scms.unipune.ac.in

Department of Scientific Computing, Modeling and Simulation

SP Pune University

Born of merger ...

SCMS-SPPU

Recently established (July 2020) by merging

- Interdisciplinary School of Scientific Computing (ISSC), 1994-2020
- Centre for Modeling & Simulation (CMS), 2003-2020

Vision & Mission

promote computing, modeling & simulation methodologies

encourage truly multi-disciplinary, problem-centric approaches to basic and applied research

transcend traditional boundaries separating knowledge disciplines

keep abreast with computing technologies

Academic Programmes

- MTech Programme in Modeling & Simulation

  Applied mathematics + statistics + computing + M&S

- MSc Programme in Scientific Computing

  Similar, but focused on computing, IT/SE, ...
  theory + practice + technologies

- PhD Programme in Scientific Computing

  Highly multi-disciplinary!

Academic Programmes

MTech & MSc Programmes

- Full-time, 2-year programmes
- Multidisciplinary; relevant to academics, industry, policymakers
- 3 semesters: Core+elective coursework; Internship: 1 sememster
- Specializations: Data Science, AI/ML, Operations Research, DSP/DIP, Complex Networks, ...

. . . has been running one of the best programs in modeling and simulation that I have ever come across. The vision, the comprehensive approach in both theoretical as well as applied aspects, the very careful nurturing of students, strong links with industry & high-quality research that is carried out by faculty [. . .] deserve all the encouragement & support that can be provided . . .

– Prof. N.V. Joshi (IISc) to Hon'ble Vice Chancellor, 2009

HPC Infrastructure

- **Sahasrar**: 1000+ Intel cores, 50 nodes

- **Hodor**: ∼80 Intel cores + 1 GPU
- **Bravos**: ∼12 Intel cores + 4 GPUs
- **Ashtanga**: ∼100 Intel cores

