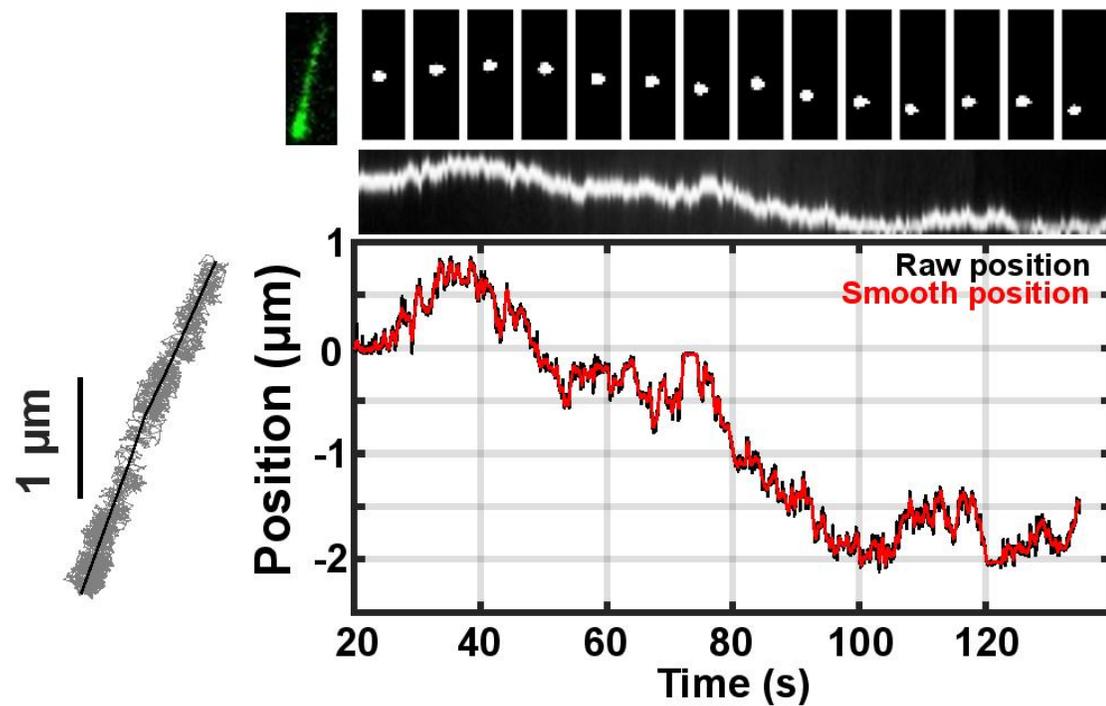
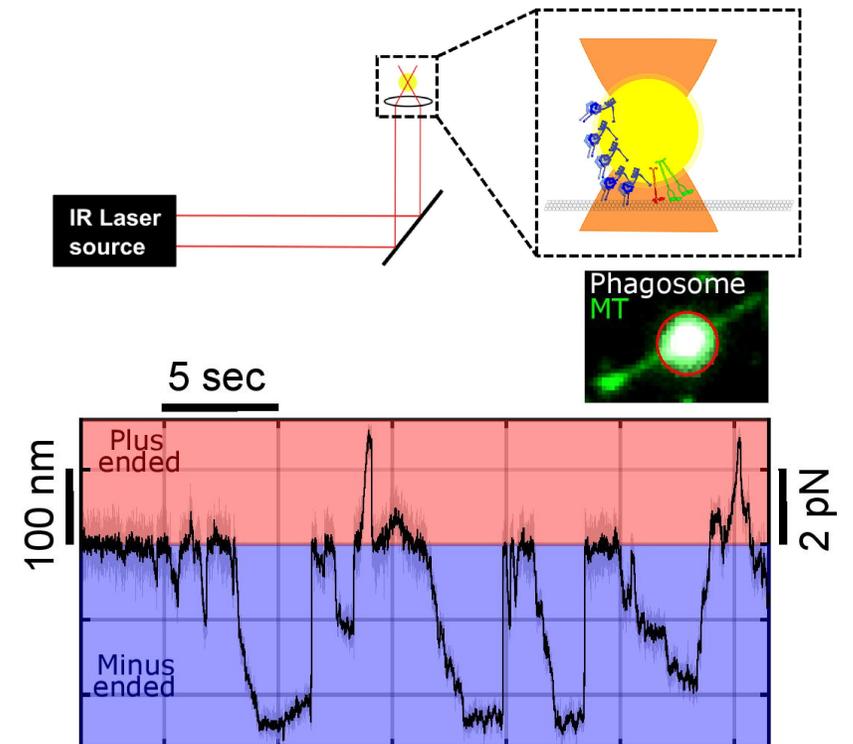


NANOMETER TRACKING

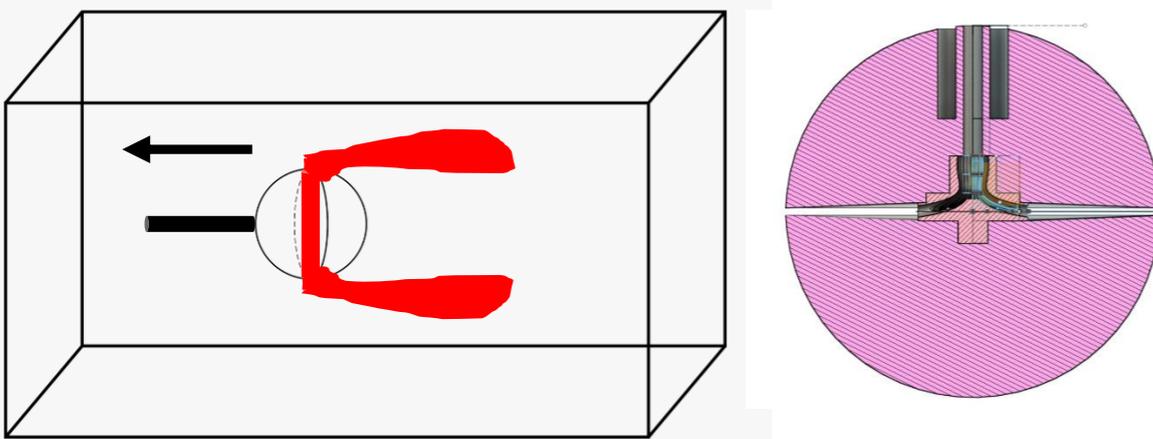


OPTICAL TRAPPING

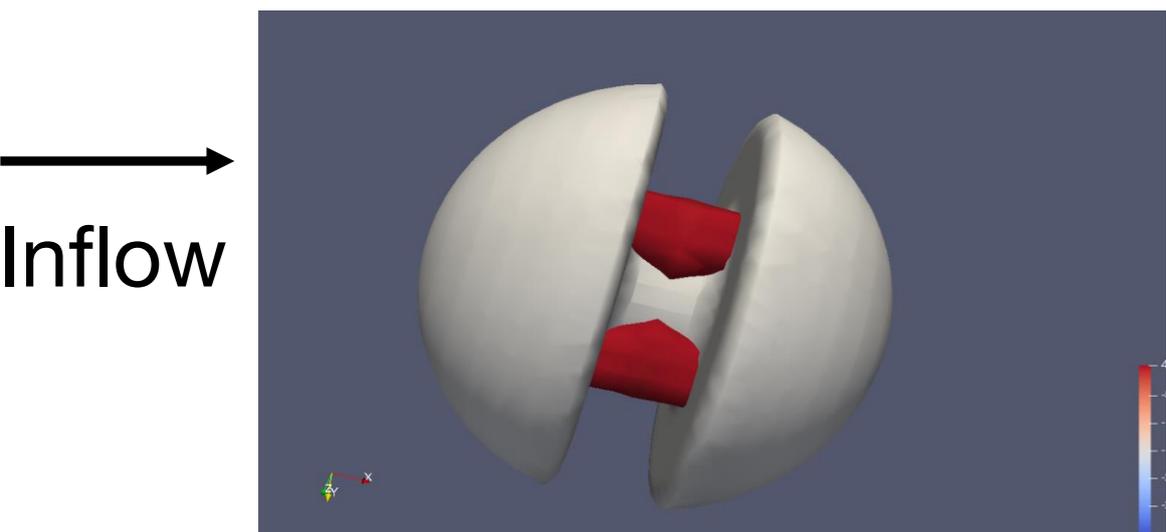


Simulation of dye ejected from sphere pulled through flow

Experiment

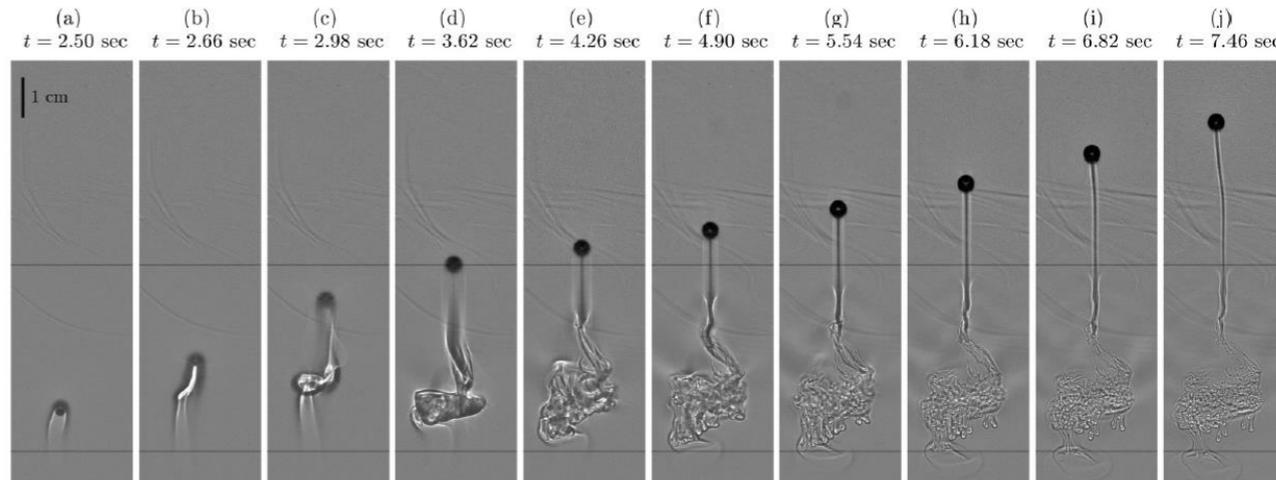


Simulation

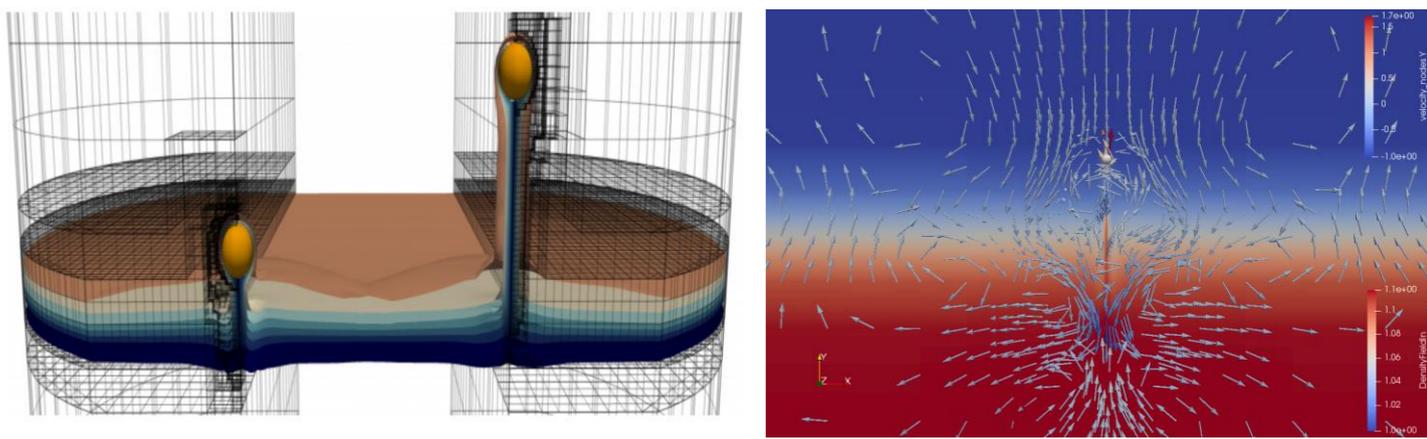


Simulation of rising oil droplets in stratified flow

Experiment



Simulation





Background:

- 2nd Year, Ph.D. Student
- B.S. in Applied Math at UC Merced

Advisor:

Dr. Roummel Marcia

Research Interest:

- Numerical Optimization – Iterative methods with Cubic Regularization
- Machine Learning – Supervised Learning and Reinforcement Learning in image processing, signal processing, and anomaly detection

Experience:

- Lawrence Livermore National Lab – Summer 2020
- Air Force Research Laboratory – Summer 2019

Collaborators:

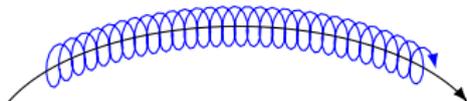
Dr. Omar DeGuchy (LLNL), Jacky Alvarez (Applied Math), Jacob Pettit (LLNL), Aditya Ranganath (CS), and Dr. Brenda Ng (LLNL)

Simulating Charged Particle Dynamics with Exponential Integrators

Tri (Alex) Nguyen, Advisor: Mayya Tokman

Background Computational simulation is fundamental in plasma and accelerator physics research.

Problem Solving for charged particle motion is a key problem - **computationally intensive!**



Research

- ▶ Exponential integration offers computational advantages over conventional methods.
- ▶ Design numerical particle pushers using exponential integration.

Ali Heydari

3rd Year PhD student @ Sindi Lab

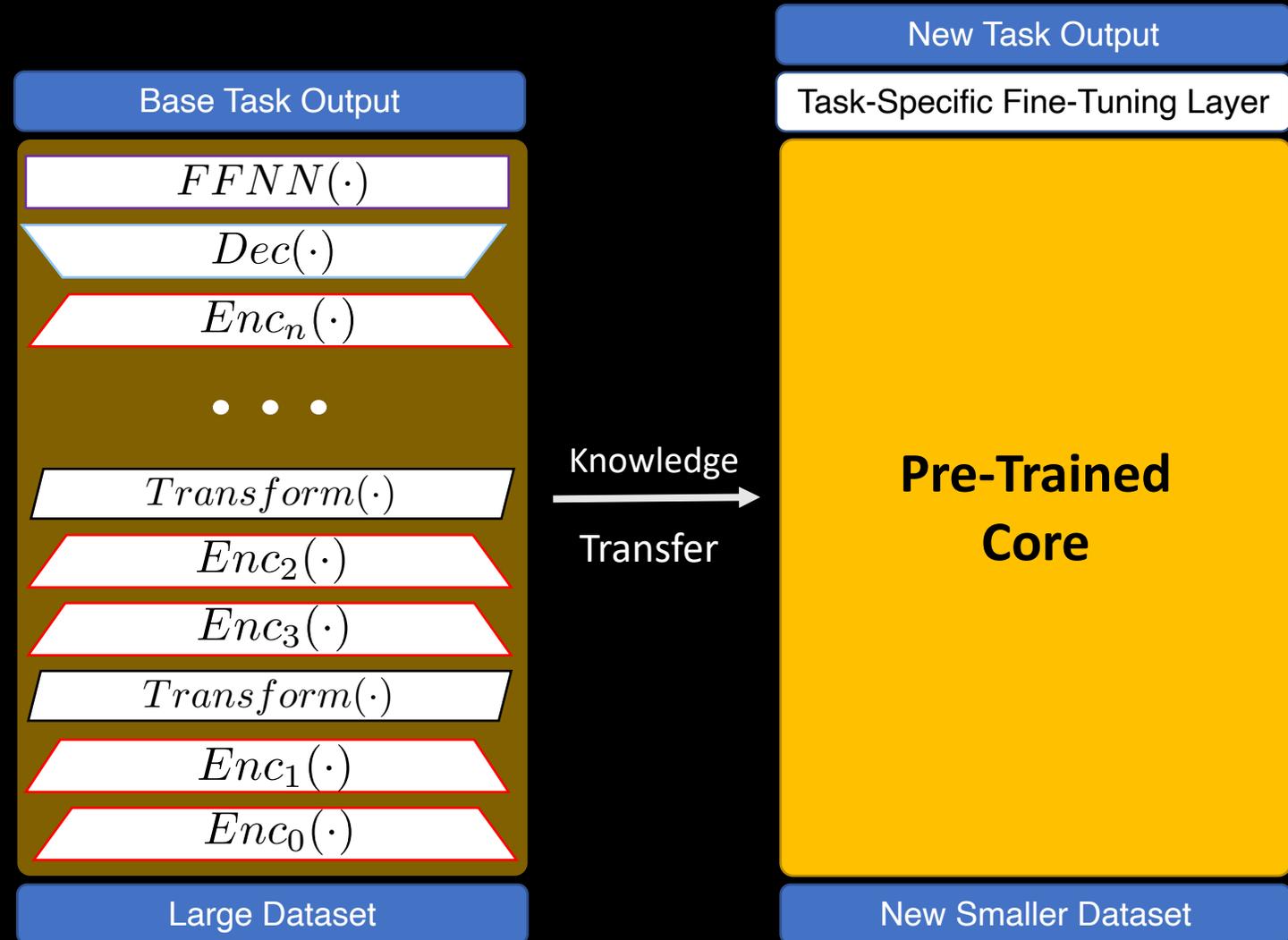
Interests:

