

Justice at Scale: Leveraging High-Throughput Computing to Analyze Millions of Judicial Records

Saloni Bhogale

9 June 2026

Throughput Computing Week 2026

**What determines the effectiveness of institutions
and their ability to achieve stated goals?**

Legal Institutions in the Developing World

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Legal Institutions in the Developing World



'A Lifelong Nightmare': Seeking Justice in India's Overwhelmed Courts

With 50 million criminal and civil cases pending, it would take 300 years to clear the country's judicial backlog.

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Lawyers outside the Delhi High Court. The number of pending cases in the Indian judicial system has doubled over the past two decades, to more than 50 million.

By Sameer Yasir Photographs by Elke Schollers
Reporting from Lakshmanpur Bathe, in the Indian state of Bihar, and Mathura, in the state of Uttar Pradesh
Jan. 13, 2024

Search Menu



CNR Number



Case Status



Court Orders



Cause List



Caveat Search



Process Details



Location

Case Status

Select State

Maharashtra

Select District

Ahmednagar

Select Court Complex

Sangamner, Dist and Sessions Court

Party Name

Case Number

Filing Number

Advocate

FIR Number

Act

Case Type

Case Status : Search by Act Type

Fields marked with * are required

Search Act

Search Act



*Act Type

INDIAN PENAL CODE

Under Section

Under Section

Pending Disposed

Captcha

mwuk47



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Go

Reset

Total Number of Establishments in Court Complex : 1 | Total number of cases : 708

District and Session Court , Sangamner : 708

| Sr No | Case Type/Case Number/Case Year | Petitioner Name versus Respondent Name | View |
|--|---------------------------------|--|----------------------|
| District and Session Court , Sangamner | | | |
| 1 | M.A.C.P./34/2026 | Sadhana sandip mane Vs kailas namdevo sadgir | View |
| 2 | M.A.C.P./33/2026 | Tanishka Sunil Dhamale Vs Prajwal Annasaheb Dighe | View |
| 3 | M.A.C.P./13/2026 | Prakash Sakharam Mhase Vs Balasaheb Changdeo Varpe | View |
| 4 | MACP, M.A./31/2025 | Balasaheb Laxman Minde Vs Akhilesh Kumar Sing | View |
| 5 | MACP, M.A./2/2024 | Babasaheb Tukaram Khemnar Vs State of Maharashtra | View |

Why High Throughput Computing?

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Why High Throughput Computing?

OSG School 2023

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OSG School 2023



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Could you transform your research with scaling out your computing?

Learn how this summer at the lovely [University of Wisconsin-Madison](#)

During the School, **August 7-11**, you will learn to use [high-throughput computing](#) (HTC) systems — at your own campus or using the national-scale [Open Science Pool](#) — to run large-scale computing applications that are at the heart of today's cutting-edge science.

Through lectures, discussions, and **lots of hands-on activities** with experienced OSG staff, you will learn how HTC systems work, how to run and manage lots of jobs and huge datasets to implement a scientific computing workflow, and where to get more information and help.

Scaling Data Extraction from eCourts

Scaling Data Extraction from eCourts



Python & Selenium

Dynamic loading for difficult page structures through an automated browser.



Docker

Bundled Chrome binaries and Python scripts into an image that can be run from any system.



HTCondor

Managed job scheduling and staggered resource allocation across the compute pool.

Paper 1
**The Political Roots of Legal Access:
Evidence from Village Councils in India**

Can elected representatives help citizens access the justice system?

Can elected representatives help citizens access the justice system?

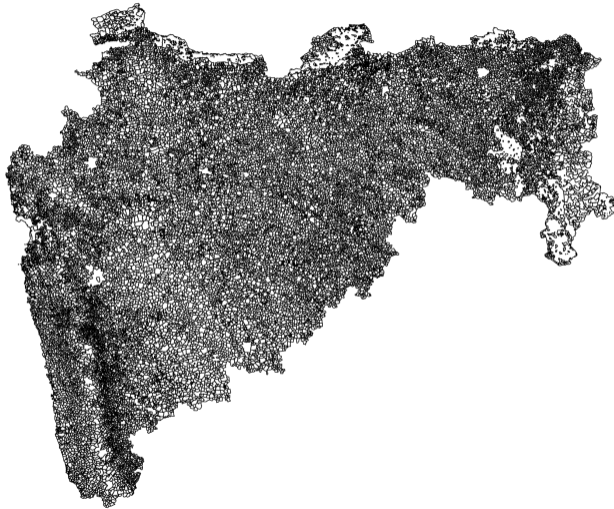


Can elected representatives help citizens access the justice system?



