**Yerbol Palzhanov**
Research Scientist, PhD
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# EXPERIENCE

2019 - 2023 Graduate Researcher @ University Of Houston
2018 - 2019 Academic Vice-Principal @ Silkway Lyceum
2016 - 2017 Academic Vice-Principal @ Atyrau Bilim-Innovation High Schools
2011 - 2018 Mathematics Teacher @ Bilim-Innovation High Schools

# PROJECTS

### Two-phase flows on manifolds

- Developed and analysed Navier–Stokes–Cahn–Hilliard model for two-phase surface flows
- Contributed to finite element C++ package DROPS - CFD tool for simulating two-phase flows to model flows
- Integrated the collection of scientific software libraries Trilinos(BELOS, AMESOS2, EPETRA) to solve systems of linear equations with Flexible GMRES

### Multicomponent lipid membranes

- Built computational model of lipid domain coarsening and fluidity
- Studied fusogenicity of positively charged phased-separated lipid vesicle

### Reduced order modeling with neural networks

- Built and trained convolutional autoencoders for advection dominated systems

# SKILLS

*Finite element methods & CFD*
Hands-on four-course Professional Certificate program, on Convolutional Neural Networks, Natural Language Processing (NLP) and Time Series Analysis in Tensorflow.
*Numerical analysis*
Hands-on four-course Professional Certificate program, on Convolutional Neural Networks, Natural Language Processing (NLP) and Time Series Analysis in Tensorflow.
*HPC*
Hands-on four-course Professional Certificate program, on Convolutional Neural Networks, Natural Language Processing (NLP) and Time Series Analysis in Tensorflow.
*Machine Learning*
Hands-on four-course Professional Certificate program, on Convolutional Neural Networks, Natural Language Processing (NLP) and Time Series Analysis in Tensorflow.

# EDUCATION

2019 - 2023 Ph.D in Computational Science, University of Houston, Houston, TX
2015 - 2017 M.S. in Mathematics, Atyrau State University, Atyrau, Kazakhstan
2008 - 2012 B.S. in Mathematics, Auezov University, Shymkent, Kazakhstan

# CERTIFICATES

*TensorFlow Developer* certificate
Hands-on four-course Professional Certificate program, on Convolutional Neural Networks, Natural Language Processing (NLP) and Time Series Analysis in Tensorflow.

# PUBLICATIONS

5. *A scalar auxiliary variable unfitted FEM for the surface Cahn-Hilliard equation*,
   M. Olshanskii, Y. Palzhanov, A. Quaini,
   Journal of Scientific Computing, Oct 2023
4. *On fusogenicity of positively charged phased-separated lipid vesicles: experiments and computational simulations*,
   Y. Wang, Y. Palzhanov, D Dang, A. Quaini, M. Olshanskii, S. Majd,
   Biomolecules, Sep 2023
3. *Lipid domain coarsening and fluidity in multicomponent lipidvesicles: A continuum based model and its experimental validation*,
   Y. Wang, Y. Palzhanov, A. Quaini, M. Olshanskii, S. Majd
   Biochimica et Biophysica Acta(BBA) - Biomembranes, 2022
2. *A comparison of Cahn-Hilliard and Navier-Stokes-Cahn-Hilliard models on manifolds*,
   M. Olshanskii, Y. Palzhanov, A. Quaini
   Vietnam Journal of Mathematics, 2022
1. *A decoupled, stable, and linear FEM for a phase-field model of variable density two-phase incompressible surface flow*,
   Y. Palzhanov, A. Zhiliakov, A. Quaini, M. Olshanskii
   Computer Methods in Applied Mechanics and Engineering, 2021

# CONFERENCES & TALKS

4. Talk @ 6th Annual Meeting of the SIAM Texas-Louisiana Section
   Topic: A scalar auxiliary variable unfitted FEM for the surface Cahn-Hilliard equation
   University of Louisiana, Lafayette, LA, November 3-5, 2023
3. Talk @ 5th Annual Meeting of the SIAM Texas-Louisiana Section
   University Of Houston, Houston, TX, November 4-6, 2022
2. Talk @ Graduate Student Paper Presentation (GSPP)
   Topic: Simulating lipid domain coarsening with TraceFEM
   University Of Houston, Houston, TX, April 29, 2022
1. Talk @ SMU Finite Element Rodeo
   Topic: Finite Element Methods for Surface Navier-Stokes-Cahn-Hilliard Equations
   Southern Methodist University, Dallas, TX, March 4-5, 2022