- Deep and Transfer Learning
- Bioinformatics and Q. Pharmacology
- Computer Vision
- Natural Language Processing
- Not PDEs

Summer 2020:

- Applied Scientist II intern @ Amazon

Designing a Pre-Trained Core for Drug ADME-Tox Prediction



One-time pre-training of the deep model
(many gradient steps = long + expensive)

New task adaptation in a few fine-tuning epochs (fast + cheap)

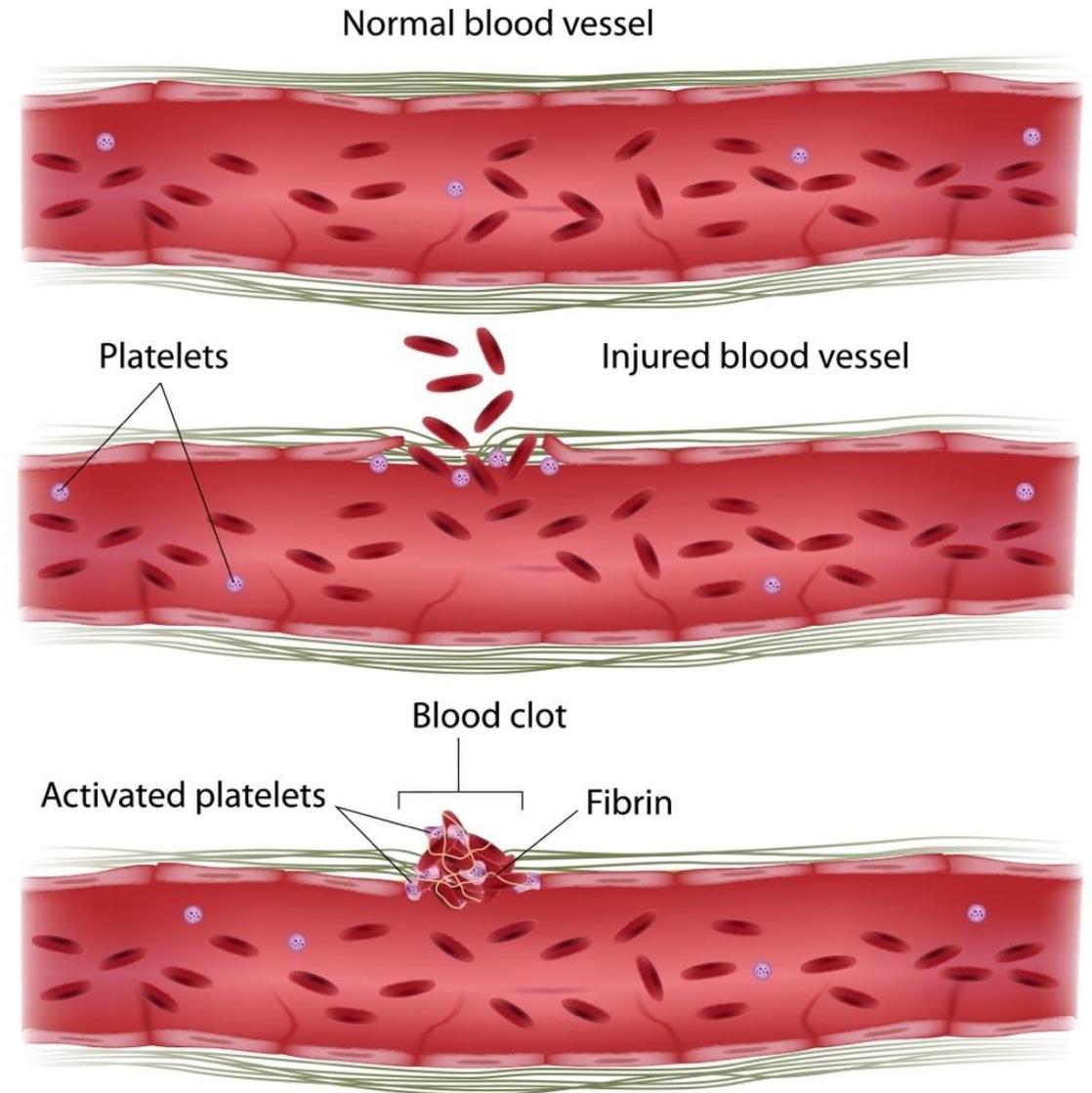
AMANDEEP KAUR

- About:

- PhD student, 2nd year
- Advisor: Dr Suzanne Sindi
- Undergraduate: Applied Mathematics, B.S. California State University, Bakersfield
- Hobbies: cooking and listening to music.

- Research Interest:

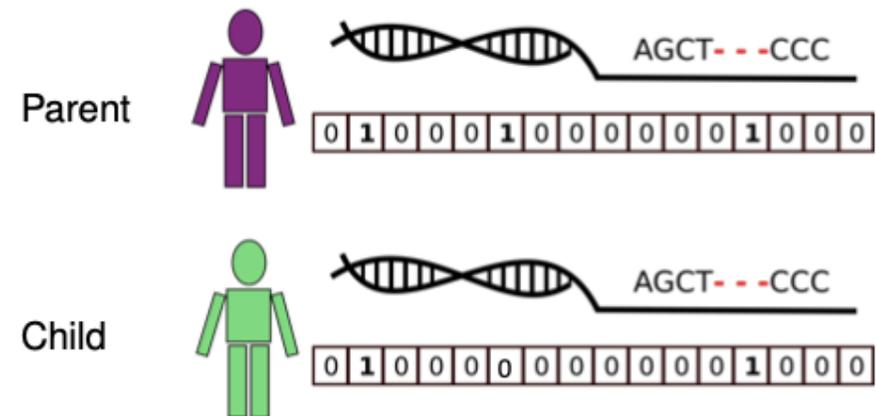
- Mathematical biology



Andrew Lazar



- About
 - Masters Student, 2nd year
 - Advisor: Dr. Roummel Marcia
 - Undergraduate: Mathematics, B.S., California State University Stanislaus
- Research Interests
 - Computational Genomics and Biology, Optimization
- Summer 2020
 - Graduate Student Researcher, Department of Applied Mathematics UC Merced





Anna Kucherova

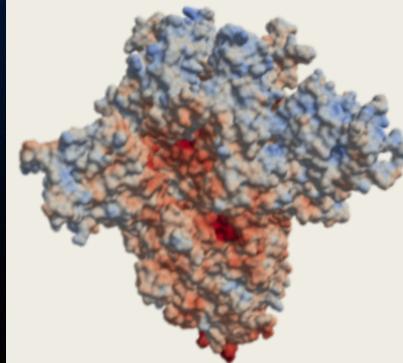
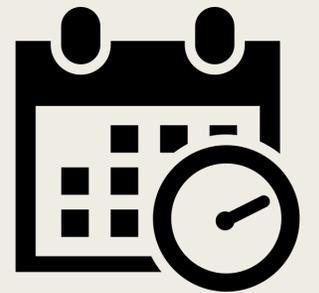
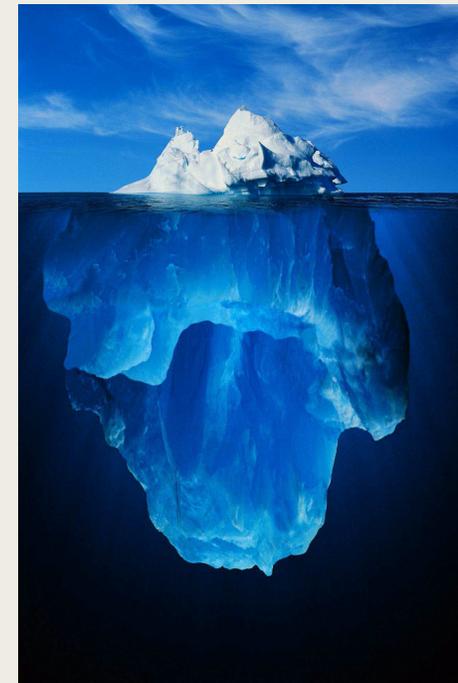


❖ Previous research:

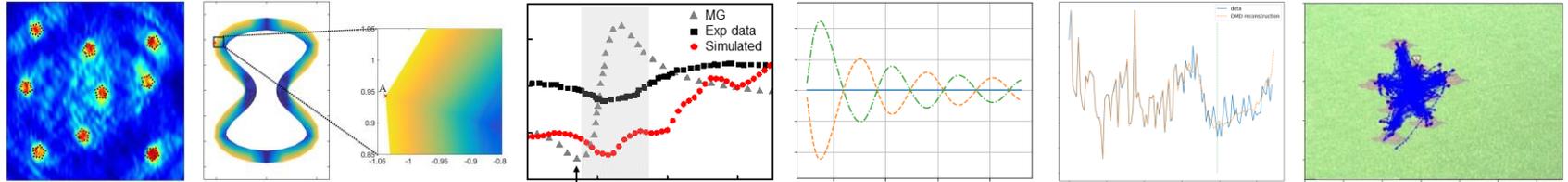
- ❖ LLNL – Antibody Antigen Binding
- ❖ W/ Noemi Petra – Ice Sheet Flow
- ❖ DESCARTES – University Course Timetabling Project [Merritt Writing Program]
- ❖ W/ Maxime – Covid-19 Spike Protein Features

❖ Future research interests

- ❖ Optimization techniques in soft computing
- ❖ Data Science/Machine Learning
- ❖ Inverse Problems



Arnold D. Kim



- Arrived at UC Merced in 2004
- Direct and inverse problems for multiple scattering of waves
- Data science for social justice and gamification

Asees Kaur

- Originally from India
- BS in Applied Mathematics(CSUEB)
- MS in Statistics, concentration: Data Science(CSUEB)
- Have worked as a Teaching Associate and a Data Analyst
- Research Interests: Not very sure of what exactly yet, but somewhere along the lines of Natural Language Processing and Deep Learning

Benjamin J. Latham

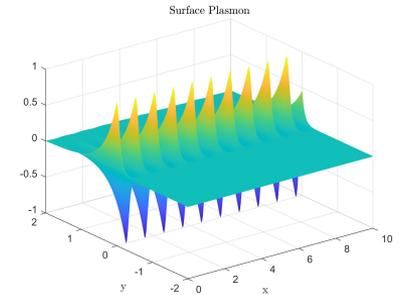
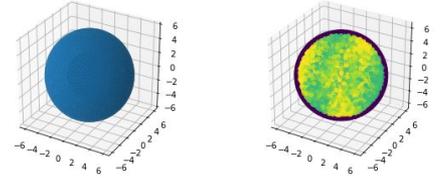
I'm a 2nd year graduate student with a background in pure math.



My current interests include:

- Finite Element Method for the study of wave propagation and plasmonics.
- Applications in optics, electromagnetics & information theory.

I'm also part of the Imaging and Sensing seminar and the Clovers Lab.

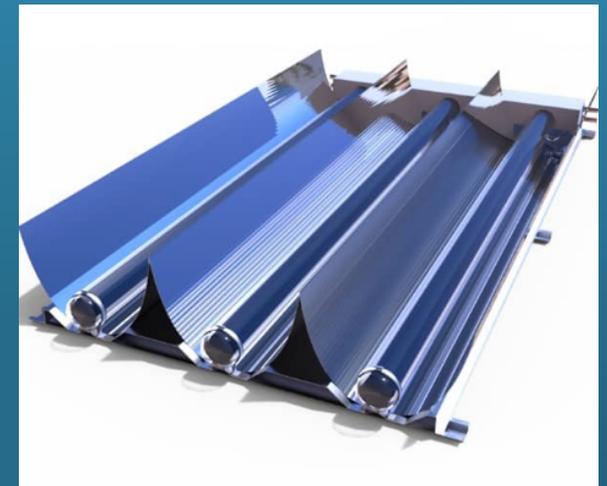


Boaz Ilan

Differential Equations, Asymptotics, Computations, Optimization, Machine Learning



Linear and nonlinear waves

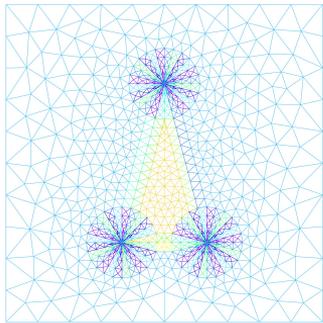


Solar energy harvesting

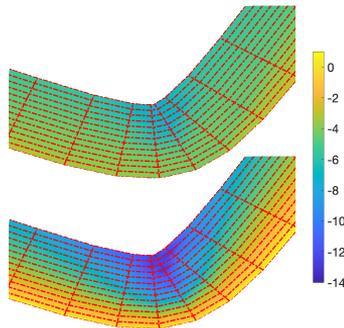
Camille Carvalho (Assistant Professor)



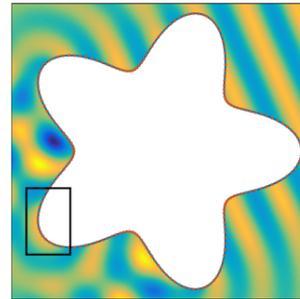
- Study wave propagation phenomena in plasmonic structures (interface problems between classical materials and metamaterials).
- Design new efficient numerical methods to accurately predict the electromagnetic near-field.
- Imaging and Sensing team (wave seminar)
- Special topics class about Boundary Integral Equations (Fall 2020)



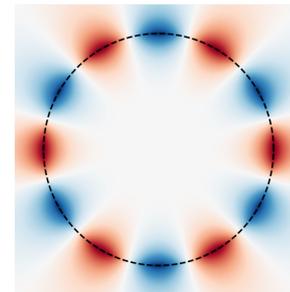
Finite Elements



Boundary Integral Methods



Scattering problems



Plasmonic Resonances

Current members



Ben Latham
(Graduate Student)



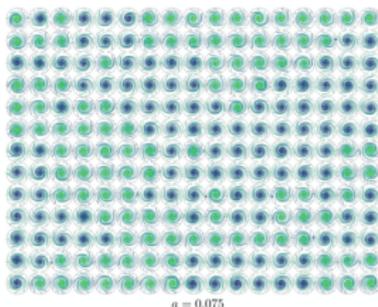
Zoïs Moitier
(Postdoc)



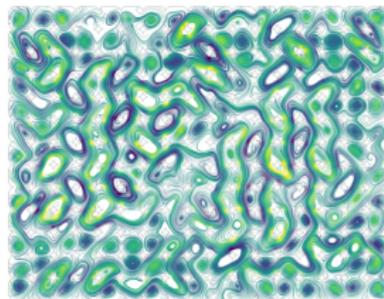
Myself, my partner Myles and our Dogter Lacey

Stuff I like:

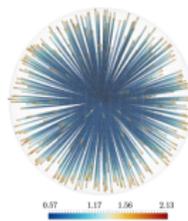
- Solving Partial Differential Equations numerically
- When active fluids self-assemble into recognizable, stable or unstable patterns
- Dogs, camping and teaching



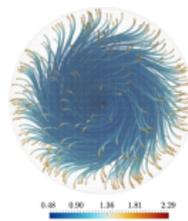
$\alpha = 0.075$



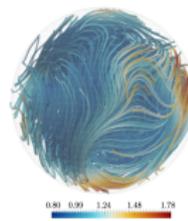
$\alpha = 0.3$



$\alpha = -1$



$\alpha = -20$



$\alpha = -200$

Now imagine these things swirling around...

