

Vedant Puri

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Code: <https://github.com/vpuri3>

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

Intern, National Center for Supercomputing Applications Sep 2017–Apr 2018

- Extended the novel Scheduled Relaxation Jacobi method for iteratively solving discrete linear systems associated with elliptic partial differential equations to nonlinear boundary value problems
- 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
- Wrote tensor-product based preconditioners for iteratively solving elliptic boundary value problems implemented using a discrete sine transform in numerical framework PETSc

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 *President, Society for Engineering Mechanics* Aug 2018–May 2019

INVOLVEMENT

- Led an organisation of 30 students to complete projects such as ‘Chocolate 3D Printer’, and ‘S’mores Machine’ for annual Engineering Open House
- Augmented student participation in Engineering Mechanics program through tutorials, advising sessions, company information sessions, workshops, social events, and annual department research fair
- Facilitated in recruiting students to department of Mechanical Science and Engineering

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	<i>Theoretical and Applied Mechanics Merit Award</i>	2019
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AND AWARDS Department of Mechanical Science and Engineering award given in honour of a student's special contributions to the Engineering Mechanics program

TECHNICAL SKILLS	Programming	Fortran 77/90, C, C++, MATLAB, Python, Shell
	Miscellaneous	L ^A T _E X Typesetting, Computer Aided Design, woodworking, soldering, photography

PROJECTS <https://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