussion class instructor</i>)	
– Texas Tech University, USA	
* ME 3370 Fluid Mechanics	F. 2008, Sp. 2010
* ME 3322 Engineering Thermodynamics II	F. 2008, F.2009
* ME 2364 Engineering Mechanics I	Sp. 2010

PEDAGOGICAL TRAINING

- **TEACH program** 2012/2013
 - Teaching, Learning, and Professional Development Center, Texas Tech University, USA.

RESEARCH INTERESTS

Heat and momentum transport by large-scale motions in turbulent flows
 Turbulent flows over heterogeneous roughness
 Two-phase interfacial flows
 Droplet formation
 Fluid dynamics of disease transmission
 Direct numerical simulation and Large-eddy simulation

AWARDS & HONORS

- Best Poster Award Mech – Aero Conference 2013
- TEACH Fellowship 2012
- TTU Harrington Graduate Engineering Scholarship 2009

PUBLICATIONS

JOURNAL ARTICLES

6. **Dharmarathne, S.**, Bocanegra Evans, H., Hamed, A.M., Burak, A., Chamorro, L. P., Tutkun, M., Doosttalab, A., & Castillo, L., (2019). *On the large- and small-scale motions in a separated, turbulent-boundary-layer flow*, Journal of Turbulence, published online.
5. Doosttalab, A., **Dharmarathne, S.**, Bocanegra Evans, H., Hamed, A.M., Gorumlu, S., Burak, A., Chamorro, L. P., Tutkun, M., & Castillo, L., (2018). *Flow Modulation by a Mushroom-Like Coating Around the Separation Region of a Wind-Turbine Airfoil Section*, Journal of Renewable and Sustainable Energy, 10(4), p.043305.
4. **Dharmarathne, S.**, Pulletikurthi, V., & Castillo, L. (2018), *Coherent Structures and their Relation to Hot/Cold Spots in a Thermal Turbulent Channel Flow*, Fluids, 3(1), 14.
3. **Dharmarathne, S.**, Tutkun, M., Araya, G., & Castillo, L. (2016), *Structures of scalar transport in a turbulent channel*, European Journal of Mechanics-B/Fluids, 55, 259-271.
2. Hu, Y., Parameswaran, S., Tan, J., **Dharmarathne, S.**, Marathe, N., Chen, Z., Grife, R. & Swift,

A. (2012), *Computing turbulent far-wake development behind a wind turbine with and without swirl*, Wind and Structures, 15(1), 17.

1. **Dharmarathne, S.**, Bocanegra Evans, H., Hamed, A.M., Burak, A., Chamorro, L., Tutkun, M., Doosttalab, A., & Castillo, L., *On the Large- and Small-scale Motions in a Separated, Turbulent-boundary-layer Flow* (in review: Journal of Turbulence).

BOOK CHAPTERS

1. Doosttalab, A., **Dharmarathne, S.**, Tutkun, M., Adrian, R., & Castillo, L.(2017), *Analysis of Velocity Structures in a Transitionally Rough Turbulent Boundary Layer*, In Whither Turbulence and Big Data in the 21st Century? 77-92, Springer International Publishing.

CONFERENCE PROCEEDINGS (PEER-REVIEWED)

1. Pulletikurthi, V., **Dharmarathne, S.**, Hussain, F., & Castillo, L.(2019), *Influence of upstream perturbations on wall heat transfer via large-scale motions*, Proceedings of the iTi Conference in Turbulence 2018.

ARTICLES IN PREPARATION

4. Castillo, L., **Dharmarathne, S.**, Tutkun, M., & Hutchins, N., *The Role of Inlet Perturbations on the Large-Scale Motions in a Turbulent Channel Flow*(in review: Physical Review Fluids).
3. Doosttalab, A., **Dharmarathne, S.**, Tutkun, M., Adrian, R., & Castillo, L., *Analysis of Thermal Structures in a Transitionally Rough Turbulent Boundary Layer*.
2. Pulletikurthi, V., **Dharmarathne, S.**, Tutkun, M., & Castillo, L., *Enhancing turbulent wall heat transfer with inlet perturbations*.
1. **Dharmarathne, S.**, Tutkun, M., Araya, G., Leonardi, S., Adrian, R., & Castillo, L., *Transport of passive scalars by large-scales in a turbulent channel*.

INVITED TALKS

1. **Dharmarathne, S.**, & Castillo, L., *DNS of Wall-bounded Flows and the Role of External Conditions on the Flow Evolution*. Engineering Mechanics Institute Conference, June, San Diego, California, June 2017.