Sahasrar
Computing Facility
for
DST Funded Research
in Materials Science

(Possibly) fastest+largest
amongst state universities

Research

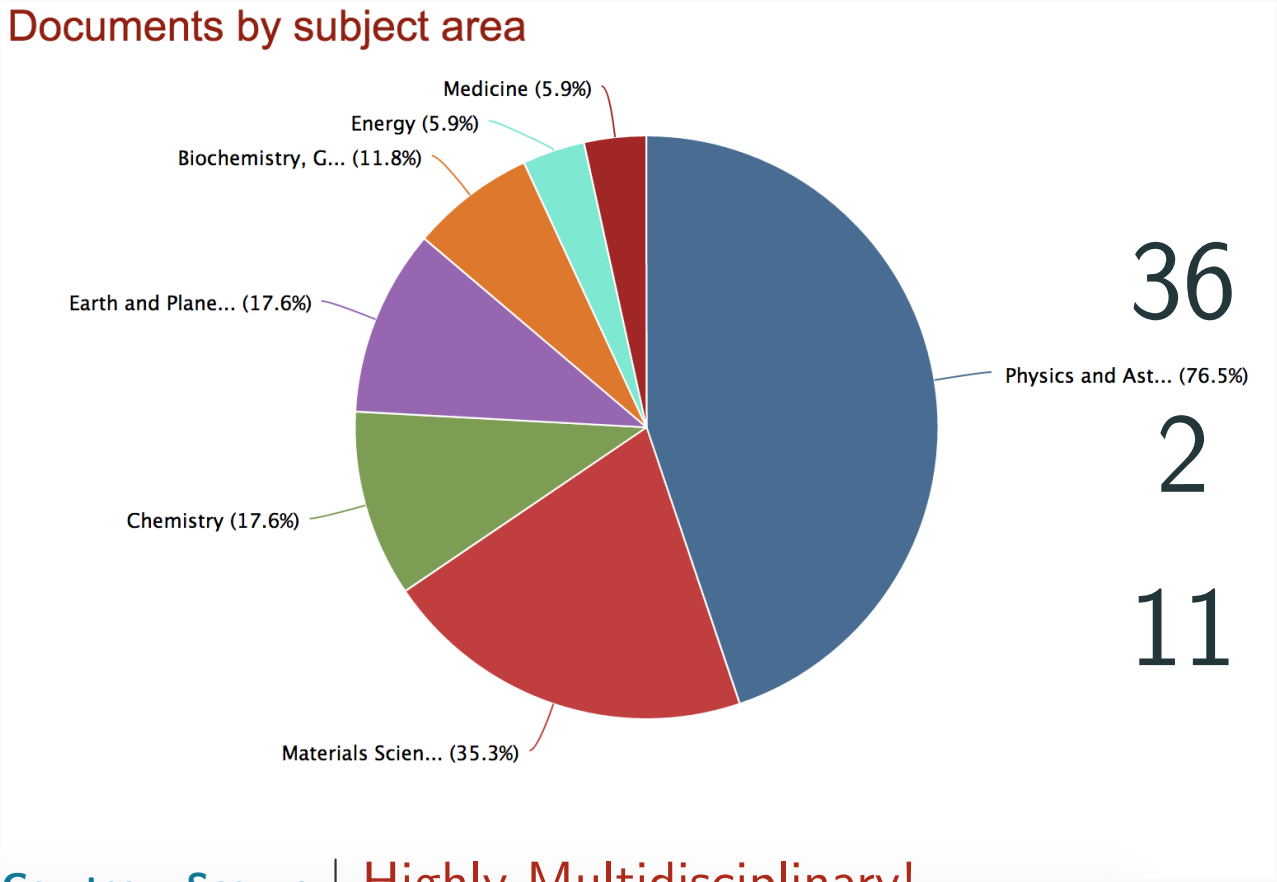
- **Research Funding (2011–)** $\sim$ Rs 12Cr
- **Wide array of agencies**
  - DST (NSM, Nanomossion)
  - DBT
  - DRDO
  - ISRO
  - CDAC
  - UGC
  - EU
  - PennState
  - SPPU
  - Industry
  - ...

Research

Multidisciplinary to the hilt

- statistical/machine learning and data science
- data-intensive science (astrostatistics, computational biology)
- complex systems & network science
- epidemiological modeling of COVID19 spread
- meteor impact simulations
- computational materials
- cryptography
- digital signal & image processing
- defense ballistics
- grid computing
- industrial modeling
- ...