Changho Kim

(Assistant Professor)

Stochastic Modeling Computer Simulation

Mesoscopic description of *dynamical systems*
where laws of microscopic interactions are known

- Instructor of MATH 231 Numerical Analysis I
- Admin of the Department Website

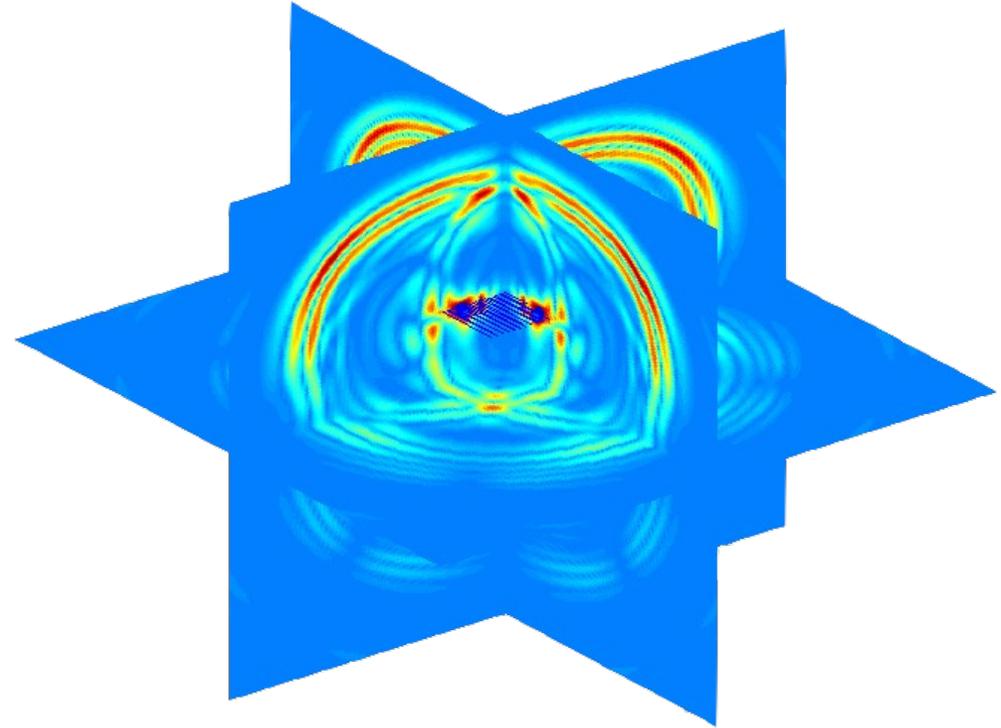
Chrysoula Tsogka



Who am I

- I am from **Greece** – **PhD in France**
- Favorite food: **cheese** (enjoying during the pandemic grilled haloumi cheese)
- **Love hiking**
- **Love California**
- **Miss the Mediterranean sea**

Imaging with Waves



By recording the response of a **medium** to known incident fields we can extract information about **its properties**

Inverse problems of imaging with waves find applications in several fields:

seismology/exploration geophysics (imaging Earth's interior)

medical ultrasound, optical imaging, elastography

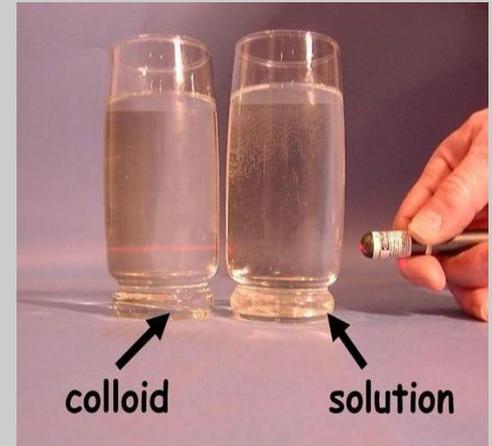
remote sensing, sonar, radar, satellite imaging

Non-destructive testing, structural health monitoring

Daisy Duarte



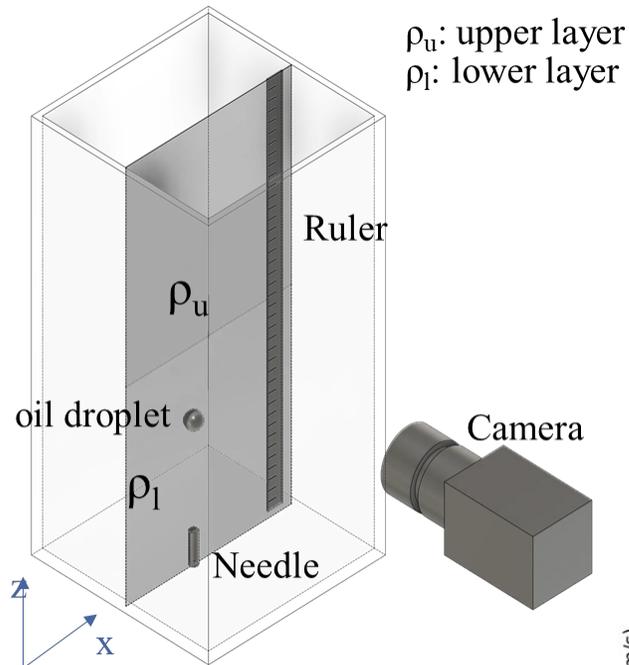
- I am from Modesto, California. I started my studies at Modesto Junior College in 2015 and then continued my studies at UC Merced since 2018.
- I am an applied mathematics major emphasis on computational data science. I earned my bachelor of science this May 2020.
- I have participated in cancer treatment methods research at the Lawrence Livermore National Lab and in timetabling algorithms research for the DESCARTES program at UC Merced.
- This Fall 2020 we will be researching how multiple scattering of light by colloids which are a collection of nanometer-to-micron diameter particles in fluid, self-assemble into composite structures. The key to study self-assembly of colloids is imaging which is used to determine the locations and shapes of scattering objects.



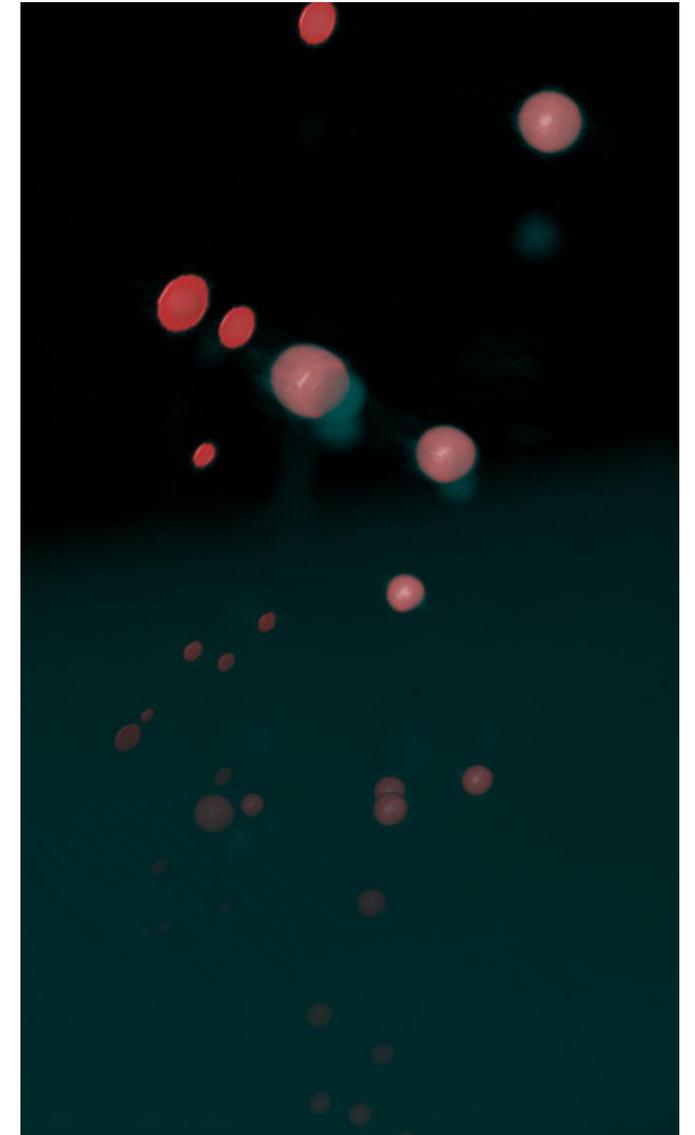
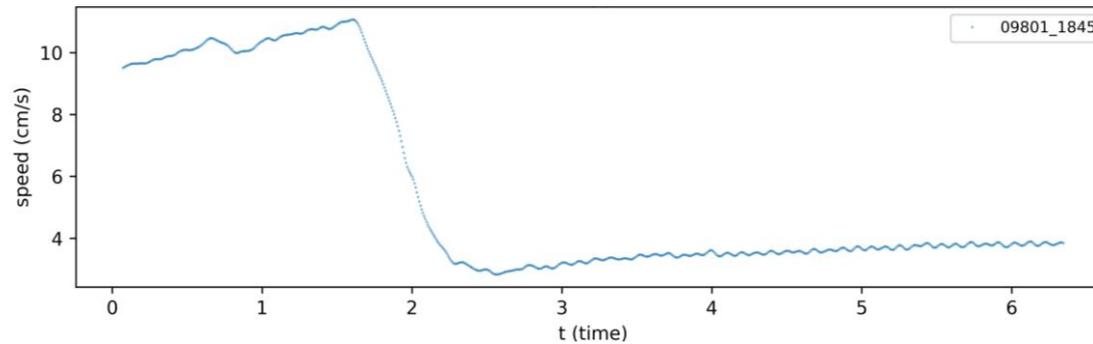
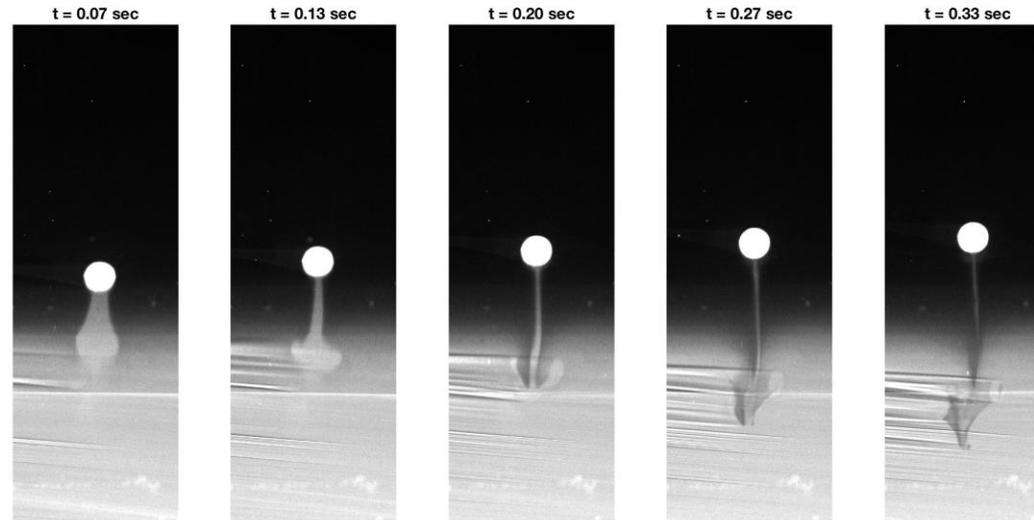
Behavior of Droplet(s) in Density Stratified Fluids

De Zhen Zhou

Advisors: Shilpa Khatri, Dustin Kleckner



ρ_u : upper layer
 ρ_l : lower layer

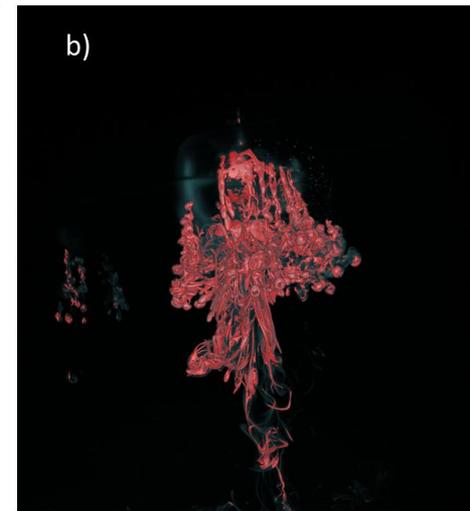
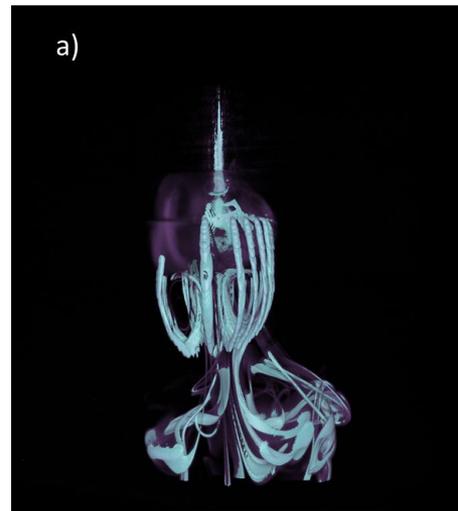
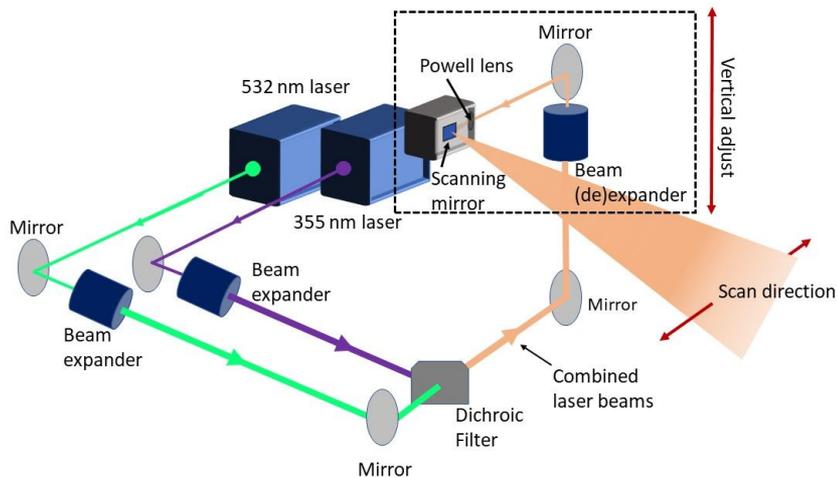




Investigating the transition from laminar to turbulent flow via a two-color scanning VLIF technique



Name: Diego Tapia Silva
Advisors: Dustin Kleckner, Shilpa Khatri
Department: Physics



• Academic Background

- First-Year Graduate Student
- UC Merced Undergrad – Computer Science
- Undergraduate Research – Boundary Integral Methods for Optical Cloaking
- Research Interests – Modeling, Computation, Optics

• Fun Pet Pictures

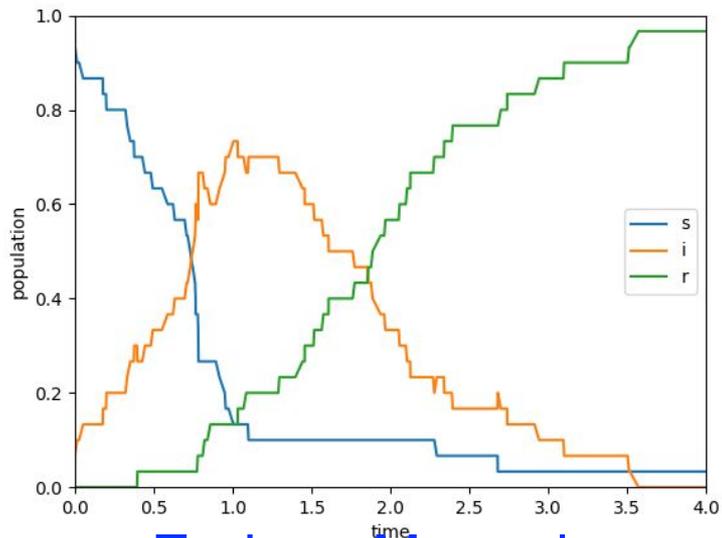


Elsie A
Cortes

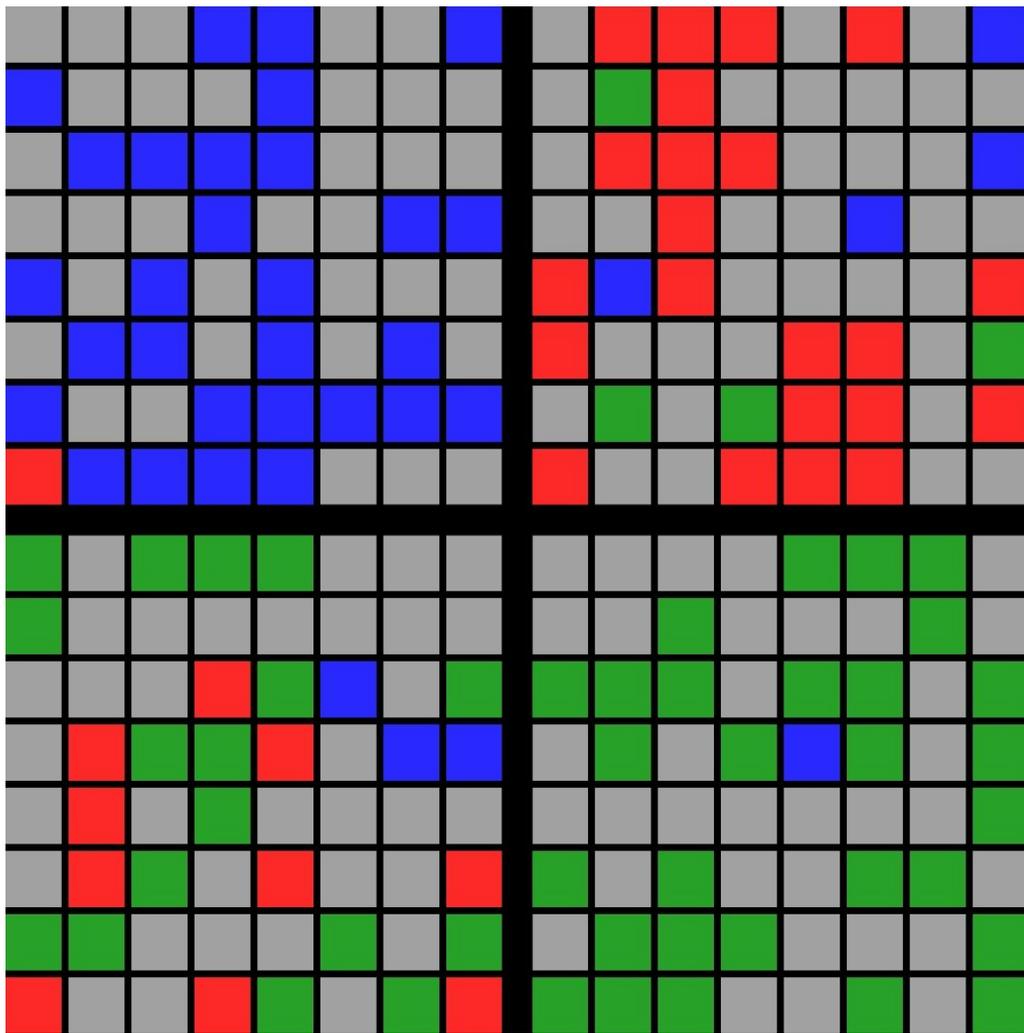


Stochastic Spatial Disease-Spreading Models

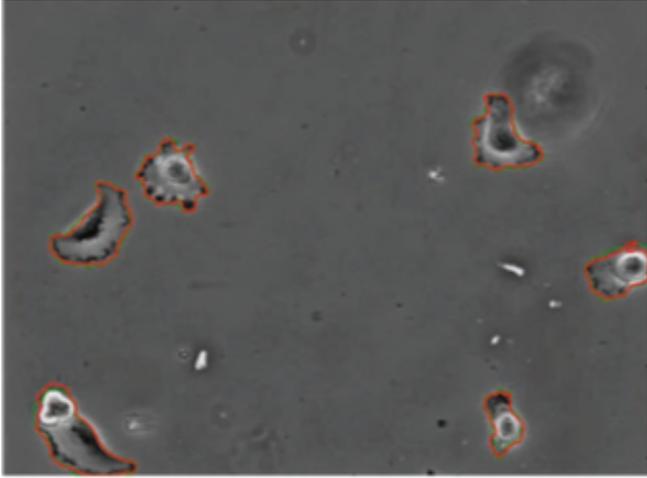
- Computational models
- Kinetic Monte Carlo and reaction-diffusion dynamics on a lattice
- Microscopic interactions and agent-tracing
- Variety of compartmental models can be implemented using this model
- Able to run in parallel on MERCED Cluster
- Data analyzed via Python scripts



