

# Vedant Puri

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Code: [www.github.com/vpuri3](https://www.github.com/vpuri3)

EDUCATION	<b>University of Illinois Urbana-Champaign</b>	2015–2019
	<i>B.S. Engineering Mechanics, Secondary Field: Fluid Mechanics</i>	GPA: 3.65/4.00
	<i>B.S. Mathematics (dual degree), Concentration: Graduate Preparatory</i>	
	<i>Minor: Computational Science and Engineering</i>	

WORK *Research Aide, Argonne National Laboratory* May–Jul 2018

EXPERIENCE

- Conducted Direct Numerical Simulations of wall-bounded flows in undulating geometries utilising up to 1024 compute nodes for 200 hours at Argonne Leadership Computing Facility supercomputers
- Computed budget terms for the tensor Reynolds Stress Transport Equation to study mechanisms responsible for transport, production and dissipation of turbulent kinetic energy
- Wrote post-processing setup to compute wall stresses, spatial averages and other turbulence statistics
- Study extended till December 2019, counting for research credit at University of Illinois

<i>Intern, National Center for Supercomputing Applications</i>	Sep 2017–Apr 2018
<ul style="list-style-type: none"> <li>- Extended the novel Scheduled Relaxation Jacobi method for iteratively solving discrete linear systems associated with elliptic partial differential equations to nonlinear boundary value problems</li> <li>- Obtained preliminary results using above method for initial data of the spacetime metric associated with a binary black hole system, for simulations of the Einstein Field Equations</li> <li>- Wrote tensor-product based preconditioners for iteratively solving elliptic boundary value problems implemented using a discrete sine transform in numerical framework PETSc</li> </ul>	

*Course Assistant, Introductory Statics, University of Illinois* Jan 2016–Dec 2018

- Conducted four weekly discussion sections where 32 students collaboratively worked on problem sets
- Wrote problem sets, assisted with course logistics, and taught students to use computational tools

RESEARCH (thesis) **V. Puri**, R. Balakrishnan, A. Obabko, P. Fischer, *Turbulent Kinetic Energy Budgets for Direct*  
 WORK *Numerical Simulations of Wall-bounded Flows in Model Geometries*  
 (talk) **V. Puri**, R. Haas, E. Bentivegna, *Initial Data Generation Algorithms for Einstein Toolkit*. American  
 Physical Society April Meeting, 2018

COLLEGIATE INVOLVEMENT	<p><b>President, Society for Engineering Mechanics</b> Aug 2018–May 2019</p> <ul style="list-style-type: none"> <li>- Led an organisation of 30 students to complete projects such as Chocolate 3D Printer, and S'mores Machine for annual Engineering Open House</li> <li>- Worked with department of Mechanical Science and Engineering to augment student participation in Engineering Mechanics program through tutorials, advising sessions, company information sessions, workshops, social events, and annual department research fair</li> <li>- Facilitated in recruiting students to department of Mechanical Science and Engineering</li> </ul>
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*Curriculum Development, Society for Engineering Mechanics* Oct 2016–May 2018

- Led a student group to design and build instructional demonstrations such as Ackermann steering system, zero-force trusses for Theoretical and Applied Mechanics (TAM) courses serving 2500 students
- Student advisor to Strategic Instructional Innovations Program group for three TAM courses

HONOURS AND AWARDS	<i>Theoretical and Applied Mechanics Merit Award</i> Department of Mechanical Science and Engineering award given in honour of a student's special contributions to the Engineering Mechanics program	2019
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TECHNICAL	Programming	Fortran, C, C++, MATLAB, Python, Shell
SKILLS	Miscellaneous	L <sup>A</sup> T <sub>E</sub> X Typesetting, Computer Aided Design, woodworking, soldering, photography

PROJECTS      [www.github.com/vpuri3](https://www.github.com/vpuri3)

- **/IlliniHyperloop**: Capstone project to implement a passive cooling solution absorbing 300 kJ of heat from propulsion system of a Hyperloop pod; fabrication handled by sponsor, Novark Technologies, Inc.
- **/Spec**: MATLAB spectral/spectral element codes for incompressible fluid flow problems
- **/Notes**: Compiled notes on mathematics and mechanics