SWAPNIL PRAVIN

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EDUCATION

Ph.D., *Mechanical and Aerospace Engineering* **Dec 2014**
University of Virginia, Charlottesville, VA
Dissertation: Fluid mechanics of chemical and flow sensing in aquatic animals.

B.Tech., *Mechanical Engineering* **May 2009**
Indian Institute of Technology, Kharagpur, India
Thesis: Elasto-hydrodynamic lubrication of rough surfaces in line contact.

EXPERIENCE

Postdoctoral Fellow Research Associate **Oct 2016 – Present**
Temple University
- Dynamics of granular media under rapid intrusion
- Physics of biological locomotion systems suitable for navigating granular substrates

Research Scientist **Apr 2015 – May 2016**
Henry M. Jackson Foundation for the Advancement of Military Medicine
- Computational modeling of platelet dynamics in blood
- Systems biology of blood coagulopathy

Research Associate **Nov 2014 – Mar 2015**
Dept. of Environmental Sciences
University of Virginia
- Wave-current boundary layer interactions over rough topography.
- Turbulent oscillatory flow over k and d type roughness using LES simulations
- Experimental study of turbulence near rough wall using PIV recordings

Graduate Research Assistant **Aug 2009 - Oct 2014**
Dept. of Mechanical and Aerospace Engineering
University of Virginia
- Fluid-structure interaction (FSI) analysis of hydrodynamic sensing organs in aquatic animals.
- Optical measurement techniques: Particle image velocimetry (PIV) and planar Laser induced fluorescence (PLIF) measurements to quantify water velocity and chemical concentrations.
- Image processing of laser particle displacements to quantify fluid motion using non-intrusive methods.
- Large eddy simulation (LES) of flow and chemical stream diffusion over rough surfaces.
- Designed and built a translating glass flume driven by an ACE-SDE stepper motor and belt drive for visualization of flow and chemical diffusion.
- Thermal and flow analysis of left ventricular assist device (LVAD) for safe operating conditions.
- Determined optimal morphological parameters for biomimetic sensing of odorant plumes resulting in peer reviewed publications.
- Presented scientific data at national conferences and numerous departmental meetings in efforts to communicate scientific finding with colleagues and scientists at various levels.

Graduate Teaching Assistant **Aug 2013 - May 2014**
Applied Mathematics, School of Engineering and Applied Science
University of Virginia
- APMA 2130 – Ordinary differential equations
- APMA 3080 – Linear Algebra
- Designed and conducted tutorial workshops for undergraduate students.
- Worked with a team of instructors and teaching assistants in designing and evaluating examinations for students.

Transmission Engineer (Intern) **May 2008 - Aug 2008**
Reliance Industries Ltd., Mumbai, India

- Failure analysis of DuPont annealer gearbox
- Devised recommendations for gearbox performance improvements.

PUBLICATIONS

1. **Pravin S.**, Berger E. and Reidenbach M.A., 2015, "Effects of morphology on hydrodynamic sensitivity of mechanosensory sensilla in crustaceans.", Bioinspiration and Biomimetics, 10(3): 036006.
2. Mellon DeF., **Pravin S.**, and Reidenbach M.A., 2014, "A nose too far: regional differences in olfactory receptor neuron efficacy along the crayfish antennule", Biological Bulletin, 227:40-50.
3. **Pravin S.**, and Reidenbach M.A., 2013, "Simultaneous sampling of flow and odorants by crustaceans can aid searches within a turbulent plume", Sensors 13: 16591-16610.
4. **Pravin S.**, Mellon DeF., and Reidenbach M.A., 2012, "Micro-scale fluid and odorant transport to antennules of the crayfish, Procambarus clarkii." Journal of Comparative Physiology A 198(9): 669-681.
5. Kailasan A., Untaroiu A., **Pravin S.**, and Wood H.G., 2012, "Assessment of thermal dissipation effects in a ventricular assist device." Biomedical Sciences Instrumentation 49: 124-133.

CONFERENCE PRESENTATIONS

1. Pravin S., Han E., Jaeger H., Hsieh S.T., “Granular media impact: Intruder spacing and particle jamming”, Society of Integrative and Comparative Biology Conference, Tampa, FL, January 2019.
2. Pravin S., Hsieh S.T., “Foot geometry and impact kinematics affect interactions in granular media”, Northeast Complex Fluids and Soft Matter (NCS) Workshop, University of Pennsylvania, Philadelphia, PA, May 2018.
3. Pravin S., Han E., Jaeger H., Hsieh S.T., “Foot geometry and impact kinematics affect force generation in granular media”, Society of Integrative and Comparative Biology Conference, San Francisco, CA, January 2018.
4. Pravin S., Koehl M.A.R., Reidenbach M.A., "Turbulent plume tracking behavior in aquatic organisms", Enviroday 2013, Department of Environmental Sciences, University of Virginia, January 2013.
5. Pravin S., Koehl M.A.R., Reidenbach M.A., "Simultaneous sampling of flow and odorants in a turbulent plume can aid tracking behavior in aquatic organisms", Society of Integrative and Comparative Biology Conference, San Francisco, California, January 2013.
6. Kailasan A., Untaroiu A., Pravin S., and Wood H.G., 2012, "Assessment of thermal dissipation effects in a ventricular assist device." Rocky Mountain Bioengineering Symposium, Colorado Springs, CO, April 2013
7. Pravin S., Mellon DeF., Reidenbach M.A., "Micro-scale flow and odorant transport to olfactory hairs of the crayfish, Procambarus clarkii", Enviroday 2011, Department of Environmental Sciences, University of Virginia, January 2011.
8. Pravin S., Mellon DeF., Reidenbach M.A., "Numeric simulation of convective-diffusive odor transport to chemosensory hairs of the crayfish, Procambarus clarkii", Society of Integrative and Comparative Biology Conference, Salt Lake City, Utah, January 2011.

INVITED PRESENTATIONS

1. CFD methods in environmental fluid dynamics, Hydrology lecture, University of Virginia, November 2014
2. Chemical sensing in aquatic animals, Virginia Commonwealth University, January 2015