Enrique Mercado



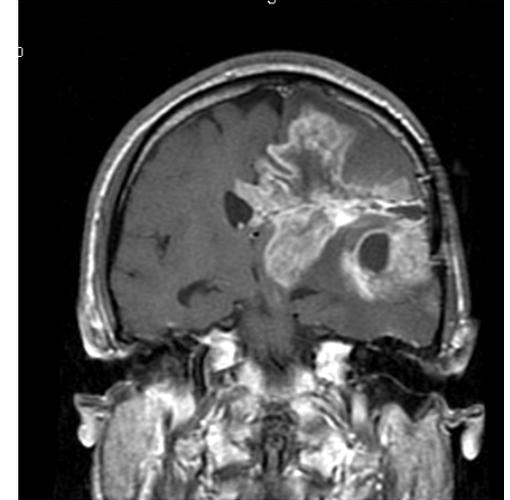
Mathematical Biology



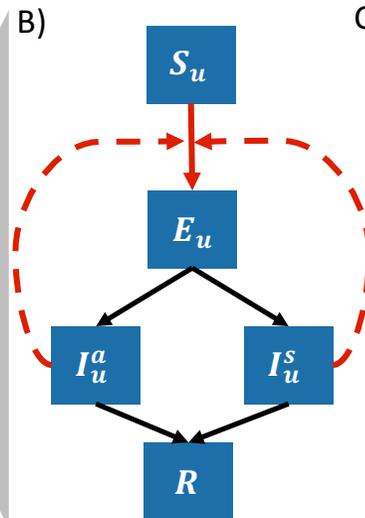
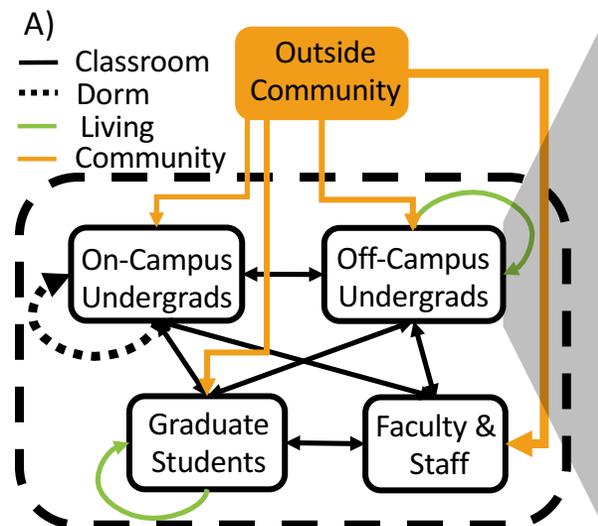
Cell Segmentation (machine learning)



Ecotoxicology (ODEs, PDEs)



Personalized Brain Cancer (inverse problems, PDEs)



C)

$$\frac{dS_u}{dt} = -\beta F S_u$$

$$\frac{dE_u}{dt} = \beta F S_u - \sigma_u E_u$$

$$\frac{dI_u^a}{dt} = \phi_u \sigma_u E_u - \gamma_u^a I_u^a$$

$$\frac{dI_u^s}{dt} = (1 - \phi_u) \sigma_u E_u - \gamma_u^s I_u^s$$

$$\frac{dR}{dt} = \gamma_u^a I_u^a + \gamma_u^s I_u^s$$

Force of Infection, F =

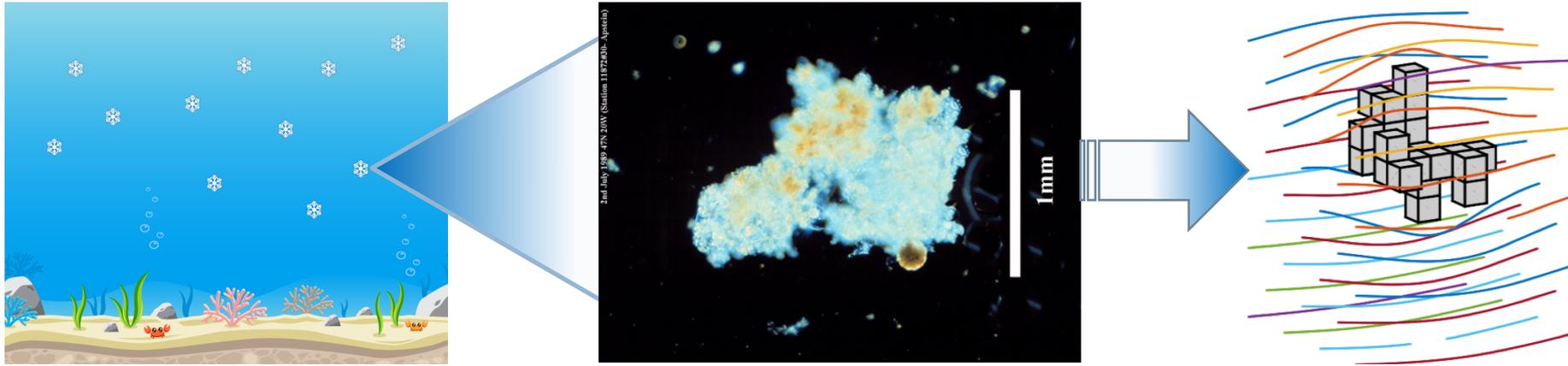
$$\underbrace{C_{u,d} \frac{aSI_d^a + I_d^s}{nD}}_{\text{Contact with on-campus undergrads}} + \underbrace{C_{u,u} \frac{aSI_u^a + I_u^s}{nU}}_{\text{Contact with off-campus undergrads}}$$

$$+ \underbrace{C_{u,g} \frac{aSI_g^a + I_g^s}{nG}}_{\text{Contact with graduate students}} + \underbrace{C_{u,f} \frac{aSI_f^a + I_f^s}{nF}}_{\text{Contact with faculty}}$$

$$+ \underbrace{C_{u,o} (aSp_a p_o + (1 - p_a) p_o)}_{\text{Contact with community}}$$

Modeling Spread of COVID-19 (ODEs, parameter estimation, control theory)

Assistant Prof.
Erica Rutter



SETTLING OF RANDOMLY FORMED AGGREGATES

Eunji Yoo (유은지)

Advisors: François Blanchette & Shilpa Khatri

08/18/2020 Applied Math retreat

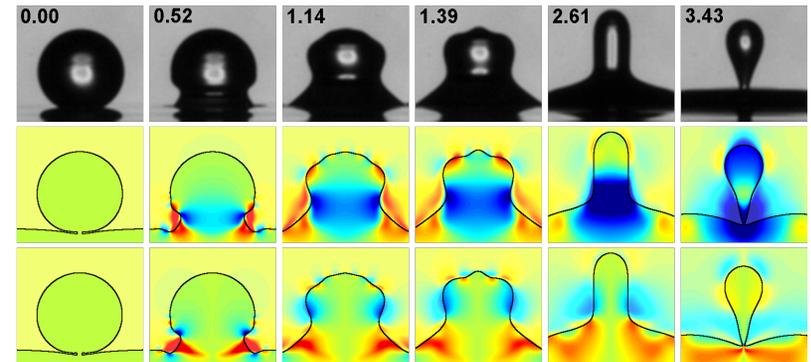
François Blanchette

Applied Mathematics

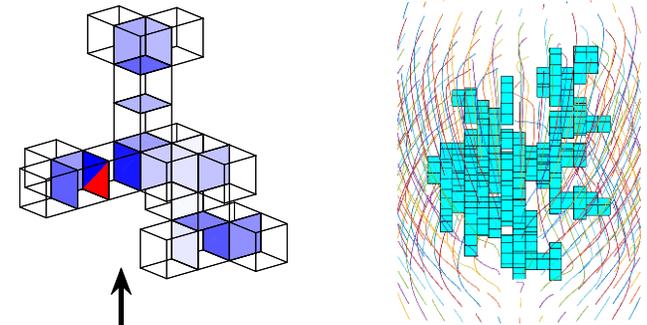


Models and simulates **FLUID DYNAMICS**

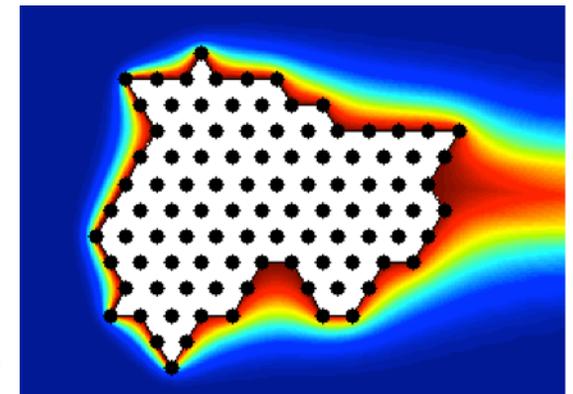
- Systems dominated by surface tension
 - Drops
 - Bubbles
 - Surfactants (soap-like molecules)
- Suspensions of many solid particles
 - Sedimentation
 - Marine aggregates
 - Erosion
- Complex natural systems with flow
 - Marine lakes
 - Huddling penguins
 - Particle clouds



Exp. and simulations of coalescing drop



Efficient simulations of flow past aggregates



Temperature distribution around model penguin huddle

Dynamics of Pulsing Soft Corals with IBFE

Gabrielle Hobson

Scripps Institution for Oceanography at UCSD

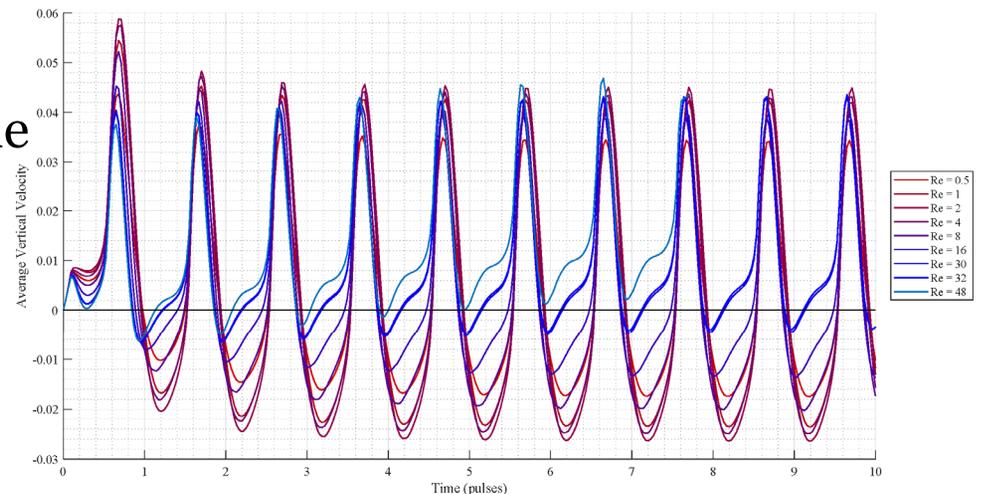
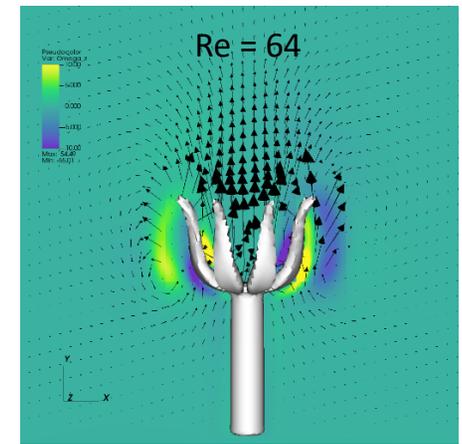
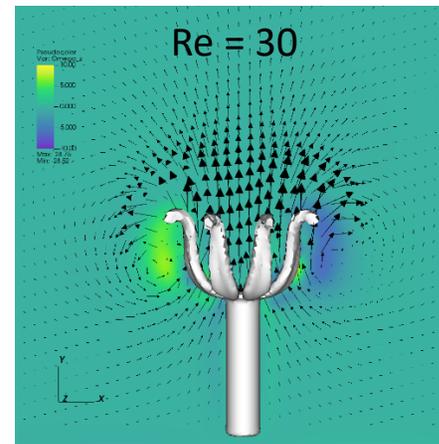
Soft corals of the family Xeniidae actively pulse, generating flow in their surrounding fluid.

This behavior is thought to increase fluid mixing and enhance photosynthesis of symbiotic algae.

We use three dimensional IBAMR simulations to model the flow generated by the polyp.

We vary the Reynolds number and the resting time between pulses.

Using VisIt, we develop visual and quantitative methods to analyze the how varying these parameters affects the fluid flow and mixing patterns.

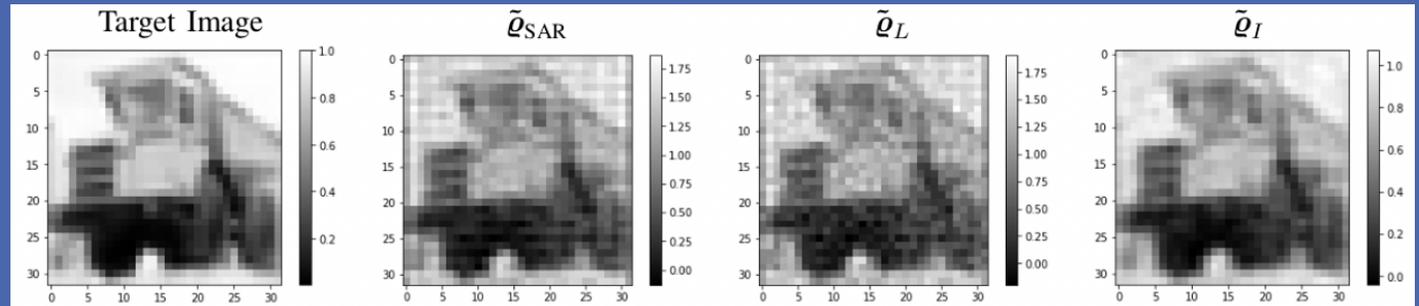


Jacqueline (Jacky) Alvarez



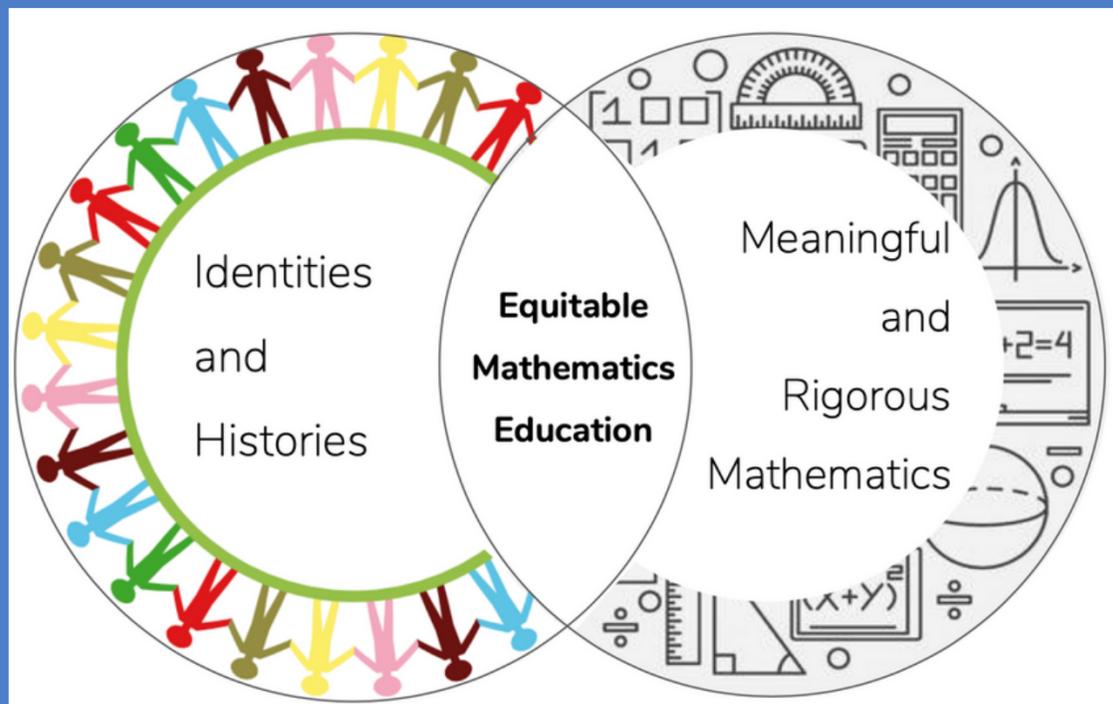
- ❖ 3rd year - Ph.D. Student
- ❖ B.S. in Mathematics, Cal Poly Pomona
- ❖ Advisor: Dr. Roummel Marcia

Research Interests: Machine learning and deep learning techniques for applications in image processing such as denoising, image recovery, and anomaly detection.



