Hello!

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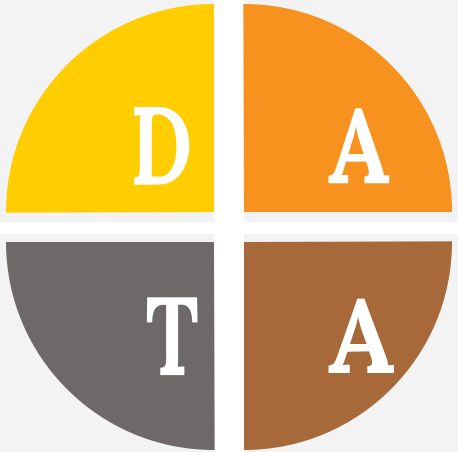
My Research Overview

DISTRIBUTED CYBER INFRASTRUCTURE

Design HPC cluster for big data analysis

Blockchain-based data transfer

TRANSFER OF BIG DATA



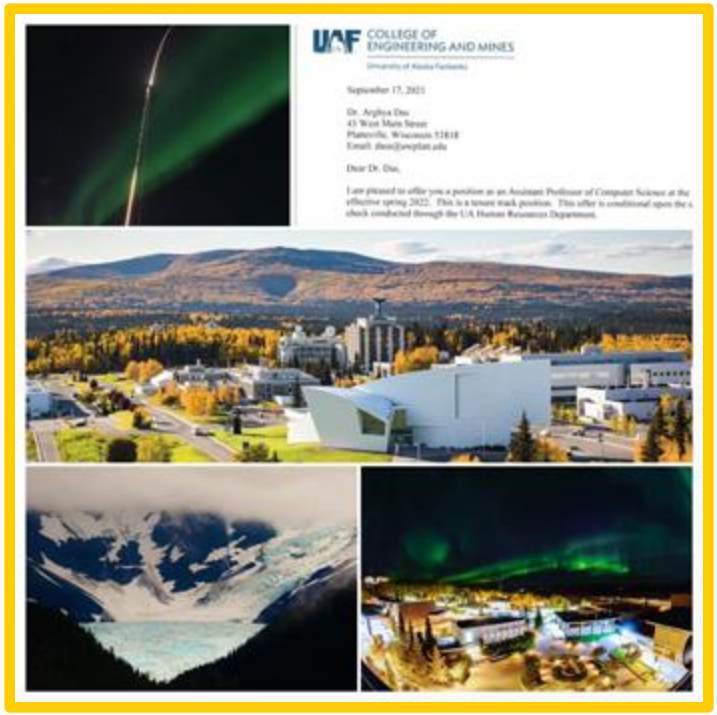
ANALYZE SCIENTIFIC BIG DATA

Develop scalable algorithms

Make data education accessible

ANDRAGOGY FOR DATA EDUCATION

My Research at UAF have been funded by



UAF UNIVERSITY OF ALASKA FAIRBANKS

NASA

NSF

NIH National Institutes of Health

USGS Water Resources

Looking for more collaboration

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My Initiatives @ University of Alaska

- **Cyberinfrastructure:** Setting up a GPU-based HPC cluster
- **Research:** Enabling research critical for Alaska EPSCoR
- **Education/Workforce:** Build campuswide capacity for CS/AI/Data/HPC

CyBR: Cyberinfrastructure for **B**ig Data **R**esearch Critical for Alaska

AMD NVIDIA Mellanox TECHNOLOGIES

UAF UNIVERSITY OF ALASKA FAIRBANKS · UAA UNIVERSITY of ALASKA ANCHORAGE · UAS UNIVERSITY OF ALASKA SOUTHEAST



Available by Summer 24

UNIVERSITY of ALASKA
Many Traditions One Alaska

NSF

This initiative is supported in part by **NSF Major Research Instrumentation (MRI)** program

GPU-HPC for entire UA-System

185 TFLOPS CPU, 423 TFLOPS GPU ~2 PB Lustre HDD + 150 TB local SSD, 200 Gb Infiniband, 9 TB RAM (3.2 TB GPU-memory)

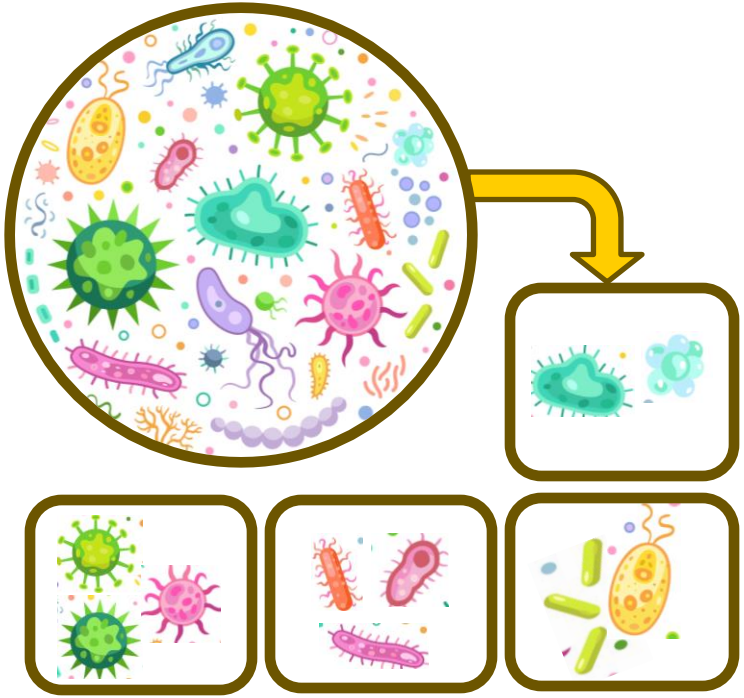
Teach Alaska, Empower Alaska

for alaska

Accelerate AI Research

Impact 700K residents, 200 communities. Enable more than 30 multidisciplinary research/education activities which will grow with time