Focus on Maharashtra, India

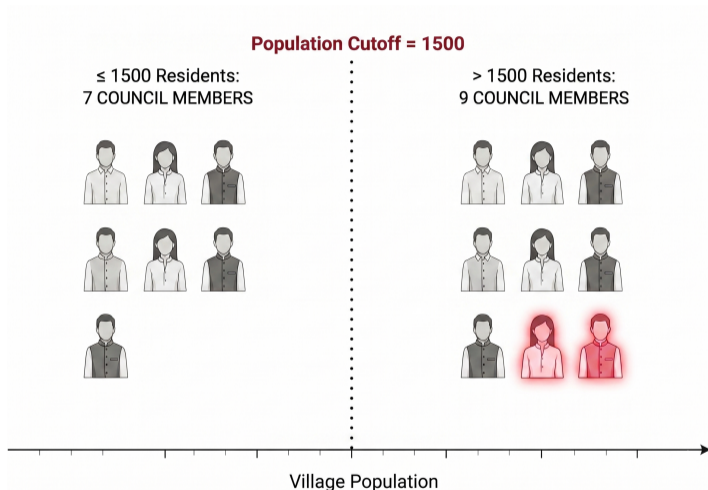
Focus on Maharashtra, India



NOTE: This figure shows the boundaries of 28,000 village councils (Gram Panchayats) of Maharashtra, with over 225,000 elected representatives.

Statewide experiment on size of the elected body

Statewide experiment on size of the elected body



Measure legal access by collecting data on 3.4 million cases

Measure legal access by collecting data on 3.4 million cases

Civil Judge Sr.Dn., Malkapur

Case Details

| | | | |
|---------------------|---|-------------------|---|
| Case Type | L.A.R. - LAND REF. | | |
| Filing Number | 21/2016 | Filing Date | 19-01-2016 |
| Registration Number | 3/2016 | Registration Date | 19-01-2016 |
| CNR Number | MHBU120000212016 (Note the CNR number for future reference) | | View QR Code or Cause Title |
| e-Filing Number | | e-Filing Date | - |

Case Status

| | |
|------------------------|-------------------------------|
| First Hearing Date | 21st January 2016 |
| Decision Date | 29th March 2016 |
| Case Status | Case disposed |
| Nature of Disposal | Contested-JUDGMENT |
| Court Number and Judge | 1-Civil Judge Sr.Dn. Malkapur |

Petitioner and Advocate

1) Keshav Sitaram Patil
Advocate - S.S. Dalvi

Respondent and Advocate

1) The Collector
Advocate - AGP
2) Land Acquisition Officer,
Advocate-A.G.P.
3) Executive Engineer
Advocate-A.G.P.

Acts

| | |
|----------------------|------------------|
| Under Act(s) | Under Section(s) |
| Land Acquisition Act | 18 |

Case History

| Judge | Business on Date | Hearing Date | Purpose of Hearing |
|-----------------------------|------------------|--------------|--------------------|
| Civil Judge Sr.Dn. Malkapur | 28-03-2016 | | Disposed |
| Civil Judge Sr.Dn. Malkapur | 21-01-2016 | 29-03-2016 | Awaiting Notice |

Final Orders / Judgements

| | | |
|--------------|------------|----------------------------------|
| Order Number | Order Date | Order Details |
| 1 | 29-03-2016 | Copy of Judgment |