This Summer:

- ❖ Graduate Student Lead - Data Science Challenge (collaboration with Lawrence Livermore National Lab)
- ❖ Internship - Autonomy Technology Research Center (ATRC) Summer Program (collaboration with Air Force Research Lab)



JOCELYN ORNELAS MUÑOZ

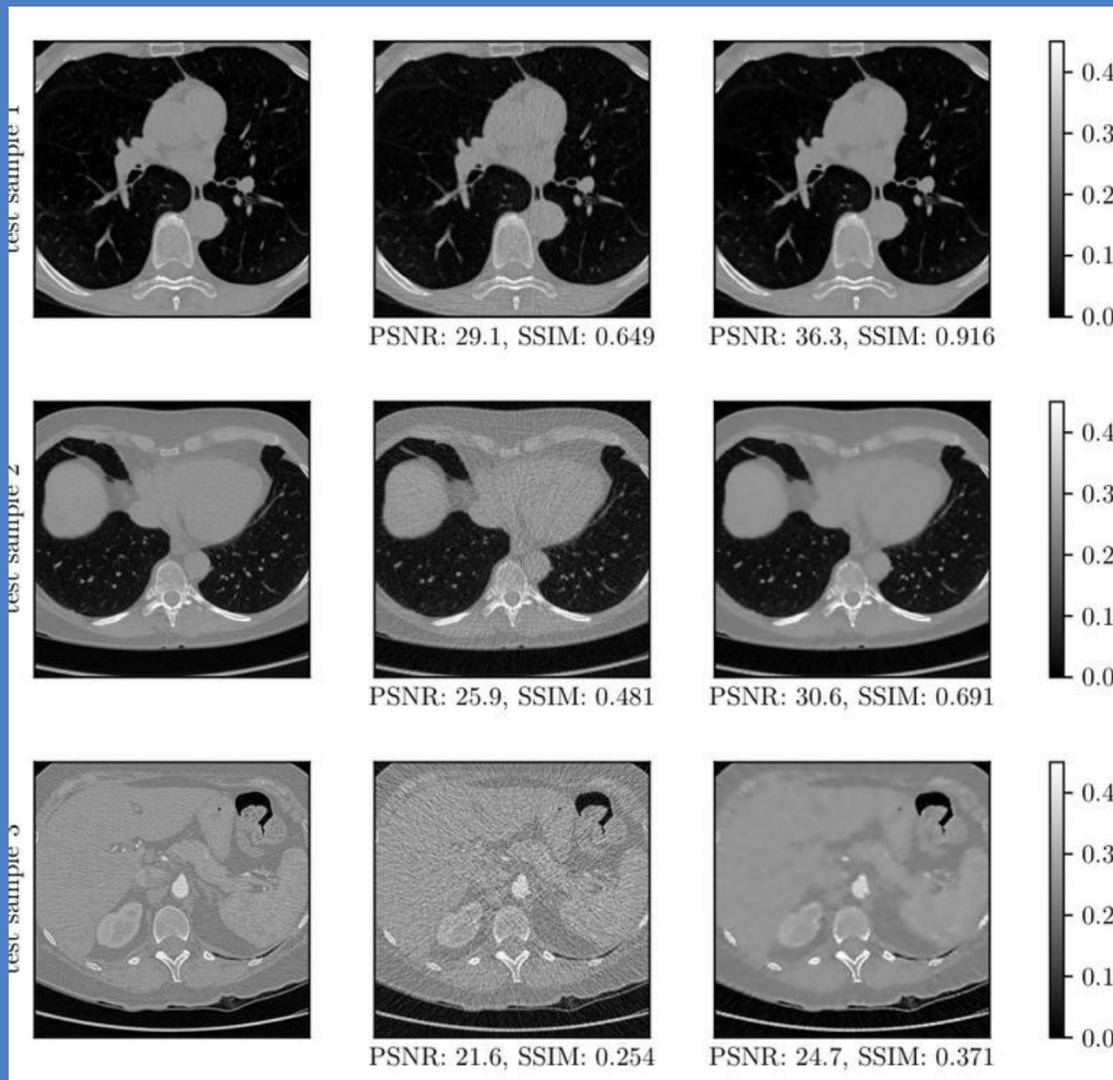
First-year graduate student
B.S in Applied Mathematics from UC San Diego

MATHEMATICS EDUCATION

Studied the epistemology of mathematics and its application in the teaching of mathematics to inform the development and implementation of a professional development program to assist mathematics teachers in the development and instruction of a well-articulated mathematics curriculum

MEDICAL IMAGE PROCESSING MACHINE LEARNING

Design of efficient and sophisticated algorithms that will aid in the accurate reconstruction of 3D medical images. Techniques can allow doctors to make more accurate medical diagnoses.

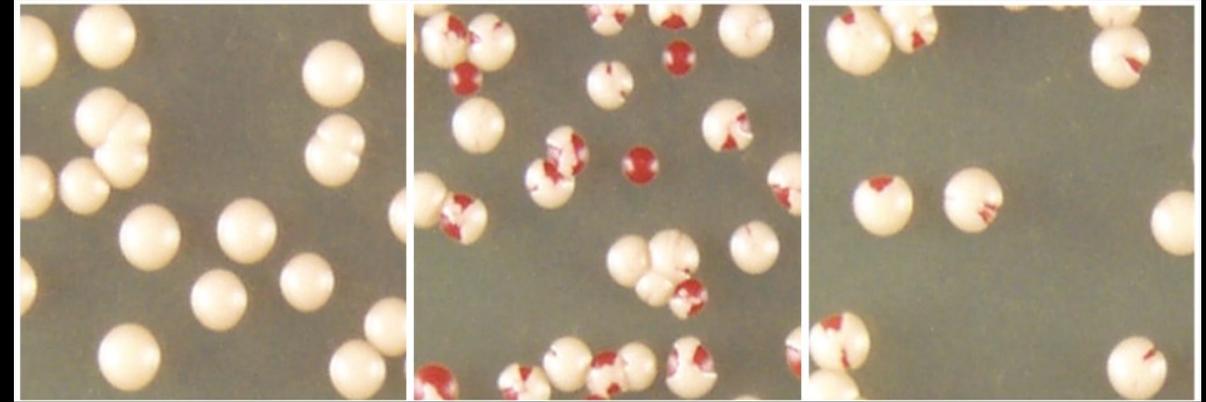
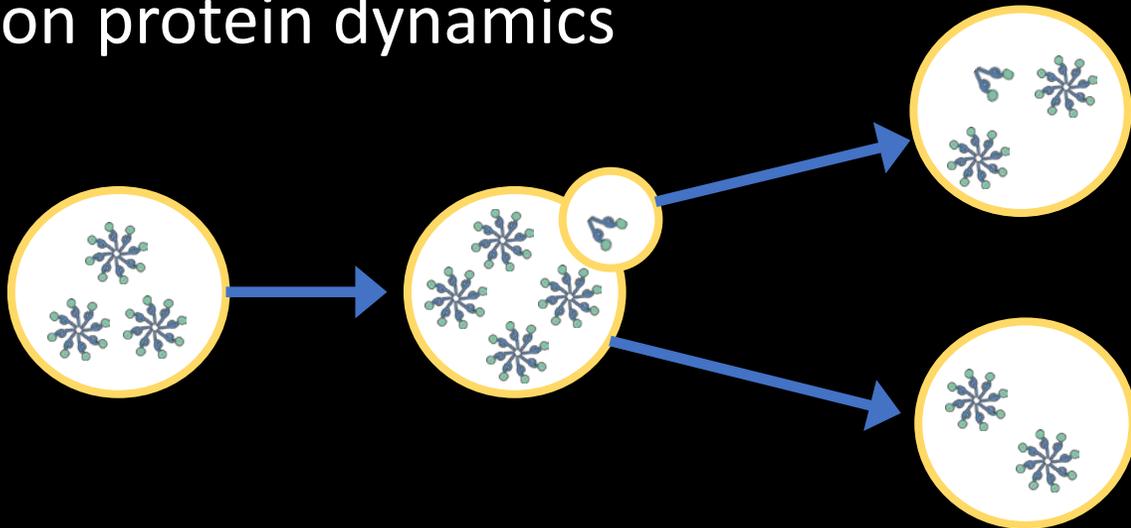


Jordan Collignon

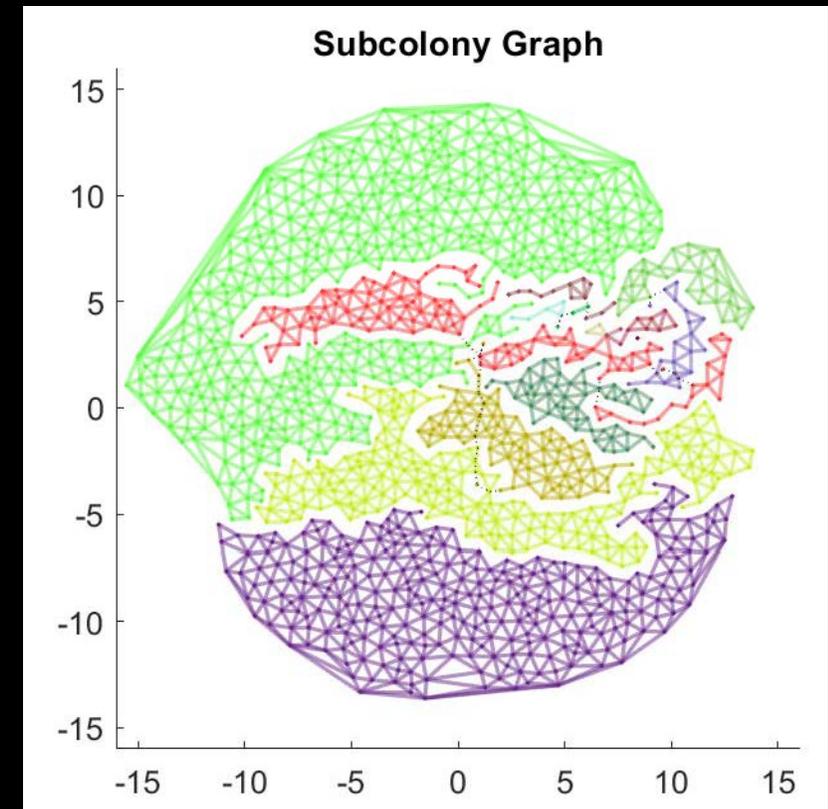
Advisor: Dr. Suzanne Sindi

Research Areas:

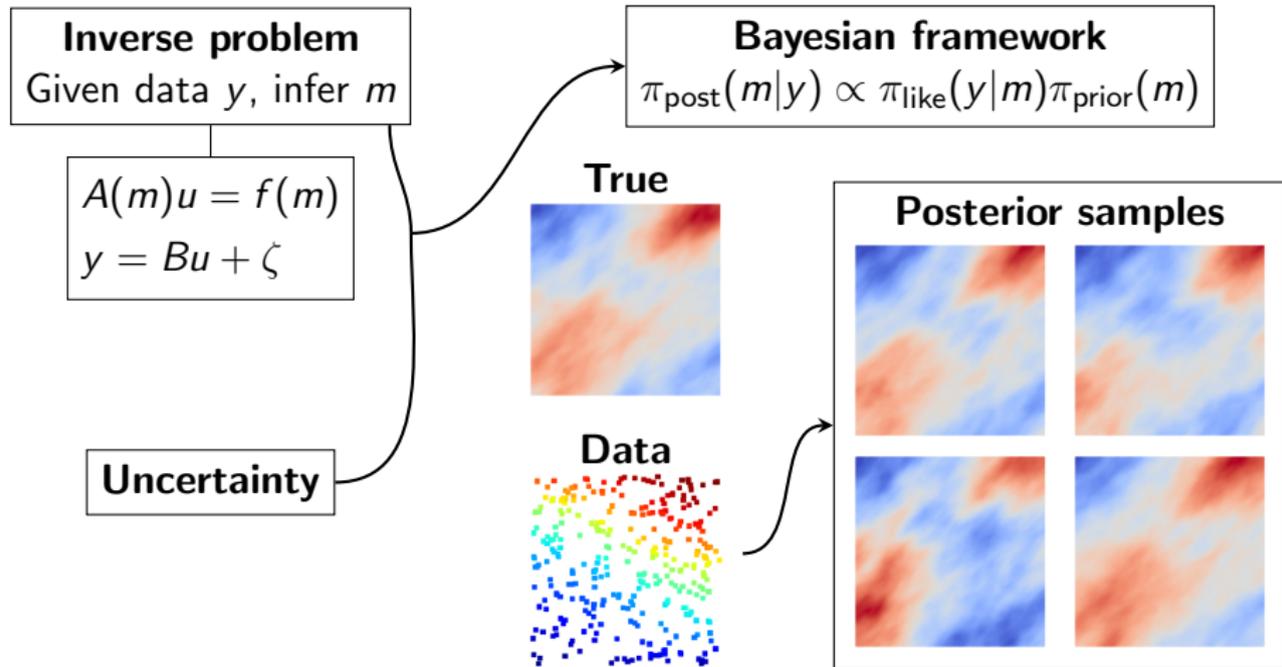
- Multiscale modeling of biological systems
- Phenotype structure in yeast colonies
- Prion protein dynamics



[Klaips et al. 2014]



Scalable Bayesian Framework for Large-Scale Inversion

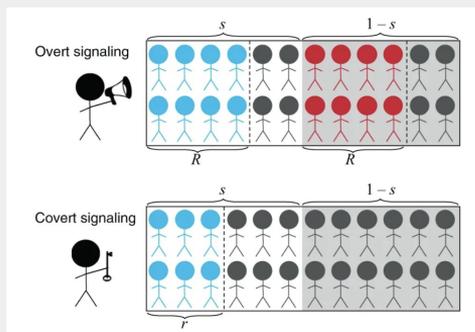
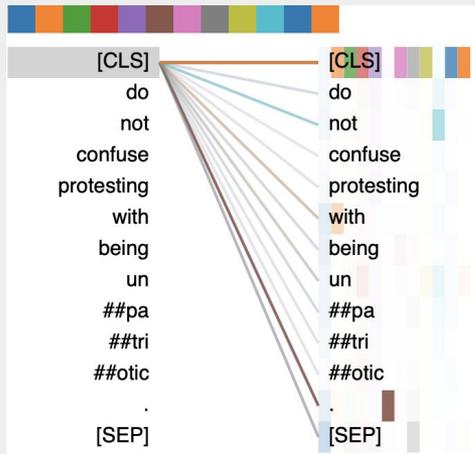


For complex large-scale Bayesian inverse problems

- ▶ Develop scalable open-source software
- ▶ Employ model reduction + Multifidelity

Kyle Wright

- 6'1", ~300 lbs.
- Lived:
 - TN: Memphis (born 1987), Chattanooga, Clarksville, Tri-Cities
 - Minnesota, Mississippi, Kentucky, California
- ETSU
 - Returned to college after 8 yrs.
- Presentations:
 - ETSU (Noyce Internship)
 - NIMBioS
 - JMM
- Math:
 - Optimization, Modelling
- Hobbies:
 - Pool, Poker, Philosophy, and Puzzles



