Lin Chen

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EDUCATION

December 2015, Ph.D., Computer Science, Old Dominion University, Norfolk, VA, USA.

December 2009, M.S., Physical Chemistry, New Mexico State University, Las Cruces, NM, USA.

July 2001, B.S., Chemistry, Lanzhou University, Lanzhou, Gansu, P. R. China

EMPLOYMENT

Langley AFB, Hampton VA

Computer Engineer	Jan, 2021 – present

Valdosta State University, Valdosta GA

Assistant Professor in Department of Computer Science	Aug, 2019 – Dec, 2020
Graduate Faculty	Nov, 2020 – Dec, 2020

Elizabeth City State University, Elizabeth City NC

Assistant Professor in Department of Mathematics and Computer Science	Aug, 2016 – July, 2019
Full Graduate Faculty	Feb, 2018 – July, 2019

Army Research Lab, Adelphi MD

TMCF Summer Research Fellow	June, 2017 – Aug, 2017

NASA Langley Research Center, Hampton VA | Science Applications International Corporation, Inc.

Senior Software Developer	Nov, 2015 – July, 2016

NASA Langley Research Center, Hampton VA | Stinger Ghaffarian Technologies, Inc.

Senior Software Developer	Feb, 2014 – Oct, 2015

RESEARCH INTERESTS

Computational biology, Machine learning, High performance computing, Image processing, Algorithm, Monte Carlo Simulation

TEACHING EXPERIENCE

Valdosta State University, Valdosta GA

Assistant Professor	Aug, 2019 – Present

- CS 1000 Intro to Microcomputer/Applications (Fall 2019)
- CS 1301 Principles of Programming I (Fall 2019, Spring 2020, Fall 2020)
- CS 2620 Discrete Structures (Fall 2019, Fall 2020)
- CS 3335 The C Programming Language (Fall 2020)
- CS 4900 Senior Seminar (Spring 2020)

Elizabeth City State University, Elizabeth City NC

Assistant Professor	Aug, 2016 – July, 2019

- BMIS 485 Business Intelligence & Data Analytics, online (Spring 2019)
- CSC115 Programming I (Fall 2016, Spring 2017)
- CSC215 Programming II (Fall 2016)
- CSC218 Data Structure (Spring 2019)
- CSC230 Java Programming (Spring 2017, Fall 2017)

CSC315 Programming Languages (Fall 2018)

CSC318 Algorithm (Fall 2017, Fall 2018)

CSC325 Database and Intelligence Sys (Spring 2017, Spring 2018, Spring 2019)

CSC401 Data Mining and Machine Learning (Spring 2018, Spring 2019)

CSC410 Net-Centric Computing (Fall 2016, Fall 2017, Fall 2018)

CSC412 Software Methodology and Engineer (Fall 2016, Spring 2017, Fall 2017, Fall 2018)

CSC413 System Analysis and Design (Spring 2018)

CSC414 Python Programming and Visualization (Spring 2018, Fall 2018)

CSC420 Operating System (Spring 2019)

University of the People, Pasadena CA

Online Volunteer Instructor   Nov, 2015 – April, 2016

   Taught CS 1103 Java Programming II

SKILLS

Machine Learning:

   Scikit-learn, Tensorflow 2, MATLAB machine learning toolbox

High Performance Computing:

   MPI, CUDA, OpenACC, Pthreads, OpenMP, Hadoop

Image Processing:

   OpenCV, ImageJ, Matlab image processing toolbox, Chimera

Programming:

   C/C++, Pyhton, Java, bash shell, MATLAB, Oracle SQL, SQLite, MySQL, Html, CSS, PHP, Javascript, React/Redux, XML, AJAX, JQuery, JSON, R, Fortran

Tools:

   Latex; GIMP; Origin; Git

Teaching:

   Blockboard; BlazeView; Moodle; MyLab

RESEARCH AND INDUSTRY EXPERIENCE

Design of a Chimera tool for Protein Anomaly Detection, Faculty Research   *Jan, 2019 – Dec, 2020*

Designed an approach to detect the anomalous protein structures solved from Cryo-EM method.