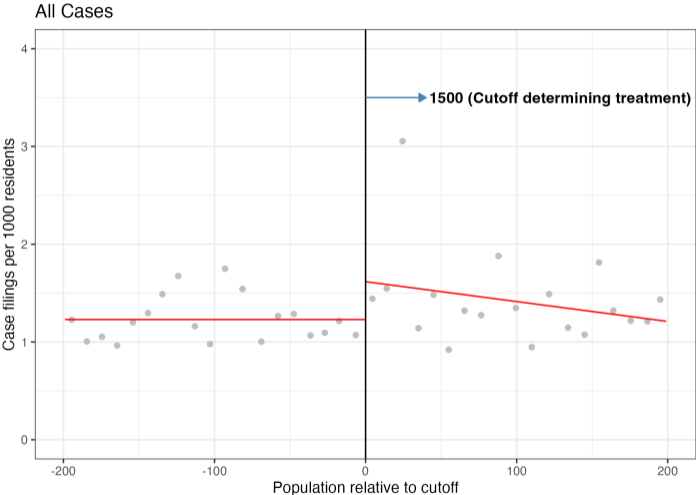
Collect data on elections and elected representatives

Collect data on elections and elected representatives



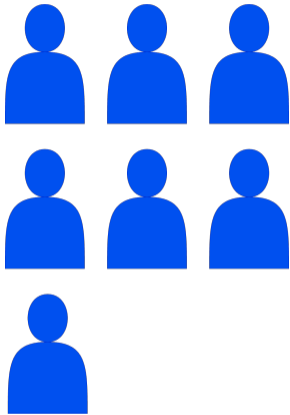
Finding I: Treatment ↑ case filings by 51%

Finding I: Treatment \uparrow case filings by 51%

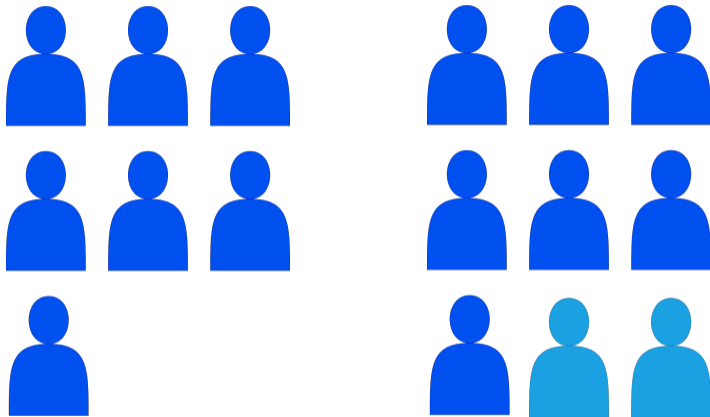


Finding II: 2 additional representatives belong to diverse groups

Finding II: 2 additional representatives belong to diverse groups

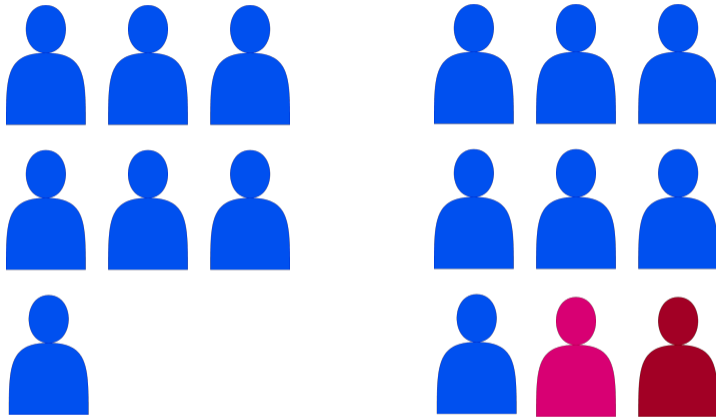


Finding II: 2 additional representatives belong to diverse groups



Two extra members increase human resources available to do work

Finding II: 2 additional representatives belong to diverse groups



Two extra members belong to different social groups

Paper 2

**Musical Chairs: Frequent Judge Transfers
Undermine Court Productivity in India**

(co-authored with Rikhil Bhavnani and Amit Jadhav)

'No fruitful purpose after 17.5-year delay in assault case': HC releases 2 after 1-month jail

Srishti Lakhota / Updated: Jan 10, 2026, 13:11 IST

Preferred on 

 Comments

 Share



 AA

ORIGINAL SENTENCE: 2-YR JAIL

> **June 12, 2008:** Victim Kunidan Shaw's sister lodged a complaint, saying Ram Prasad and Rabi Prasad assaulted Shaw with a cycle jump and a wooden stick.