MAIA POWELL

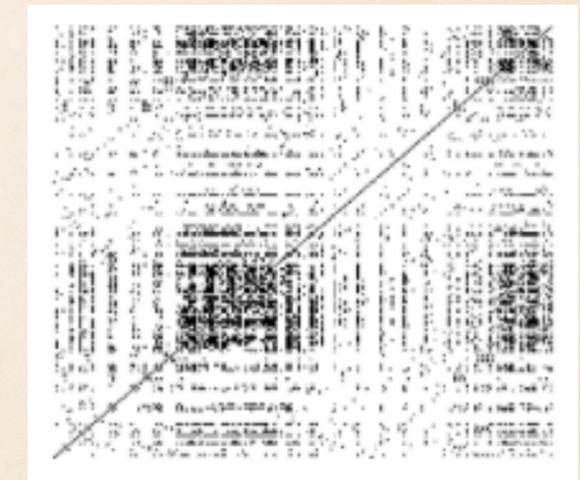
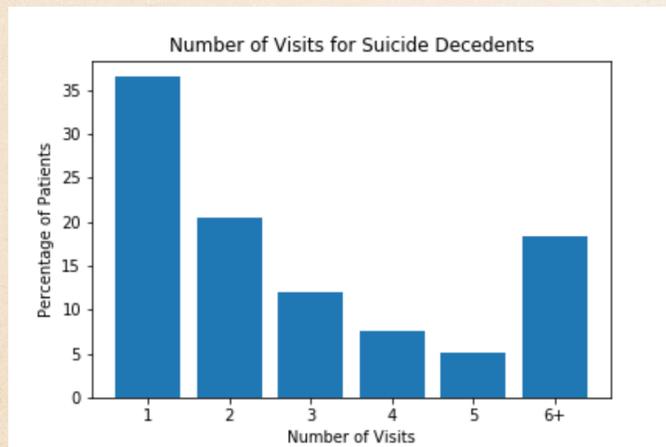
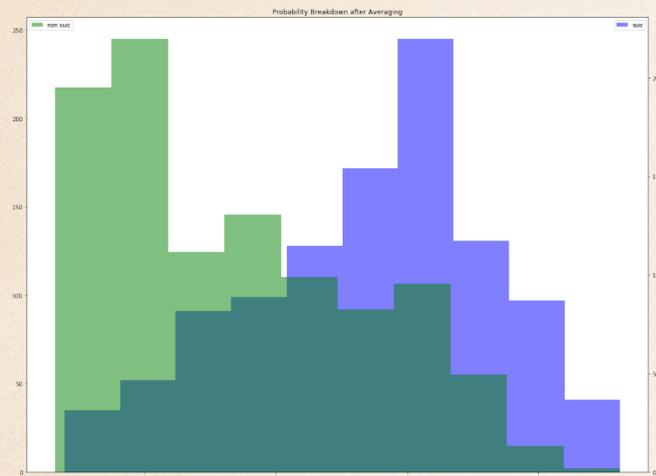
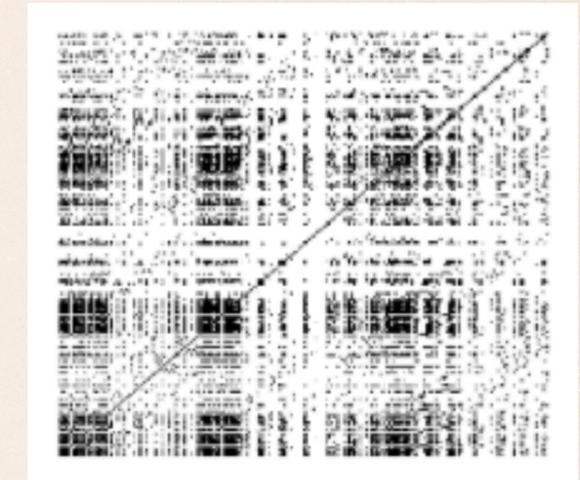
- About Me:
 - Ph.D Student, 3rd Year
 - Advisor: Dr. Arnold Kim
- Research Interests:
 - Data Science, Machine Learning, Natural Language Processing
 - Cultural/viral hashtags
 - Covert hate speech transmission

APPLIED MATH RETREAT - 2020

MAJERLE REEVES

PH.D STUDENT, 3RD YEAR

ADVISOR: DR. HARISH BHAT



RESEARCH INTERESTS:
DATA SCIENCE, MACHINE LEARNING
SUICIDE PREDICTION FROM EHRs
CROWD CLASSIFICATION FROM SOUND WAVES

Mixing and Concentration Dynamics of Pulsing Soft Corals

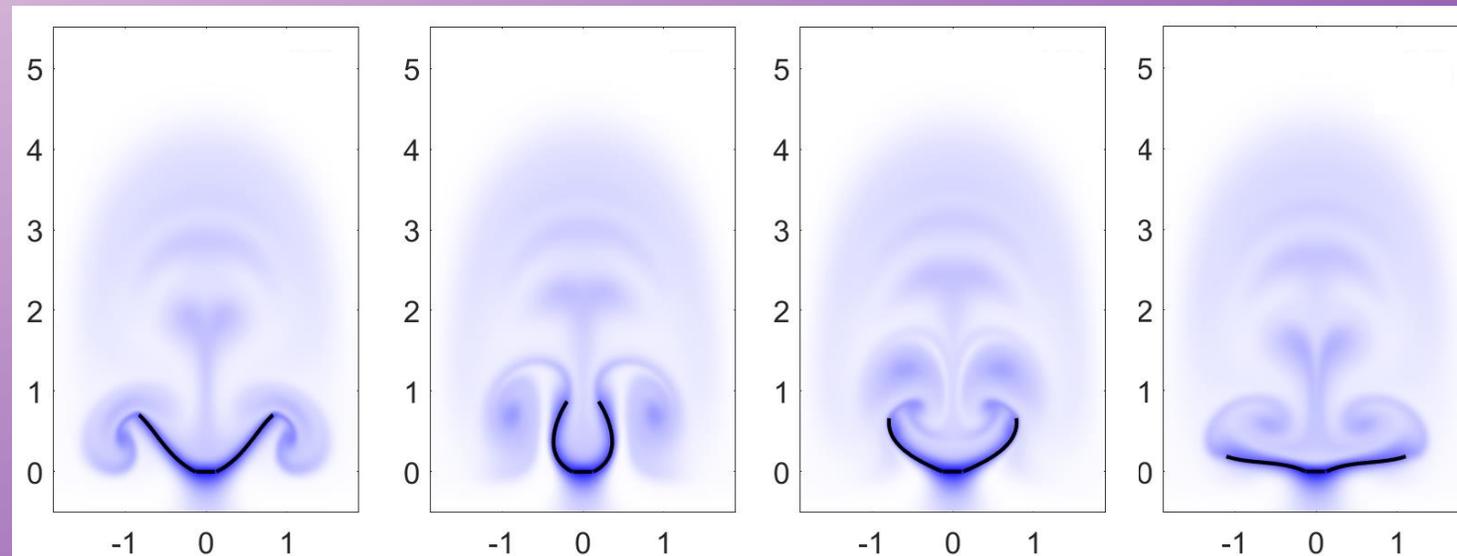
Matea Santiago, Advisor: Shilpa Khatri

- A subset of sessile octocorals actively pulse their tentacles which is very energetically expensive
- An experimental study suggested that the pulsing behavior facilitates photosynthesis of their symbiotic algae and this is the source of their energy
- I use numerical simulations to investigate this



Research Goals

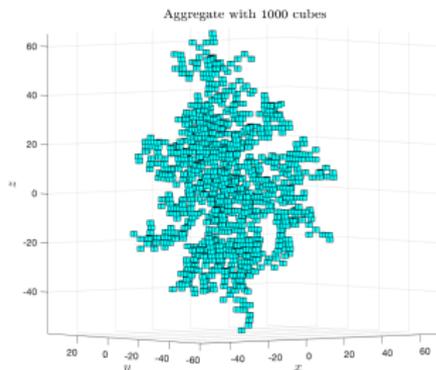
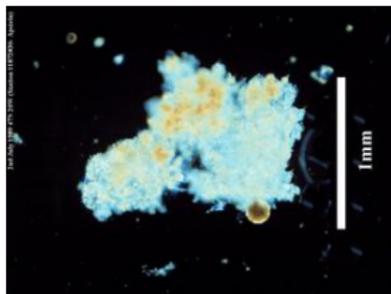
1. Model the pulsing corals as a fluid-structure interaction
2. Model photosynthesis coupled to fluid-structure interaction
3. Numerically quantify the mixing and concentration dynamics of this system



Matteo Polimeno, 2nd year PhD



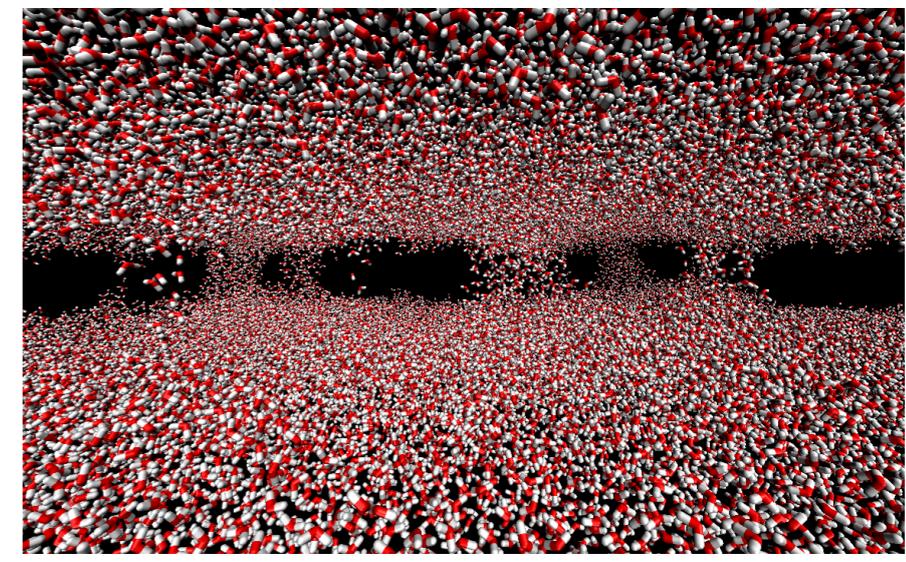
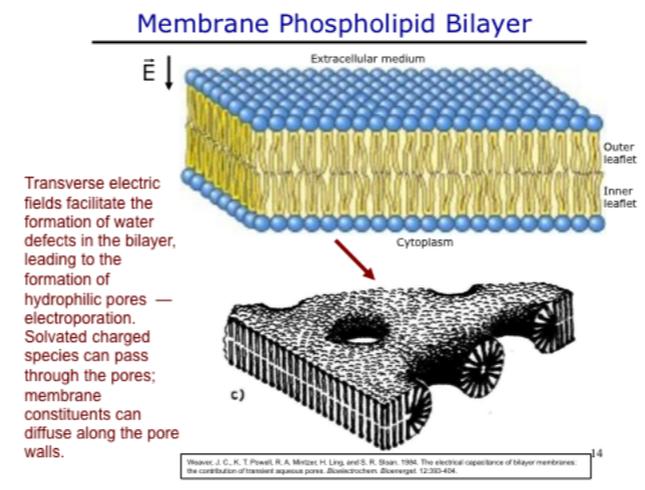
Advisors: Dr. Changho Kim, Dr. Francois Blanchette



- Marine aggregates
- Brownian Dynamics
- Fractal Dimension
- PBC

Tokman's Group

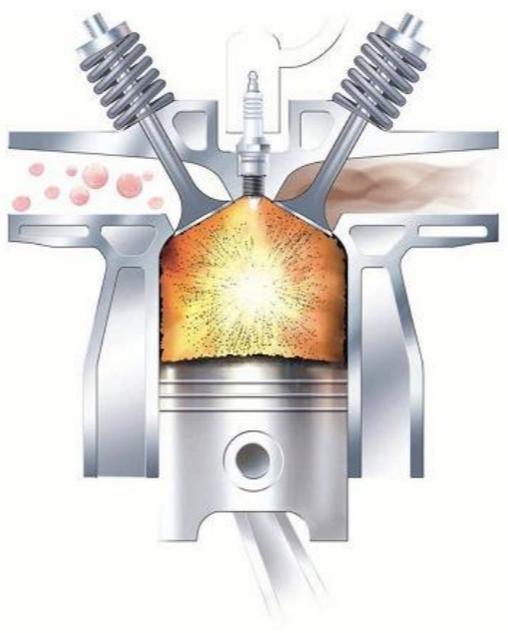
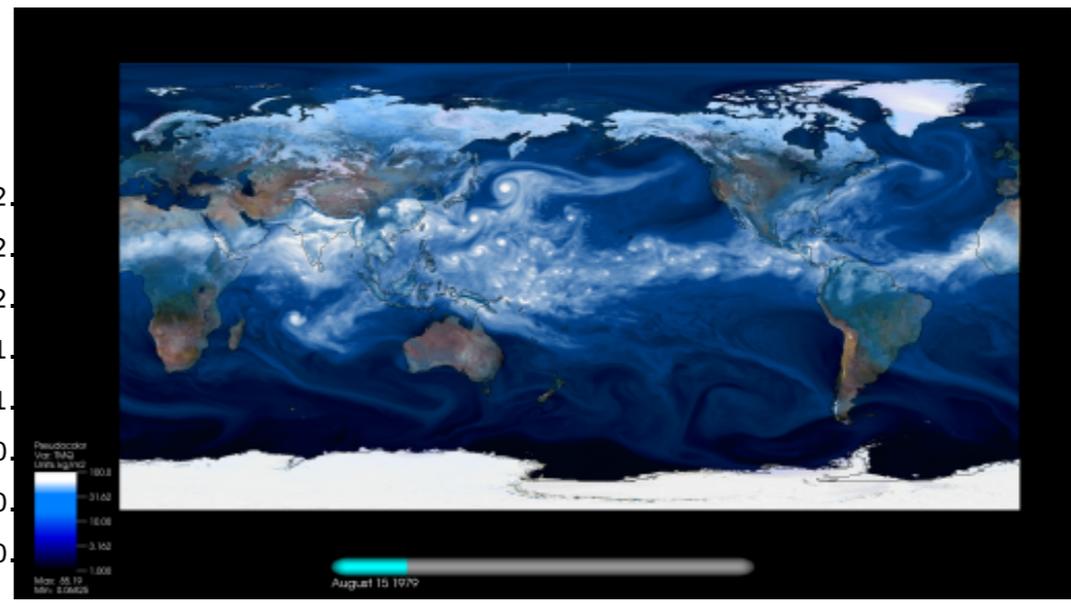
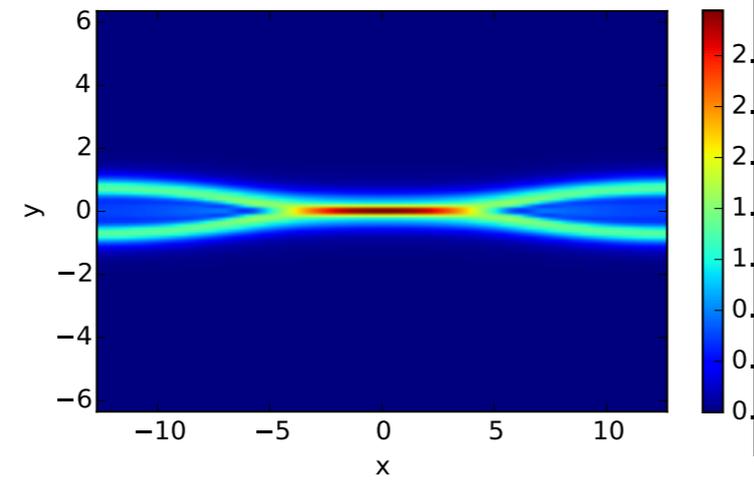
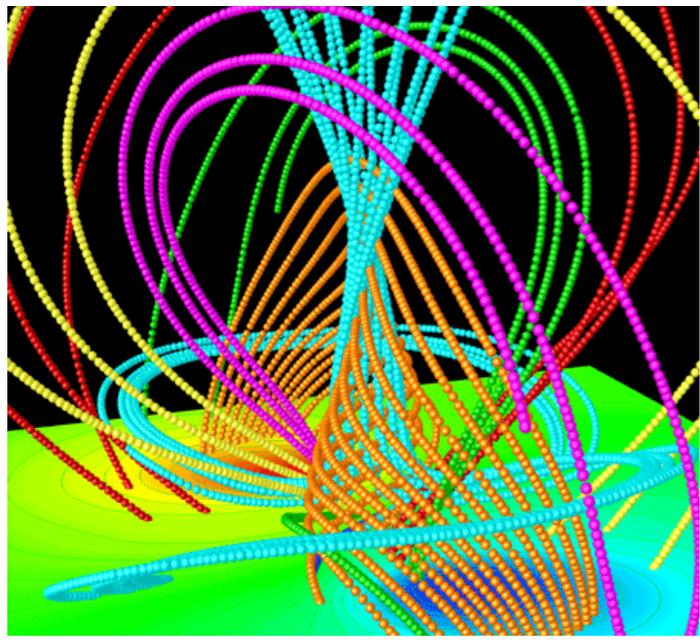
- Mathematical modeling
- Numerical Analysis
- Scientific computing



$$Y_1 = y_0 + a_{11}h\varphi_1\left(\frac{1}{3}hA_0\right)f(y_0),$$

$$Y_2 = y_0 + a_{21}h\varphi_1\left(\frac{2}{3}hA_0\right)f(y_0) + a_{22}h\varphi_2\left(\frac{2}{3}hA_0\right)\Delta r(y_0),$$

$$y_1 = y_0 + b_1h\varphi_1(hA_0)f(y_0) + b_2h\varphi_2(hA_0)\Delta r(y_0) + b_3h\psi_3(hA_0)\Delta^2 r(y_0),$$



Natalie Meacham

Research Background:

- Replicating and analyzing ODE models of reproductive hormones under specific conditions (undergraduate honors thesis, Bryn Mawr College)
- Generating, encoding, recovering, and testing for extended memory in Markov Chains (summer REU, University of Connecticut)
- Building a model to evaluate coral reef health given farm fishing (short-term project, Bryn Mawr College)
- Constructing an Excel-based argument to justify the financial and environmental plausibility of bringing freight farming to campus (semester project, Bryn Mawr College)