Research Publications 2011-17



36 Journal Articles

2 Book Chapters

11 Conference Proceedings

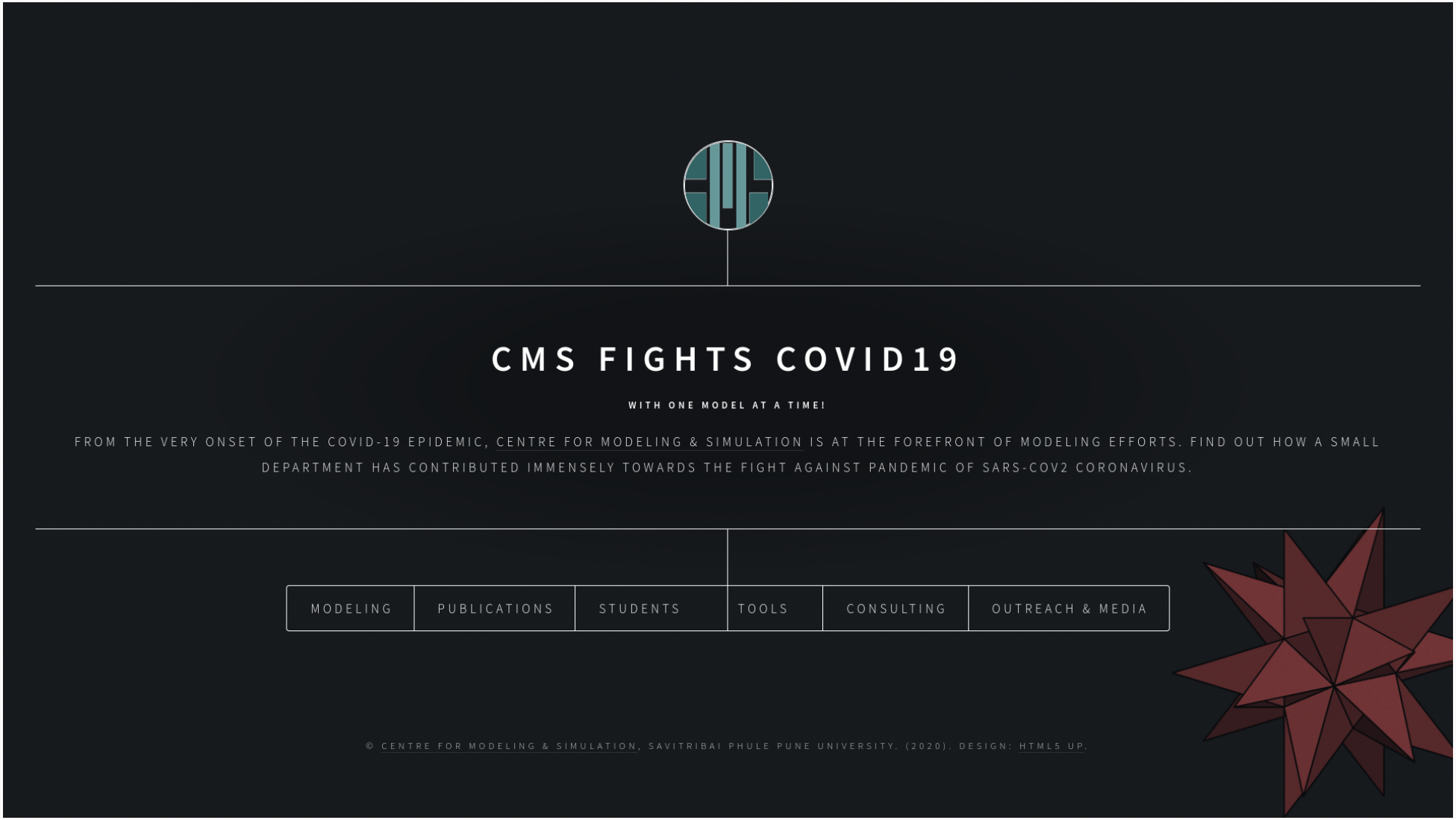
Courtesy: Scopus | Highly Multidisciplinary!