> **Dec 2, 2009:** Barrackpore ACJM took cognisance of the offence.

> **Aug 20, 2019:** The two

were convicted of voluntarily causing grievous hurt and sentenced to 2 years' jail and fined ₹5,000 each.

> **Jan 9, 2026:** HC let the two go, noting they had served over a month in jail and sending them to jail after 17.5 years would serve no fruitful purpose.

Kolkata: The Calcutta High Court on Friday reduced the sentence of two men, convicted in an assault case of 2008, considering it had already been 17-and-a-half years and sending them to a correctional home would serve "no fruitful purpose". Noting that the two had served over one month in jail, the court let them go.

The Barrackpore ACJM took cognisance of the assault on Dec 2, 2009 and convicted the two—Ram Chandra Prasad alias Das and Rabi Prasad, residents of Ichhapur—of voluntarily causing grievous hurt under Section 325 of IPC. The ACJM on Aug 20, 2019, sentenced them to two years' imprisonment and fined them Rs 5,000 each.

'No fruitful purpose after case': HC releases 2 after

Srishti Lakhotia / Updated: Jan 30, 2026, 13:11 IST

ORIGINAL SENTENCE: 2-YR JAIL

- > **June 12, 2008:** Victim Kundan Shaw's sister lodged a complaint, saying Ram Prasad and Rabi Prasad assaulted Shaw with a cycle pump and a wooden stick.
- > **Dec 2, 2009:** Barrackpore ACJM took cognisance of the offence.
- > **Aug 26, 2019:** The two were convicted of voluntarily causing grievous hurt and sentenced to 2 years' jail and fined ₹5,000 each.
- > **Jan 9, 2026:** HC let the two go, noting they had served over a month in jail and sending them to jail after 11 years would serve no fruitful purpose.

The Barrackpore ACJM took cognisance of the offence in 2009—Ram Chandra Prasad alias Das and Rabi Prasad were convicted of voluntarily causing grievous hurt under Section 325 of the IPC and sentenced them to two years' imprisonment and fine

Almost 35 Years Have Lapsed: Supreme Court Stays Criminal Case Against Police Officer Citing 35 year Delay

By Satyajeet Barik | 25 April 2026, 3:51 PM | 1 minute, 47 seconds Read

Thank you for reading this post, don't forget to subscribe!

Supreme Court of India stayed 1989 criminal proceedings citing 35 year delay without witness examination. Bench of J. B. Pardiwala and Vijay Bishnoi indicated quashing due to extraordinary delay.



'No fruitful purpose after case': HC releases 2 after

Srishti Lakhota / Updated: Jan 10, 2026, 13:11 IST

ORIGINAL SENTENCE: 2-YR JAIL

> June 12, 2006: Victim were convicted of voluntari

Almost 35 Years Have Lapsed: Supreme Court Stays Criminal

Citing

Empty benches, long waits: Consumer courts strain under delays, vacancies

Chittaranjan Tembhekar / TNN / Mar 19, 2026, 13:41 IST

Preferred on     



Representative AI image

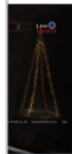
MUMBAI: For a homebuyer awaiting possession, an insurance claimant battling rejection, or a bank customer locked in a dispute, the wait for justice is getting longer—and increasingly uncertain.

India's consumer courts, envisioned as fast-track grievance redressal forums under the Consumer Protection Act, 2019, are today grappling with severe capacity constraints,

mounting vacancies and rising pendency, the latest India Justice Report (IJR) 2026 has found.

The findings point to a system under stress: more than half of the president and member posts in State Consumer Disputes Redressal Commissions (SCDRCs) remained vacant in 2025, while a significant share of cases has been pending for over three years—far exceeding the law's mandate of disposing matters within five months.

er delay without
sted quashing



'No fruitful purpose after case': HC releases 2 after

Srishti Lakhota / Updated: Jan 10, 2026, 13:11 IST

ORIGINAL SENTENCE: 2-YR JAIL

> June 12, 2006: Victim were convicted of voluntarily causing grievous hurt and...