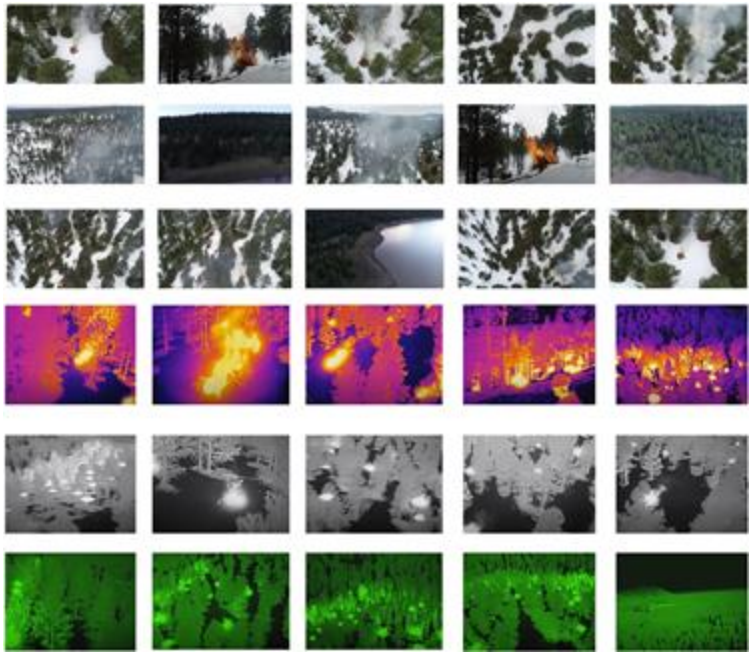
Identify AI Opportunities for Research Critical for Alaska EPSCoR



Another Example: Develop a software pipeline to extract pan-genomic information of all the strains of a particular microbial community from large-scale metagenomic data containing a mixed population of multiple microbial communities

This initiative is supported in part by **NSF EPSCoR Research Infrastructure Improvement (RII) Track-4** program

Identify AI Opportunities for Research Critical for Alaska EPSCoR



An Example: Developing Energy Efficient Deep Learning Model for Onsite Detection of Forest Fire and its Severity using UAS or other Low-Power Devices

This initiative is supported in part by **NASA Alaska EPSCoR Research Infrastructure Infrastructure Development (RID)** program

Looking for more collaboration

Data and AI Lab

Focus on Archiving · Analyzing · Disseminating

Focus on Education,Research, and Cyber Infrastructure

This initiative is supported in part by **NIH AIM-AHEAD PAIR** program

Collaborative Platform with Training Materials

Alaska Center ICE

Improve accessibility of HPC, AI, and Data technologies through a web-based platform with intuitive GUI and required training materials

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Checklist before submission

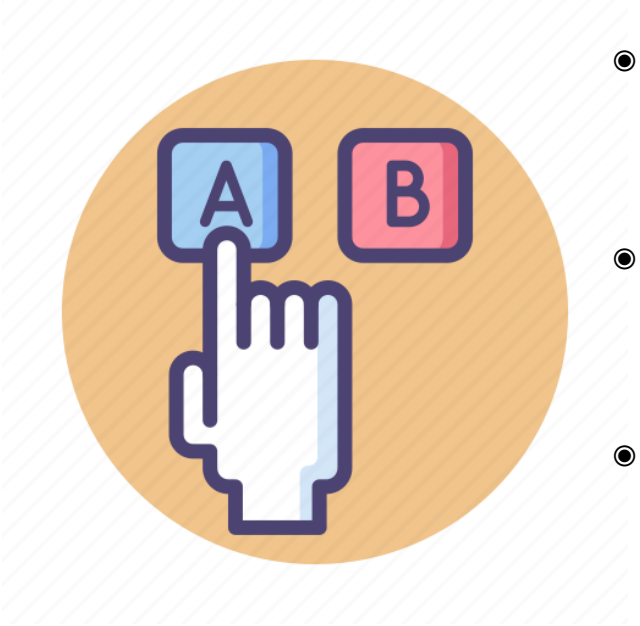
- Identify the problem
- Select the right program
- Identify the resources to overcome challenges
- Make a reasonable budget
- Write in a way which is understandable to all

Identify the problem

Be specific about the problem from the beginning

Substantiate with evidences

Select the right award program



- There are hundreds award program
- Select the one that best matches your problem
- **Talk to Program Managemers**

Identify resources to overcome challenges

Select your collaborators carefully

Analyze the infrastructure available

Make a reasonable budget

- Not too LESS not too much
- Budget is the only quantitative way to prove commitment

Write that is understandable to all

Reviewers from different background should understand

Do not leave many questions in your proposal

Do not wait too long

- Rolling deadline
- GREAT MINDS THINK ALIKE: Many people are thinking at the same direction ☺ ☺

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Checklist after submission

- If not funded
- If funded

If not funded

- Analyze the reviewer comments
- Serve in a reviewer panel for better understanding of the review process
- Talk to Program Managers

If funded

- Coordinate with all collaborators
- Work regularly with the grant managers
- Do not leave any issues unaddressed
  - Find out the showstoppers and address them first

Thanks!

Any questions ?

You can find me at

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