Impact factor range: 0.4 to 9.2*

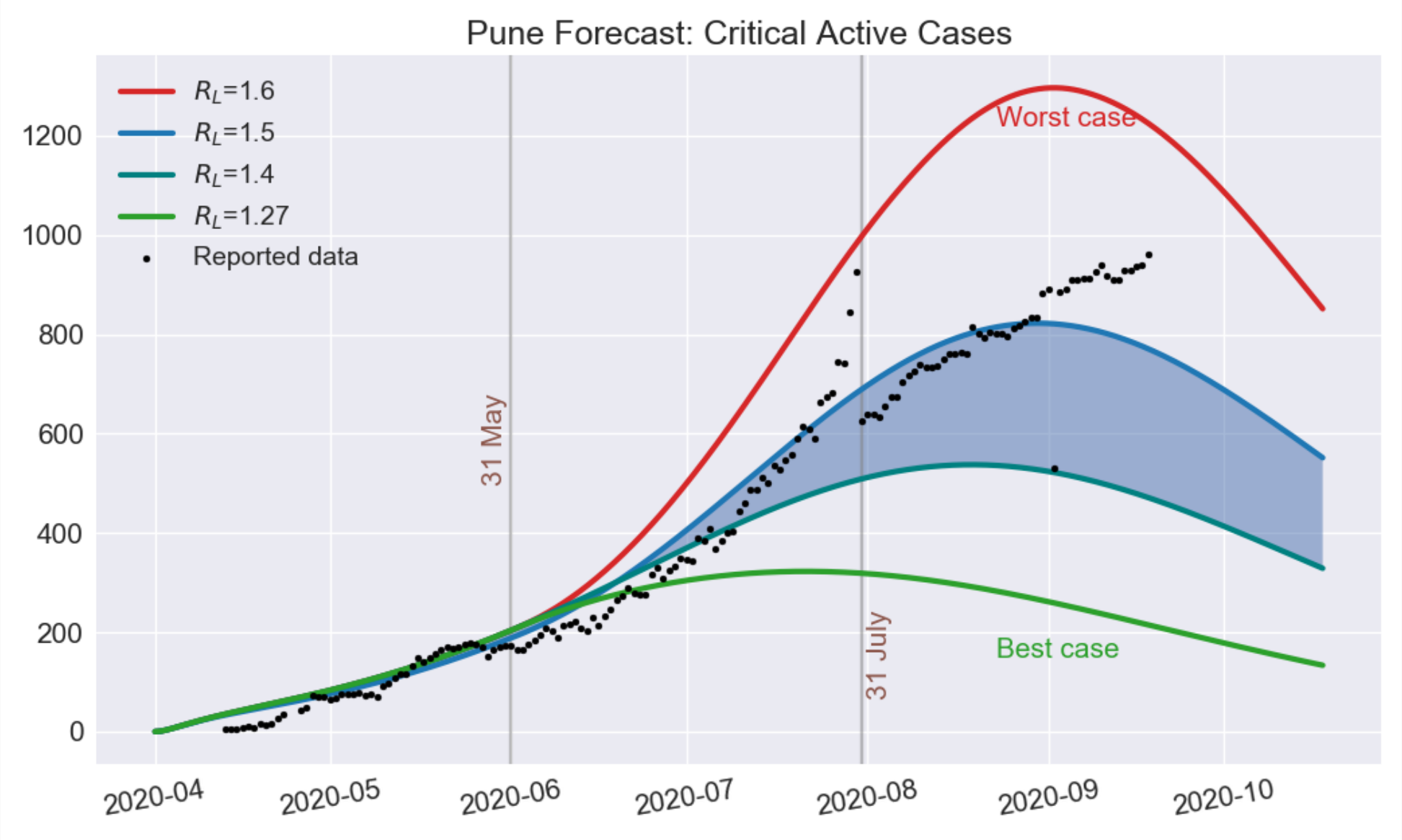
All in reputed international peer-reviewed research journals

* Nucleic Acids Research 5yr IF: 8.647 | DOI: 10.1093/nar/gks1285

Individual Research Collaborations (2011-17)



http://scms.unipune.ac.in/Covid19/



https://scms.unipune.ac.in/~bspujari/Covid19/Pune2/

. . . I was impressed to hear that this Centre was started in the early 2000s, when such places were still rare even in the U.S., and to see the advanced computing techniques and multi-disciplinary projects that take place there. I hope that this Centre continues to thrive . . .

– Dr. Rebecca McNamee (GIAN Faculty) to Hon'ble Vice Chancellor, 2016

Outreach & Public Education

- The Center for Science Education and Communication AKA Science Park was physically and formally hosted by SCMS-SPPU during its initial years.
- SCMS-SPPU is a strong supporter for free software: see https://fsf.org.in/case-study/unipune/. SCMS-SPPU offers advice for those wishing to adopt free software.
- SCMS OpenCourseWare for the public, a small beginning: apps.scms.unipune.ac.in/moodle/course/index.php?categoryid=15
- COVID-related outreach: https://scms.unipune.ac.in/~bspujari/Covid19/#outreach
- Miscellaneous: https://scms.unipune.ac.in/reports/#OD, https://scms.unipune.ac.in/~mihir/#outreach.

Webpage

scms.unipune.ac.in

SCMS OpenCourseWare

apps.scms.unipune.ac.in/moodle/course/index.php?categoryid=15

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