Vedant Puri

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EDUCATION	**University of Illinois Urbana-Champaign**	Aug 2015–Dec 2019

B.S. Engineering Mechanics, Secondary Field: *Fluid Mechanics* — GPA: 3.66/4.00
B.S. Mathematics (dual degree), Concentration: *Graduate Preparatory*
Minor: *Computational Science and Engineering*

WORK EXPERIENCE

Research Aide, **Argonne National Laboratory** — Mar 2020–Present
- Wall-Resolved Large Eddy Simulations over building-like geometries

Research Aide, **Argonne National Laboratory** — May–Jul 2018
- Direct Numerical Simulations of turbulent flows over smooth and rough wavy walls
- Computed Reynolds Stress budgets within spectral-element code NEK5000
- Studied turbulence production, transport, dissipation processes

Intern, **National Center for Supercomputing Applications** — Sep 2017–May 2018
- Computed spacetime metric initial data of black hole system for gravitational wave simulations
- Solved nonlinear elliptic PDEs in parallel within C++ cosmological framework Einstein Toolkit
- Implemented relaxation methods for solving elliptic PDEs, significantly reducing solution time
- Wrote Laplacian preconditioners for elliptic PDEs using discrete transforms and PETSc in C

Course Assistant, **UIUC Mechanical Science & Engineering** — Jan 2016–Dec 2017
- Taught mechanical analysis using free-body-diagrams and control-volumes for *Statics* course
- Conducted 4 weekly discussion sections with 32 students each

RESEARCH WORK

(thesis) **V. Puri**, R. Balakrishnan, A. Obabko, P. Fischer, *Reynolds Stress Budgets for Turbulent Flows Over Smooth and Rough Wavy Walls*
(talk) **V. Puri**, R. Haas, E. Bentivegna, *Initial Data Generation Algorithms for 'Einstein Toolkit'.* American Physical Society April Meeting 2018

ACTIVITIES

President, **UIUC Society for Engineering Mechanics** — Aug 2018–May 2019
- Led organization of 30 students to pursue engineering projects
- Increase student engagement Engineering Mechanics program

Curriculum Development, **UIUC Society for Engineering Mechanics** — Oct 2016–May 2018
- Created instructional demonstrations for engineering courses serving 2500 students
- Student advisor to Strategic Instructional Innovations Program group for mechanics courses

HONOURS & AWARDS

Theoretical and Applied Mechanics Merit Award — 2019
UIUC Mechanical Science and Engineering department award in honour of a student's special contributions to Theoretical and Applied Mechanics, and Engineering Mechanics programs

SKILLS

Programming	FORTRAN 77/90, C, C++, MATLAB, Python, Shell
Software	PETSc, FFTW, Gmsh, Visit, Paraview, LaTeX
Miscellaneous	Computer Aided Design, woodworking, soldering, photography

PROJECTS

https://github.com/vpuri3
- `/Notes`: LaTeX notes on mechanics, real analysis, functional analysis
- `/Spec`: Spectral-element incompressible Navier-Stokes MATLAB code in deformed geometries
- `/NekTools`: Turbulence budgets and post-processing routines for FORTRAN 77 code NEK5000
- `/IlliniHyperloop`: (UIUC capstone) Passive cooling solution absorbing 300 kJ heat from propulsion system of Hyperloop pod; fabrication handled by sponsor, Novark Technologies, Inc.