CONFERENCE PRESENTATIONS

11. Pulletikurthi, V., **Dharmarathne, S.**, Tutkun, M., & Castillo, L., *Modifying spatial large-scales using blowing perturbations*, 17th European Turbulence Conference, September 2019, Torino, Italy.
10. **Dharmarathne, S.**, Pulletikurthi, V., Tutkun, M., & Castillo, L., *Modulation of large-scale motions due to blowing and suction*, 71st Annual Meeting of the APS Division of Fluid Dynamics, November 2018, Atlanta, Georgia.
9. Pulletikurthi, V., **Dharmarathne, S.**, Hussain, F., & Castillo, L., *Relation of large-scale motions with inlet blowing perturbations in turbulent wall-bounded flows*, 71st Annual Meeting of the APS Division of Fluid Dynamics, November 2018, Atlanta, Georgia.
8. **Dharmarathne, S.**, Bocanegra Evans, H., Hamed, A.M., Burak, A., Chamorro, L., Tutkun,

- M., & Castillo, L., *Large-Scale Motions in a Separated Turbulent Boundary Layer*, 70th Annual Meeting of the APS Division of Fluid Dynamics, November 2017, Denver, Colorado.
7. Castillo, L., **Dharmarathne, S.**, Tutkun, M., & Hutchins, N., *The Prominent Role of the Upstream Conditions on the Large-Scale Motions of a Turbulent Channel Flow*, 70th Annual Meeting of the APS Division of Fluid Dynamics, November 2017, Denver, Colorado.
 6. **Dharmarathne, S.**, Tutkun, M., Adrian, R., & Castillo, L., *Effects of vortical motions on turbulence scalar transport in a turbulent channel flow*, 69th Annual Meeting of the APS Division of Fluid Dynamics, November 2016, Portland, Oregon.
 5. Doosttalab, A., **Dharmarathne, S.**, Tutkun, M., Adrian, R., & Castillo, L., *Analysis of turbulent heat and momentum transfer in a transitionally rough turbulent boundary layer*, 69th Annual Meeting of the APS Division of Fluid Dynamics, November 2016, Portland, Oregon.
 4. **Dharmarathne, S.**, Tutkun, M., Araya, G., Leonardi, S., Adrian, R., & Castillo, L., *Large scale motions of thermal transport in a turbulent channel*, 68th Annual Meeting of the APS Division of Fluid Dynamics, November 2015, Boston, Massachusetts.
 3. Doosttalab, A., **Dharmarathne, S.**, Araya, G., Tutkun, M., Adrian, R., & Castillo, L., *Analysis of velocity and thermal structures in a transitionally rough turbulent boundary layer*, 68th Annual Meeting of the APS Division of Fluid Dynamics, November 2015, Boston, Massachusetts.
 2. **Dharmarathne, S.**, Tutkun, M., Araya, G., Leonardi, S., & Castillo, L., *Role of large scale motion on passive scalar transport*, 67th Annual Meeting of the APS Division of Fluid Dynamics, November 2014, San Francisco, California.
 1. **Dharmarathne, S.**, Sridhar, N., Araya, G., Parameswaran, S., & Castillo, L., *Large Eddy Simulation of a Film Cooling Technique with the Plenum*, 65th Annual Meeting of the APS Division of Fluid Dynamics, November 2012, San Diego, California.

GRANT PROPOSALS

- **NSF-STTR PHASE I: Measuring Arterial Blood Temperature and Its Role on Behavioral Change.**
PI: Glen C. Irvin (Med-Vi). CO-PIs: Luciano Castillo (TTU), **Suranga Dharmarathne (TTU)**, and Jie Zhang (UT-Dallas). \$ 225,000 (*not funded*)

RESEARCH MENTORING

- Purdue University, USA
 - **Mr. Venkatesh Pulletikurthi** (*Ph.D. student*) Sept. 2017 – Present
- Texas Tech University, USA
 - **Mr. Ali Doosttalab** (*Ph.D. student*) Sept. 2015 – Aug 2017

SERVICE & ENGAGEMENT

- **Groundwork Instructor** 2014 – 2017
 - Teaching, Learning, and Professional Development Center, Texas Tech University, USA.
- **Summer Institute Instructor** (*UG research*) Summer 2014
 - National Wind Resource Center, Texas Tech University, USA.

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- **Academic Advisor** 2007 – 2008
 - Mechanical Engineering Society, University of Peradeniya, Sri Lanka.
 - **Reviewer**
 - Journal of Turbulence
 - Journal of Energy Engineering
 - Journal of Renewable and Sustainable Energy
 - European Journal of Mechanics B/Fluids

SELECTED PROGRAMS & WORKSHOPS

- **The Burgers Program Research School on Fluid Dynamics** 2015
 - The University of Maryland, College Park, USA.
- **Summer Supercomputing Institute** 2016
 - Texas Advanced Computing Center, The University of Texas, USA.

COMPUTER COMPETENCE

- Parallel computing:
 - **MPI** (*including MPI-IO*), **OpenMP**, and **Hybrid computing**
- Programming:
 - **FORTRAN 90, MATLAB**
- CFD Tools:
 - **OpenFOAM, ANSYS FLUENT, CFX, and ICEM CFD, Tecplot 360**

PROFESSIONAL AFFILIATIONS

- **The American Society of Mechanical Engineers.**
- **American Physical Society.**
- **The Institution of Engineers Sri Lanka.**

LEADERSHIP

- **President**
 - Sri Lankan Students' Association, Texas Tech University, USA. 2009/2010