Hessian Approximations for Large-Scale Inverse Problems

Prototype inverse problem:

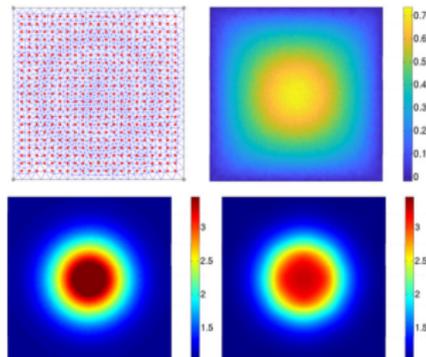
$$\min_{m \in \mathcal{H}} \mathcal{J}(m) = \frac{1}{2} \|u - u_d\|_{L^2(\Omega)}^2 + \frac{\gamma}{2} \|m\|_{\mathcal{R}}^2$$

where u satisfies the underlying (here Poisson) PDE:

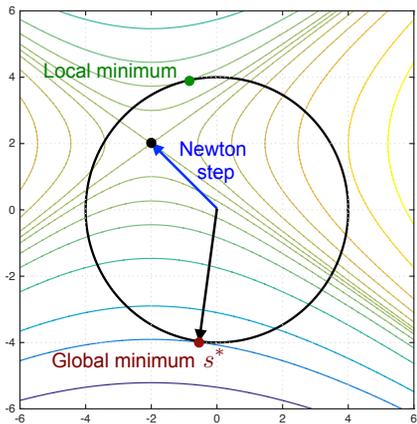
$$\begin{aligned} -\nabla \cdot (e^m \nabla u) &= f \quad \text{in } \Omega \\ \alpha u + \beta \nabla u \cdot n &= 0 \quad \text{on } \partial\Omega \end{aligned}$$

Goal:

- Develop efficient methods for large-scale inverse problems governed by PDEs
- Hessian approximations via quasi-Newton methods and inexact second-order adjoints



Computational Optimization Group (PI: Prof. Roummel F. Marcia)



Optimization Theory

$$A x = b$$

$n \times n \quad n \times 1 \quad n \times 1$

Numerical Linear Algebra

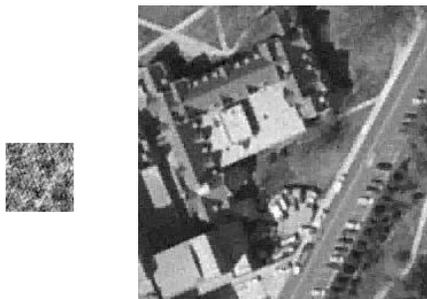
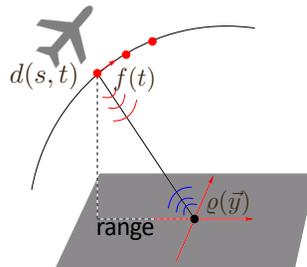
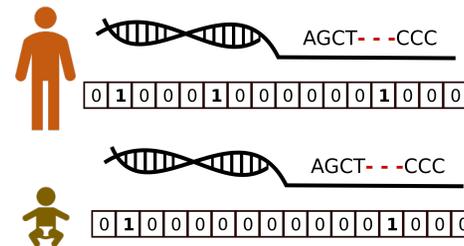


Image Processing

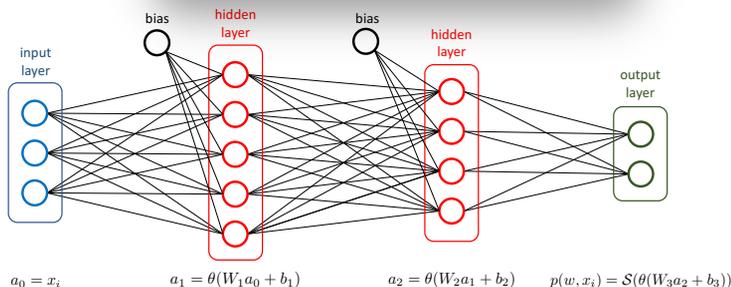


Synthetic Aperture Radar



Structural Genomics

$$\min_{x \in \mathbb{R}^n} f(x)$$



Machine / Deep Learning



Ashley De Luna

Dr. Omar DeGuchy

Melissa Anisko



Jacky Alvarez

Alex Ho

Andrew Lazar

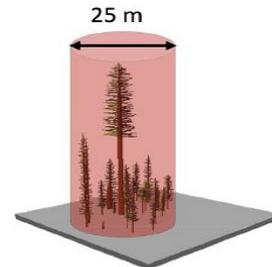
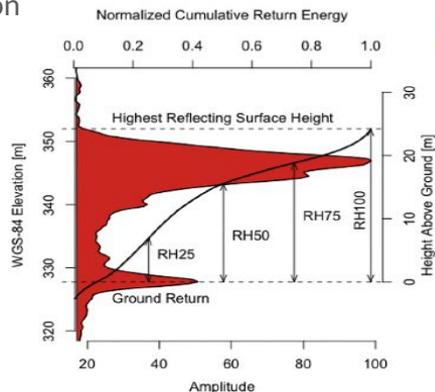
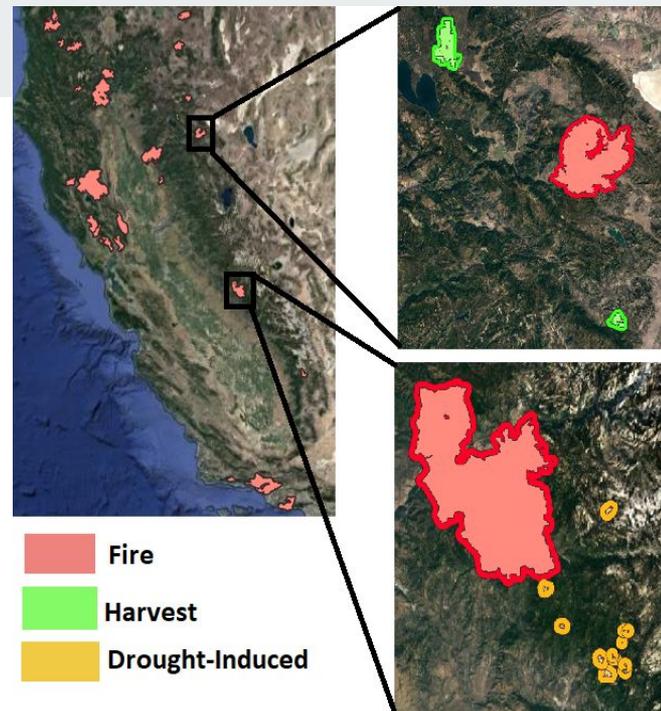
Graduate students



Sarah Downs

Advisors: Shilpa Khatri & Roummel Marcia

- Graduated UC Merced with B.S. in Applied Mathematics in May 2020
- Research Interests:
 - Machine Learning & Neural Networks
 - Applications in Climate Change
- This Summer
 - Worked in Randerson Earth Science Lab at UC Irvine
 - Can lidar data be used to classify forest disturbance?
 - Worked on creating & running classification algorithms



SCOTT WEST

- First year PhD student
- Hometown: Santa Clarita, CA
- Education: B.S. Mathematics, Cal Poly Pomona (2020)
- Research Interests: Numerical Analysis and PDE's
 - Previous work in the Finite Element Method
 - NSF REU participant in Mathematical Virology in 2019



Sean Horan

My background:

- PhD Mathematics, UC Irvine
- BS Mathematics, BA Philosophy, UM St. Louis
- Former professional fencing coach

My Research Interests:

- Spectral solutions to the Radiative Transport Equation
- Applications to biophotonics
 - Spatial Frequency Domain Imaging

$$\nabla \cdot \Omega \Psi(r, \Omega) = -\mu_t \Psi(r, \Omega) + \mu_s \int_{4\pi} \Psi(r, \Omega') p(\Omega' \cdot \Omega) d\Omega' + Q(r, \Omega)$$

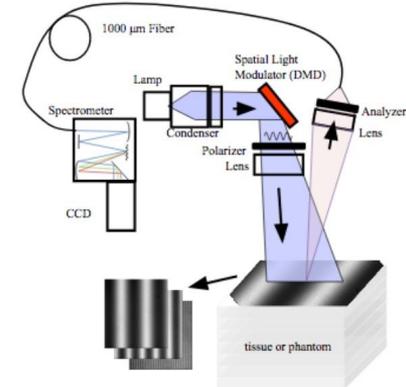
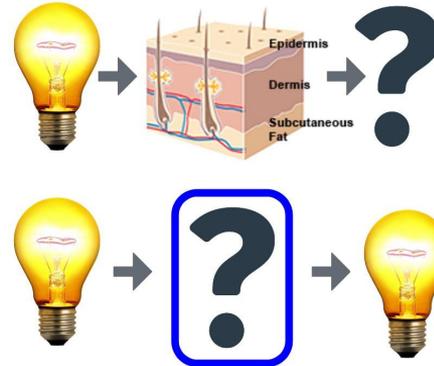


$$\begin{bmatrix} A_z & 0 \\ 0 & -A_z \end{bmatrix} \frac{d}{dz} \begin{bmatrix} \tilde{\Psi}^+ \\ \tilde{\Psi}^- \end{bmatrix} + \begin{bmatrix} -\mu_s P^+ + \mu_t I - k_x A_x - k_y A_y & -\mu_s P^- \\ -\mu_s P^+ & -\mu_s P^- + \mu_t I - k_x A_x - k_y A_y \end{bmatrix} \begin{bmatrix} \tilde{\Psi}^+ \\ \tilde{\Psi}^- \end{bmatrix} = \begin{bmatrix} \tilde{Q}^+ \\ \tilde{Q}^- \end{bmatrix}$$

A

B

$$A \tilde{\Psi}'(z) + B \tilde{\Psi}(z) = \tilde{Q}(z)$$





Shayna Bennett

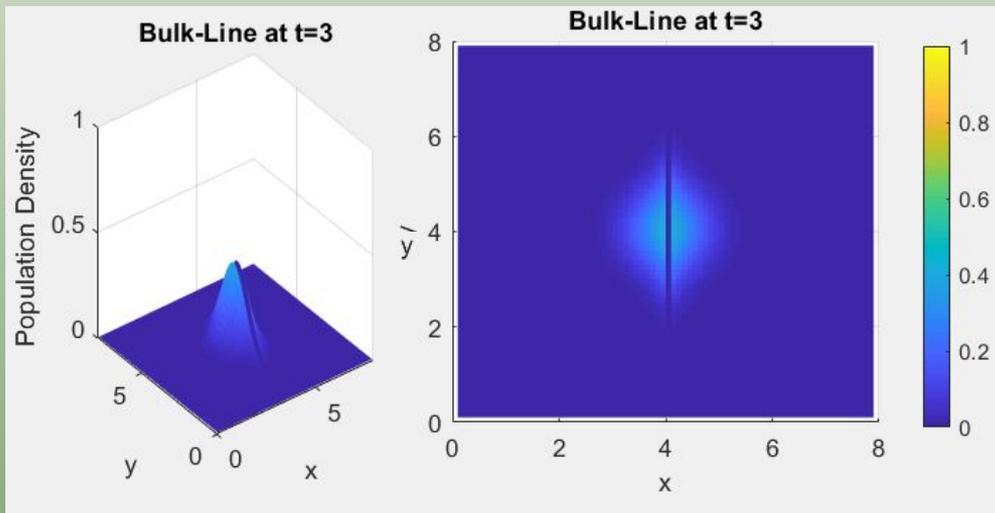
Graduate Student, 4th year
Applied Mathematics, UC Merced

Advisor: Dr. Shilpa Khatri

Research Focus: modeling spatial movement across heterogeneous landscapes using finite difference methods for PDEs, with applications in ecology.

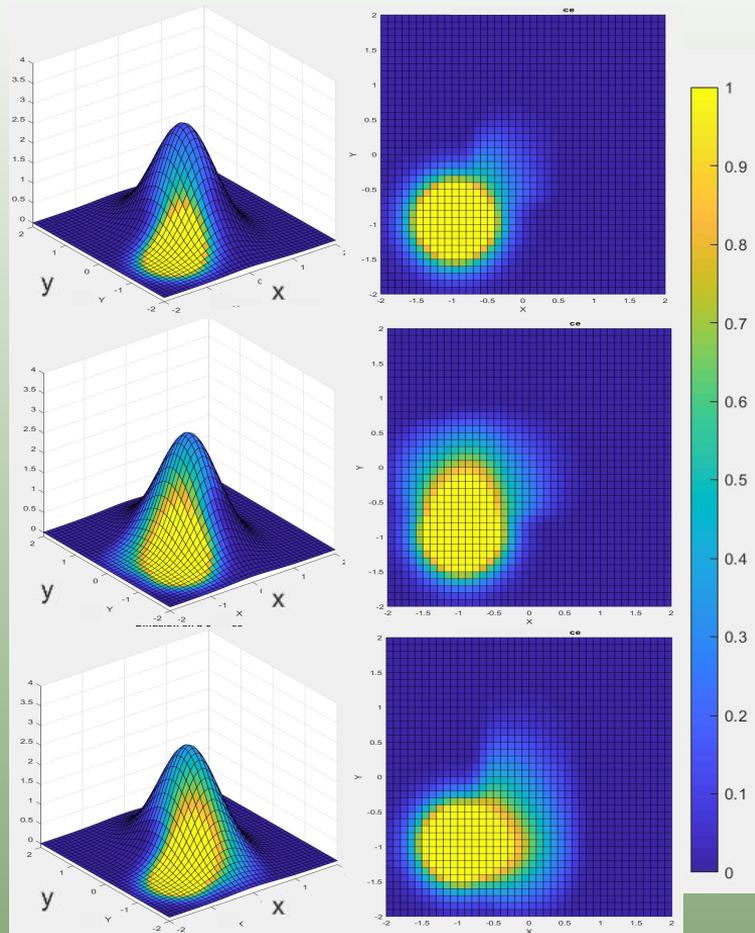
Diffusion in Complex Landscapes

Fast diffusion on a line or network coupled with diffusion in a field or on a surface



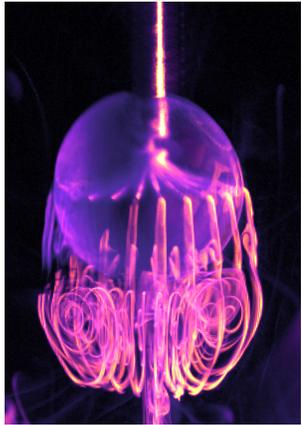
Diffusion On Surfaces

Diffusion coefficient depends on the topography of the surface

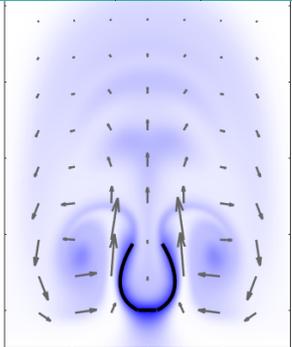
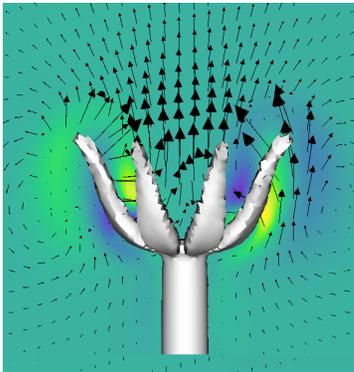


Shilpa Khatri

Numerical Analysis and Fluid Dynamics
Applications in Biology and Oceanography



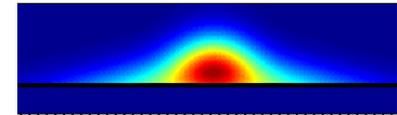
volumetric imaging
(MUVI Lab)



simulations of
pulsating corals

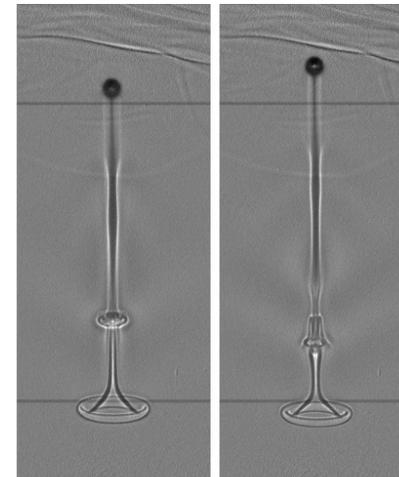
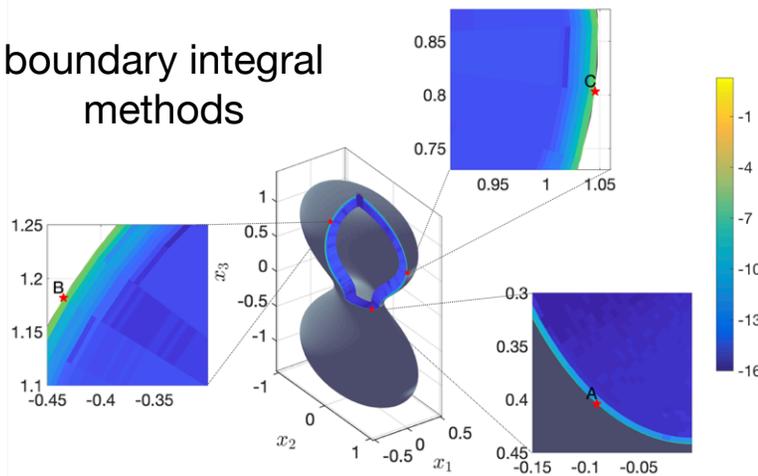


Khatri Lab Members
Shayna Bennett
Adam Binswanger
Sarah Downs
Gabrielle Hobson
Matea Santiago
Diego Tapia Silva
Eunji Yoo
De Zhen Zhou

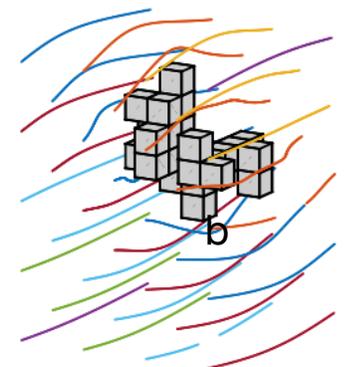


biological invasions
diffusion-reaction
methods

boundary integral
methods



settling and rising in stratified fluids



Data Driven Modeling in Mathematical Biology



*Group Outing Summer 2019
The Before Time*

What?

