Nikolaos Memmos

Contact	Minneapolis, MN • 952-457-0122 • memmo007@umn.edu

Summary My research spans the fields of biology, immunology and computational mathematics with a focus on optimizing cancer immunotherapies.

- Experience in mechanistic modeling (e.g. ordinary, partial and stochastic differential equation models) to understand the biological mechanism of cancer immunotherapies and identify potential targets in the signaling pathways, using sensitivity analysis
- Skilled in Python and Matlab for scientific computing programming and statistical analysis, such as time series analysis for cell migration data
- Experienced in collaborating with experts from different fields, such as experimental immunology, biostatistics, and mathematics
- Mentored 4 undergraduate students for different projects and 2 high school students from underrepresented groups through the Biomedical Engineering high school internship program. The latter was awarded the Inspiring Programs in STEM Award

Technical Skills
- *Programming languages*: Python (Expert), Matlab (Expert), Julia (Intermediate), Fortran (Intermediate)
- *Software*: BioNetGen, Simbiology, Salib, Networkx, Scikit-learn, Emukit, Simulink, NAMD, GROMACS, COMSOL

Experience

University of Minnesota   Aug. 2017 - Present

⋆ PhD Researcher
- Currently developing ordinary differential equation models for the CD200 checkpoint pathway in dendritic cells to optimize it (in collaboration with Profs. Michael Olin and Jasmine Foo)
- Studying the migration of CD8+ T cells in melanoma tumors from *ex vivo* experiments and identified different subpopulations by using machine learning and time series analysis (in collaboration with Profs. David Masopust and Brian Fife)
- Developing an off-lattice agent-based model and demonstrated that stiffer malignant cells form smaller tumors
- During pandemic, I contributed to the development of a predictive model for COVID-19 spread, using different network structures to capture human social interactions

National Technical University of Athens   Aug. 2016 - Jul. 2017

⋆ Undergraduate Research Assistant
- Conducted kinetic Monte Carlo simulations to investigate the heterogeneity of the concentration of regulatory molecules in E.coli cell populations, which carry the toggle switch genetic network, and discovered different regions of stability

National Centre for Scientific Research "Demokritos", Athens, Greece   Aug. 2016 - Oct. 2016

⋆ Research Intern
- Prediction of time-dependent physical properties of alkane-alcohol mixtures using molecular dynamics simulations
- Studied the absorption of nitrogen in organometallic crystals with Monte Carlo simulations

Education **University of Minnesota** , Minneapolis, MN, USA

⋆ Ph.D. Candidate, Chemical Engineering, Aug. 2024 (Expected)
- Thesis: "Mathematical optimization of therapies for glioblastoma and melanoma". Advisor: Prof. David J. Odde

National Technical University of Athens, Athens, Greece

⋆ B.S., Chemical Engineering, Jul. 2017
- Thesis: "Stochastic simulations in heterogeneous populations of E.coli with the toggle switch model". Advisor: Prof. Andreas G. Boudouvis

Awards		
	Inspiring Programs in STEM Award	INSIGHT Into Diversity, 2022
	Cancer Bioengineering Initiative $10k Grant	National Cancer Institute, 2022
	Bodossaki Foundation Scholarship	Bodossaki Foundation, 2021
	Graduate Scholarship	Gerondelis Foundation, 2018
	Sebastian C. Reyes Fellowship	University of Minnesota, 2017
	Stephen J. Salter Fellowship Fund	University of Minnesota, 2017
	Thomas R. and Yolanda Shirley Stein Fellowship	University of Minnesota, 2017

Services Mentored undergraduate and high school students on different projects and served as a teaching assistant for three semesters

Memberships Biophysical Society, American Physical Society, Hellenic Student Association (UMN)