Leslie Nichole Cook

Curriculum Vitae

EDUCATION

M.S. in Computer Science	Midwestern State University	December 2024
B.S. in Chemistry	Midwestern State University	December 2020

RESEARCH EXPERIENCE

National Institute of Health: Summer Internship Program

- Biomedical Informatics Section, identifying tools to connect text mining with the visualization power of R within the HuRIS (Human Research Information System) database. (June 13, 2022 - August 5, 2022)
  Supervisors: Mustapha Mesghanni, Johns Hopkins Bayview Medical Center, and Dr. Jia-Ling Lin, NIH & NIDA
  - *Data management, communication, and interpretation with security and applicable regulations, data and text mining techniques, data visualization in the realm of big data, natural language processing, frequency of words, and use of data analytics*

Midwestern State University, Wichita Falls, TX

- Non-Linear Science Research Group, studying entropy trends in biophysical processes (2021-present)
  Supervisor: Dr. Preet Sharma, Ph.D. Particle Physics
  - *Non-equilibrium thermodynamics, entropy calculations of protein aggregation process, Langevin dynamics of complex systems, Fokker-Planck dynamics of complex systems and biosystems, quantum physics applications to complex biomolecules, statistical physics applications to complex molecules, machine learning models, numerical analysis performed in Python, Octave, MATLAB, Pythia, and R.*
- Biochemistry Research Group, studying protein aggregation of A-ß and α-synuclein known to be primary contributors to neurodegenerative diseases like Alzheimer's and Parkinson's disease. (2021-present)
  Supervisor: Dr. Fu-Cheng Liang, Ph.D. Biochemistry
  - *PCR primer design, protein mutation design, chaperone development, bacterial transformations, SDS-PAGE, Agarose Gel Electrophoresis, sonication, protein purification techniques, affinity chromatography, size exclusion chromatography, FPLC, ThT microtiter fluorescence assays, STEM (scanning transmission electron microscopy), AutoDock Protein - Chaperone modeling*
- Welch Scholarship Research Program, investigating antibiotic properties of essential oils and tinctures. (2017-2019)
  Supervisor: Dr. Elizabeth Machunis-Masuoka, Ph.D. Biology
  - *Kirby-Bauer disk diffusion, microtiter assays, spectroscopic analysis, extraction, distillation, purification techniques*

PESENTATIONS, AND CONFERENCE PROCEEDINGS

L.Cook, J.L. Lin, M. Mezghanni "*Discovering Emerging Pattersn in Clinical Reasearch Data with R"* National Instiute on Drug Abuse, NIH Intramulra Research Program, Baltimore, MD, August 3-4. 2022. Link

L. Cook, P. Sharma, "*Entropy Production and Entropy Generation of Protein Aggregate Models*" 3rd Annual Biophysical and Quantitative Biology Conference and Workshop, Midwestern State University, Wichita Falls, TX, January 20-22, 2022. Reports and Advances of Physical Sciences. Link
L. Cook, P. Sharma, "*Entropic Analysis of Protein Aggregation Using Langevin Equations and Fokker-Planck Dynamics*" #3478, 66th Biophysical Society Annual Meeting, San Francisco, CA, February 19-23, 2022. Biophysical Journal. Link
L. Cook, P. Sharma, "*Protein Aggregation Review and Entropy Trends in a Model Independent Protein Aggregation Process at Various Stages using Fokker-Planck Dynamics*" currently under review Heliyon, Elsevier, 2022. Cell Press. Link

AWARDS AND RECOGNITIONS

- ACM SIGHPC Fellowship Award Recipeint, 2022-2023
- Outstanding Graduate Woman of the Year, 2022
- Summer Internship Program (SIP) awarded by the NIH, 2022
- Golden Key Honours award for top 15% of class, 2020
- Welch Chemistry Scholarship recipient, 2017-2020

LEADERSHIP

- PTA (Parent-Teacher Association) board member at Franklin Elementary School
- Advanced Inorganic & Physical Chemistry laboratory Teaching Assistant
- Organizastion Commitee for the "3rd Annual Biophysical and Quantitative Biology Conference and Workshop" at MSU Texas, Wichita Falls, TX.
- Mentor incoming Science majors and International students with a review of coursework and orientation of programs/affiliations offered at MSU Texas
- Graduate Assitant at Midwesten State University, Computer Science Dept.

PROFESSIONAL AFFILIATIONS AND SOCIETIES

- National Institute of Health (NIH)
- Biophysical Society (BPS)
- American Chemical Society (ACS)
- Golden Key International Honour Society
- MSU Texas Programming Club
- MSU Texas Computer Science Research Groups
    - Machine Learning Research Group
    - High Performance Computing/Data Science Research Group

PROGRAMMING LANGUAGES

- C++, C, C#, Python, Octave, R, CUDA, SWI-Prolog, Scheme

OPERATING SYSTEMS

- MacOS, Windows, Linux

SOFTWARE

- aGPSS, AutoDock, PyMOL, GaussView, Gaussian, CaryWinUV, Bruker-OPUS, Magellan-TECAN, Berkeley Madonna

DATABASES

- wwPDB, Rstudio

SUPERCOMPUTING CLUSTERS

- Texas Advanced Computing Center
    - MAVERICK 2: supports GPU accelerated Machine/Deep Learning workloads

CONTACT INFORMATION

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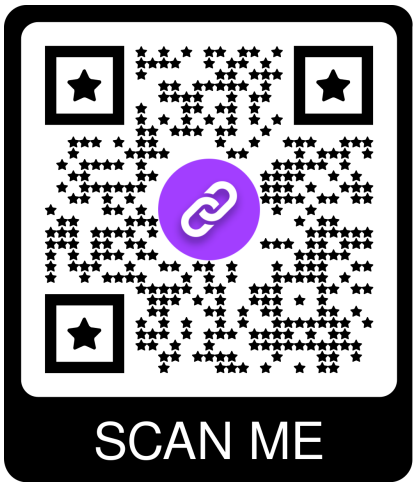

REFERENCES

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