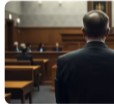
Almost 35 Years Have Lapsed: Supreme Court Stays Criminal

Citing

Empty benches, long waits: Consumer courts strain under delays, vacancies

Chittaranjan Tembhekar / TNN / Mar 19, 2026, 13:41 IST

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Representative AI

mounting vacancies and rising delays were found.

The findings point to a systemic issue with long delays in State Consumer Disputes Act, 2025, while a significant share of cases are exceeding the law's mandated timeline.

or delay without being quashed

India's Judicial Pendency Crisis 2026: 5 Crore Pending Cases, Delayed Justice & Constitutional Failure

An in-depth analysis of judicial delay in India, Article 21 speedy trial rights, court backlog causes, undertrial crisis, and urgent judicial reforms.

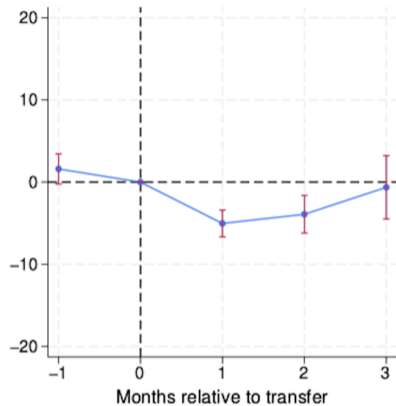




Judges move across courtrooms: spend ~7 months in each position

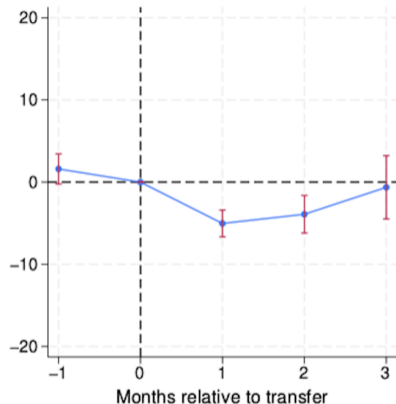
Transfers worsen productivity and cause vacancies

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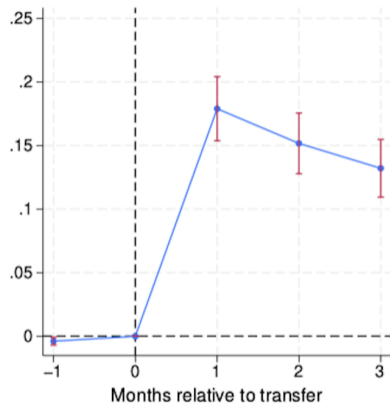


Each transfer leads to ~1 week of lost productivity (decisions)

Transfers worsen productivity and cause vacancies



Each transfer leads to ~1 week of lost productivity (decisions)



Each transfer increases the probability that a courtroom remains vacant

Paper 3
Estimating Treatment Effect Heterogeneity
with Varying Coefficients and Bayesian Tree Ensembles
(co-authored with Sameer Deshpande)

Experiments help us understand how treatments work on average

Experiments help us understand how treatments work on average

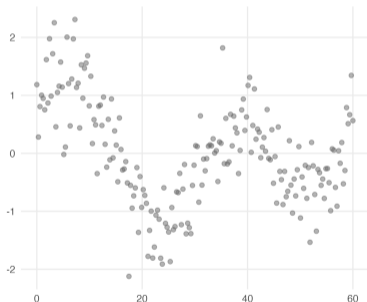
- ▶ Do effects of interventions vary → design effective interventions & target scarce resources

Experiments help us understand how treatments work on average

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- ▶ **Current methods involve strong functional form assumptions**