Prion Diseases
Cell Fate Determination
Genomic Variation
Blood Coagulation
Linguistic Change
#TwitterStuff

How?

Structured Population Models
Bayesian Inference
Machine Learning
Stochastic Processes
ODEs/PDES
Optimization
Impulsive Equations

Funding



*Math Biology SMART Team
Wednesday 9am*

Ask me about:

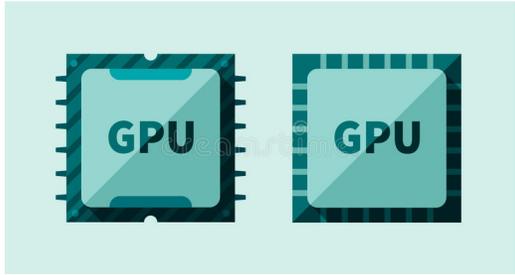
Undergraduate Major
Research Computing
NRT-Intelligent Adaptive Systems

Suzanne S. Sindi
Associate Professor
@SuzanneSindi

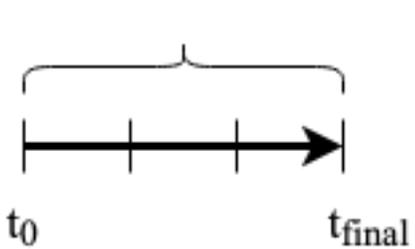


UCMERCED

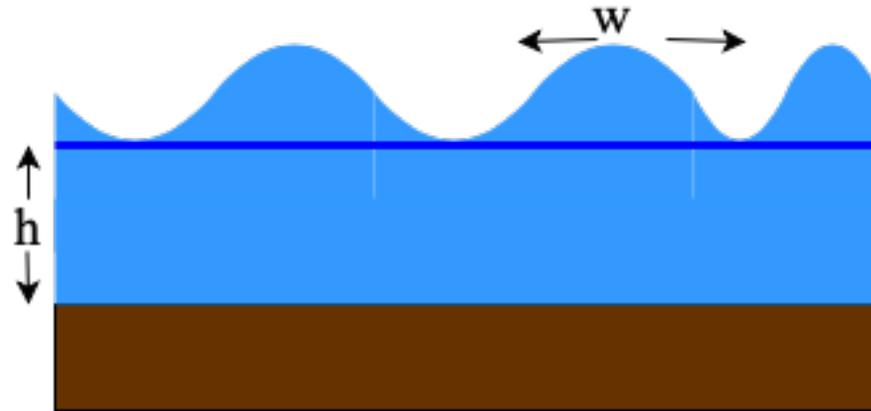
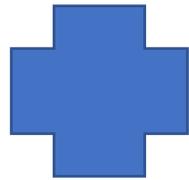
Efficient and Accurate Time Integrators



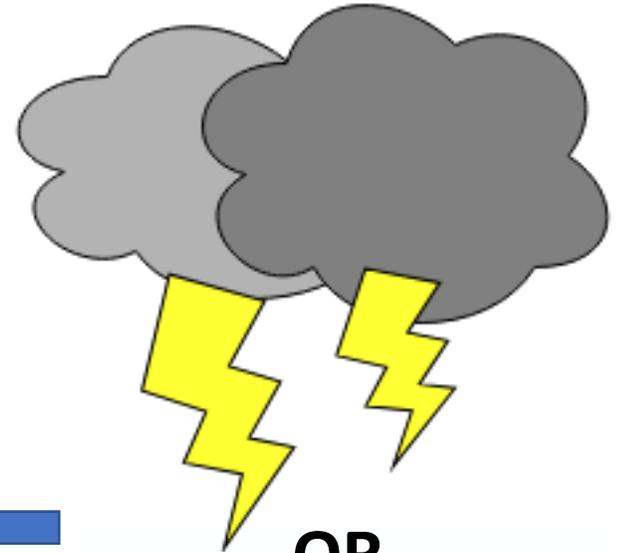
$$y(t_n + h) = y_n + \varphi_1(hJ_n)hf(y_n)$$



Algorithms tailored toward high performant architecture.



Mathematical modeling of physical phenomena.



OR



Accurate weather simulations.



Kuramoto - Sivashinsky

Research Topic:

Time-integrators for solving ODEs

$$\mathbf{y}'(t) = F(t, \mathbf{y}(t))$$

arising from partial differential eqns.

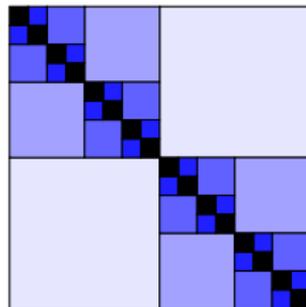
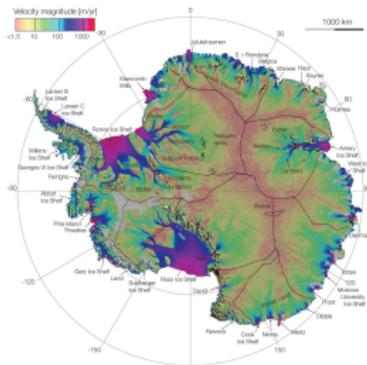


Current Projects:

- Polynomial-based integrators
- Parallel-in-time methods

Hierarchical Off-diagonal Low-rank (HODLR) Approximation of Hessians for Inverse Problems

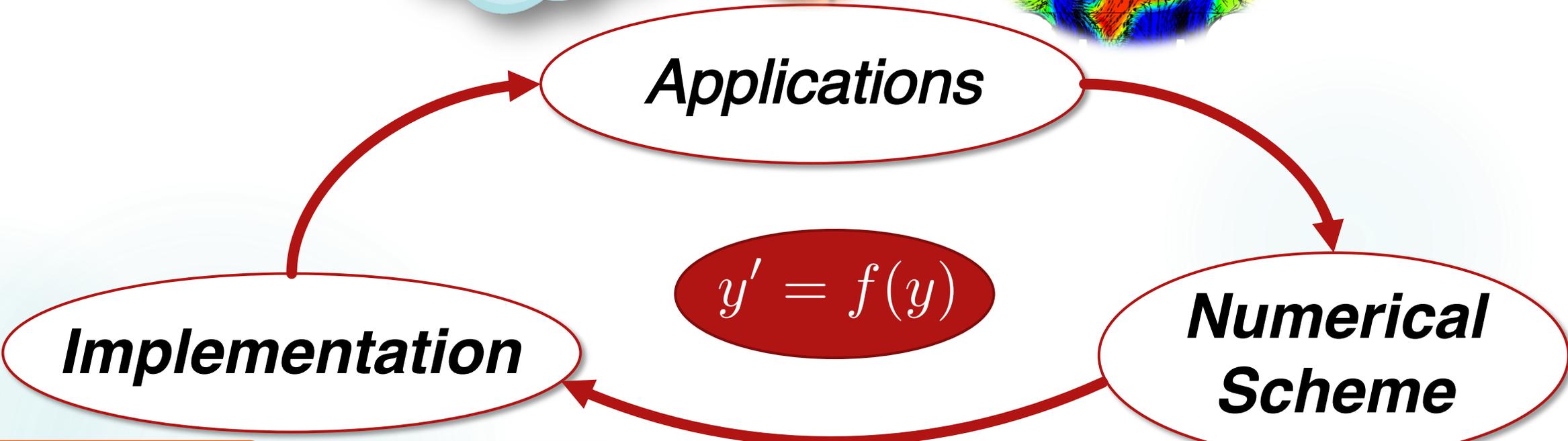
- ★ Application of data-sparse matrix compression for the computationally efficient estimation of large-scale parameters and their associated uncertainties (e.g., basal sliding coefficient for an ice-sheet model).



Observed surface flow velocity from InSAR (Rignot et. al, 2011).

HODLR data-sparse matrix structure, rank deficient off-diagonal blocks.

- Joint work with Georg Stadler (Courant Institute) and Noemi Petra (UC, Merced).
- Research funded by NSF grants DMS-CAREER-1654311, OAC-1550547 and DMS-1723211.



$$y' = f(y)$$

Adaptive Krylov

Matrix exponential

High performance Computing

Exponential multi-step

Multirate Time Integration

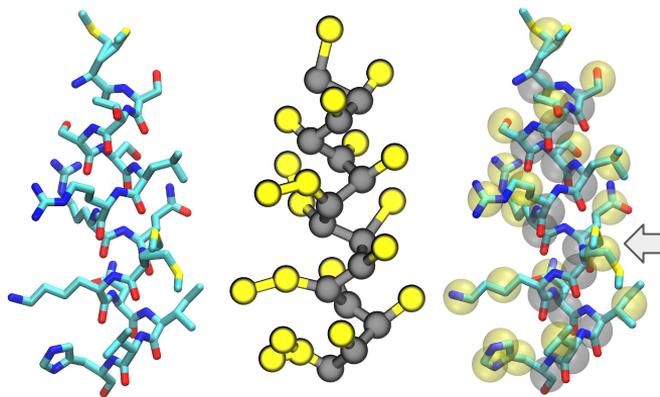
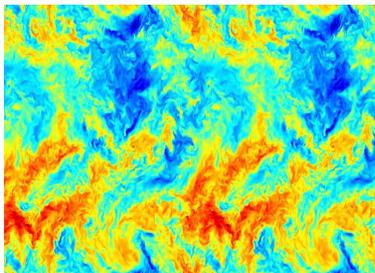
IMEXP Partitioned

Yuanran Zhu

(Visiting Assistant Professor)

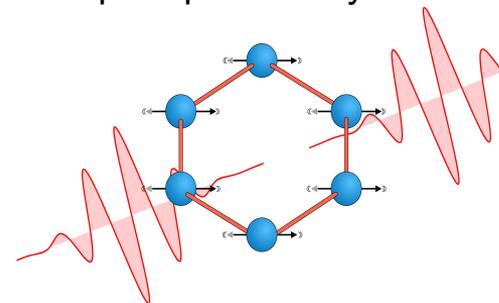
Dimension reduction and stochastic modeling

Turbulence



Molecular dynamics

Open quantum system

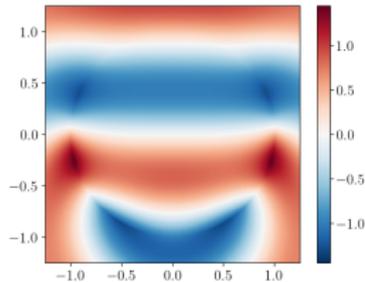


Zoïs MOITIER – Postdoctoral Researcher

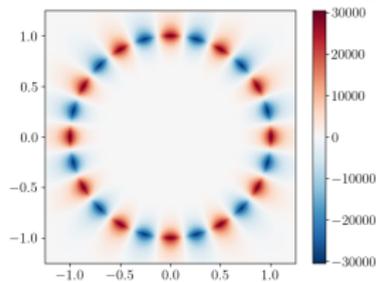


Research Interests: Wave propagation; Resonances; High frequencies; Unbounded problem; FEM for eigenvalue problem.

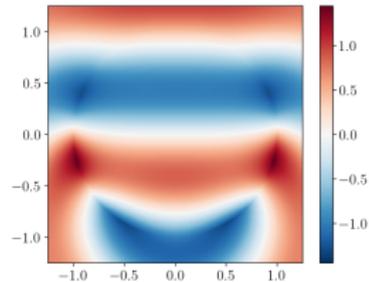
Scattering problem: graphs of the scattering wave



$k = 6.58$



$k = 6.59$



$k = 6.60$

Harish S. Bhat

A little about me:

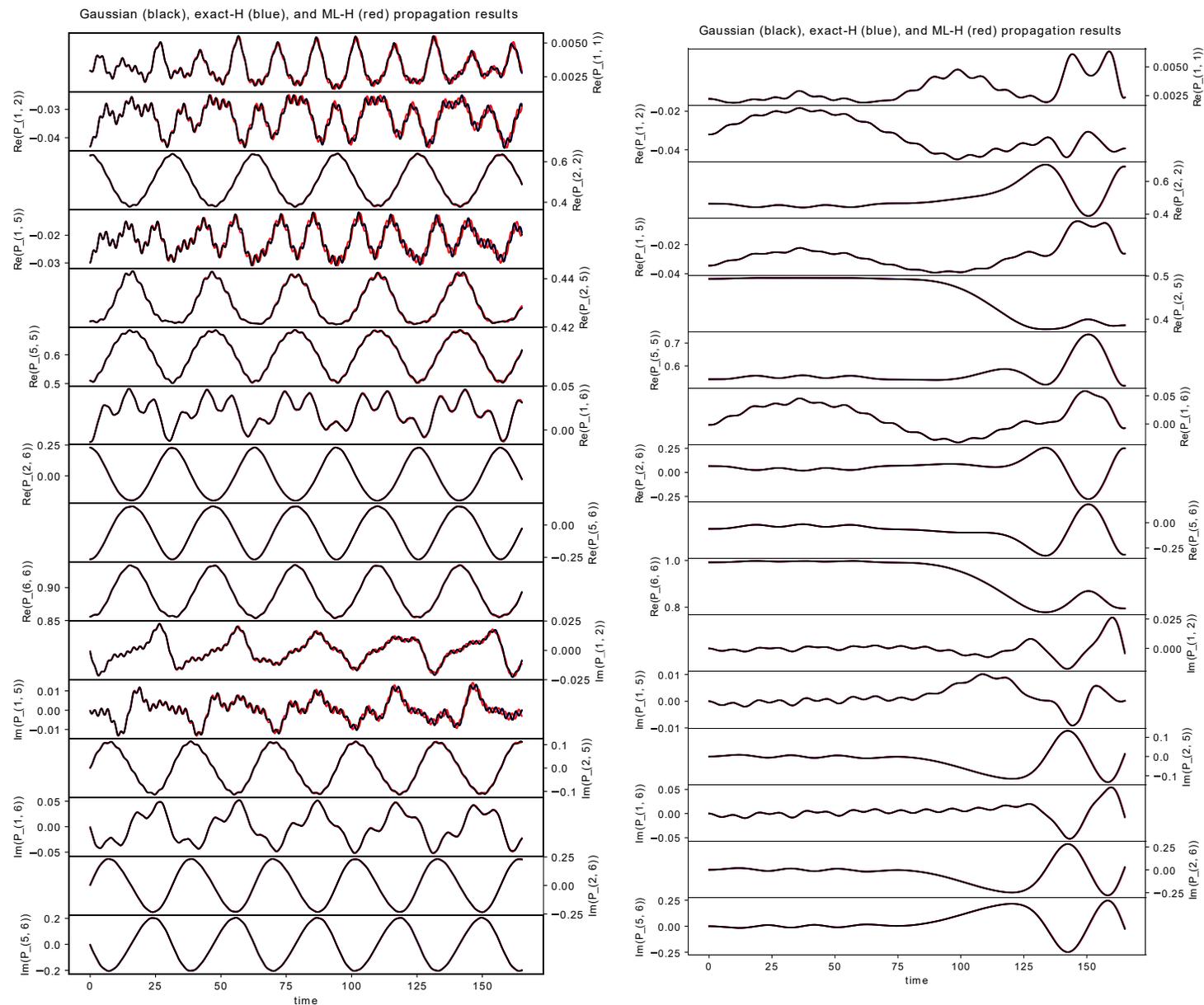
- Grew up in San Jose
- Married to Lee-May Huang for 15 years. She works as a nurse practitioner. Two kids: Karthik (7) and Nalini (5).
- Started at UC Merced in 2008.



Research interests:

- Machine learning for physical systems, e.g., you give me time series, and I estimate the system's Hamiltonian (with Prof. Isborn in Chemistry).
- Machine learning to better understand and predict various aspects of suicide (with Prof. Goldman-Mellor in Public Health).
- Parameter estimation and filtering for ordinary & stochastic differential equations (with Dr. Priyadip Ray at LLNL).

Learn Hamiltonian using simulations of LiH with no field (left); then make predictions with applied electric field (right).



Training

- B.S. in Math
BUPT
- Ph.D. in Math
UL Lafayette
- IMCI Postdoc
U Idaho

Underpinning

- Iterative
approach
- Interdisciplinary
collaboration

