JUSTIN FINN
Oregon State University

Degrees:
BS in Mechanical Engineering, University of Massachusetts, Amherst
MS in Mechanical Engineering, Oregon State University
PhD in Mechanical Engineering, Oregon State University

Scholar Donors:
Schnitzer Steel Industries

About the Scholar:
Justin is a mechanical engineer whose work involves the development and application of new tools to simulate the motion of fluids on today's most powerful supercomputers. Specifically, he is interested in "multiphase" flows and flows through "porous media". His work attempts to identify key structural features in these complex flows, such as jets and vortices that can dramatically enhance mixing and transport properties. Justin is originally from central Massachusetts and was drawn to the Northwest for its world class mountain biking. He recently defended his PhD dissertation, and has accepted a two-year post-doctoral research position at the University of Liverpool in the U.K., where he will be studying sand transport under breaking waves.

Benefits to Society:
By improving our understanding of how fluids can transport things like sand along a coastline, pollutants in our rivers and streams, or even bubbles in our champagne glasses, we can minimize our impact on the world around us, and improve our everyday lives. My work allows us to investigate these complex flows by harnessing the exponentially growing power of today's supercomputers.

Awards and Honors:
Lundstrom Fellowship, Oregon State University Dept. of Mechanical Engineering. 2008, 2009
Rickert Fellowship, Oregon State University Dept. of Mechanical Engineering. 2007

Publications and Posters:
Justin Finn and Sourabh V. Apte. Relative performance of body-fitted and fictitious-domain simulations of flow through packed beds. International Journal of Multiphase Flow. 2013 (Accepted).
Justin Finn and Sourabh V. Apte. Integrated computation of finite time Lyapunov exponent fields during direct numerical simulation of unsteady flows. Chaos, 23(1):013145, 2013.
Sourabh V. Apte and Justin Finn. A variable-density fictitious domain method for particulate flows with broad range of particle-fluid density ratios. Journal of Computational Physics, 243 (15):109-129, 2013.
Andrew Cihonski, Justin Finn, and Sourabh V. Apte. Volume displacement effects during bubble entrainment in a traveling vortex ring. Journal of Fluid Mechanics, 721:2265–267, 2013.
Justin Finn, Ehsan Shams, and Sourabh V. Apte. Modeling and simulation of multiple bubble entrainment and interactions with two dimensional vortical flows. Physics of Fluids, 23(2):023301– 023301, 2011.
Ehsan Shams, Justin Finn, and Sourabh V. Apte. A numerical scheme for Euler–Lagrange simulation of bubbly flows in complex systems. International Journal for Numerical Methods in Fluids, 67(12):1865–1898, 2011.