Experiments help us understand how treatments work on average

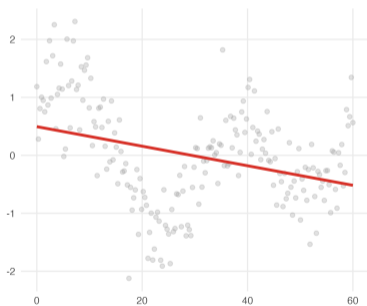
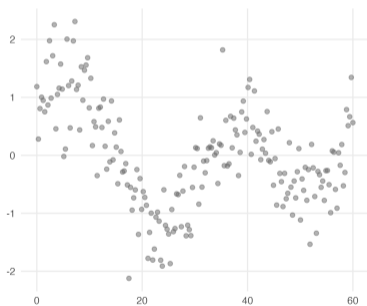
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Experiments help us understand how treatments work on average

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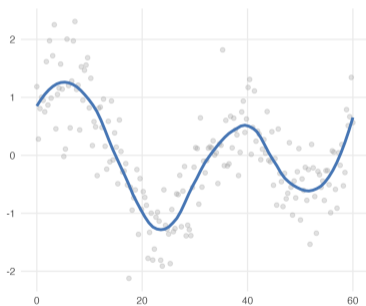
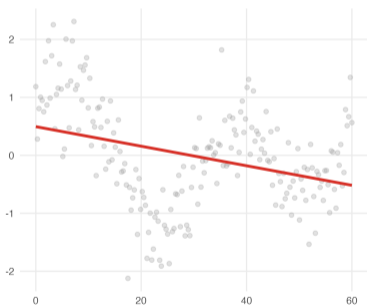
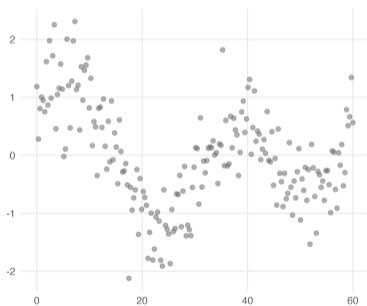
► **Current methods involve strong functional form assumptions**



Experiments help us understand how treatments work on average

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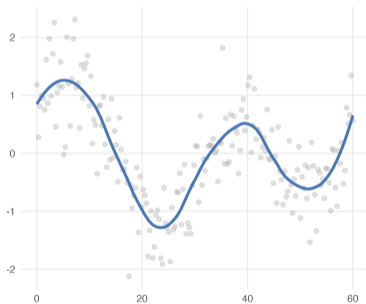
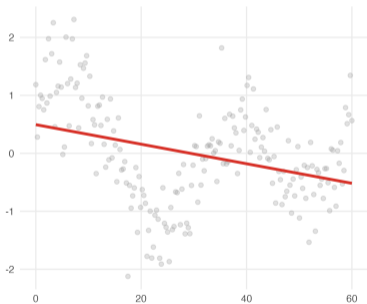
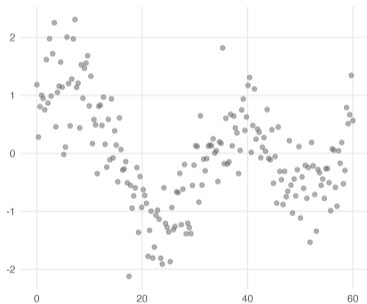
► **Current methods involve strong functional form assumptions**



Experiments help us understand how treatments work on average

► Do effects of interventions vary → design effective interventions & target scarce resources

► **Current methods involve strong functional form assumptions**



► Test whether a new Bayesian semi-parametric method (VCBART) can solve this problem

Leveraged HTC to Run Simulations

Leveraged HTC to Run Simulations

Method Evaluation



Validity

Does the proposed method “hallucinate”?



Performance

Benchmark against competing methods:
BART, GRF, LASSO and more.

Leveraged HTC to Run Simulations

Method Evaluation



Validity

Does the proposed method “hallucinate”?



Performance

Benchmark against competing methods: BART, GRF, LASSO and more.

Scale & Execution



HTC Infrastructure

Jobs varying complexities, methods and sample sizes.



Containerized Runs

Docker bundled packages to execute 1,000 runs per configuration.

Closing Remarks

Closing Remarks

- ▶ Understand institutions and analyze policies that can improve lives

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- ▶ OSG School & HTC changed the scale and type of work I was able to accomplish

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Thank you!

bhogale@wisc.edu