Module and Library: Chimera, Tkinter, biopython

Coding languages: Python

Protein Structure Anomaly Detection, Faculty Research   *Oct, 2016 – Dec, 2020*

Designed an approach to detect the anomalous protein structures solved from Cryo-EM method.

Techniques: statistics

Module and Library: biopython

Coding languages: Python

Optimized Machine Learning for Human Agent Teaming, ARL Project   *Summer, 2017*

Designed and conducted an approach to identify image sense by deep learning methods.

Techniques: image processing, deep learning

Modules and Libraries: scikit-image, tensorflow, MATLAB image processing toolbox, MATLAB computer vision toolbox

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Coding language: MATLAB, Python

Web Crawling to Matching miRNA ID to Expression, NIH-MARC Project   *Spring, 2017*

Conducted a web crawling to match miRNA ID and its expression by searching mirbase.org and targetscan.org.

Modules and Libraries: urllib2, beautifulsoup

Coding language: Python

NDE, NASA Langley Research Project   *June, 2014 – June, 2016*

Designed an algorithm and delivered a software for delamination detection from CT image.

Modules and Libraries: scikit-image, tensorflow, MATLAB image processing toolbox, MATLAB computer vision toolbox

Techniques: image processing, machine learning, high performance computing

Modules and Libraries: MATLAB image processing toolbox, MATLAB machine learning toolbox, MATLAB mex, C++11 STL, C++ Eigen

Coding languages: MATLAB, Python, C++

WCA, NASA Langley Project   *June, 2014 – June, 2016*

Supported IBM Watson Content Analytics system for Information Management Branch.

Modules and Libraries: xml, urllib2, beautifulsoup

Coding languages: Python, Java, WordPress

HPC, NASA Langley Research Project   *Jan, 2016 – July, 2016*

Conducted a prototype using both Phi and GPU on NASA cluster.

Techniques: high performance computing

Modules and Libraries: MPI MVAPICH2, OpenMP, C++ Boost, CUDA, OpenACC, Qt

Coding languages: C++

ADT, NASA Langley Project   *April, 2016 – June, 2016*

Supported building a website hosting machine learning models for research and training purpose.

Coding languages: Python, PHP, HTML, CSS

Protein Energy Function Design, Ph. D. Research   *June, 2011 – Jan, 2013*

Designed and generated energy function for protein structure prediction.

Techniques: Boltzmann theory, thermodynamics, high performance computing

Coding languages: C++

Algorithm design, Ph. D. Research   *Jan, 2012 – Dec, 2013*

Designed a top-K algorithm for the native topology searching in protein prediction

Techniques: graph theory, image processing

Coding languages: C++

CNT Simulation, Master Research   *Oct, 2005 – Dec, 2008*

Simulated the purification of small chemicals in aqueous solution by carbon nanotube.

Techniques: Monte Carlo simulation, thermodynamics

Coding languages: C++, Fortran

GRANTS AND AWARDS

- PI, Valdosta State University Faculty Research Seed Grant 2020-2024, $5,000.
- PI, Valdosta State University First Year Grant for Tenure Track Faculty 2019-2020, $2753.81.
- Elizabeth City State University Certificate of Recognition Honors Thesis Advisors, 4.25.2019
- PI, Elizabeth City State University Mini-Grant 2018, $1,500.
- PI, NC LIVE's Open Education North Carolina (OENC) initiative 2018, $1,000.
- 2018 Annual Biomedical Research Conference for Minority Students (ABRCMS) travel award, $1,000.
- Thurgood Marshall College Fund (TMCF) – Department of Defense (DoD) Faculty Fellowship 2017, $25,000.

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PUBLICATIONS

*corresponding author

- Monet Stevenson, Hirendra Nath Banerjee, Narendra Banerjee, Kuldeep Rawat, *Lin Chen*, Myla Worthington, Sasha Hodge, Rayshawn Walker, Mukesh Verma, Fazlul Sarkar, Santosh Manda, A health disparities study of MicroRNA-146a expression in prostate cancer samples derived from African American and European American patients. Journal of Solid Tumors, 10(2):1, 2020.

- *Chen, L.*, Jebril, R. and Al Nasr, K*., Segmentation based Feature Extraction for Cryo Electron Microscopy at Medium Resolution, 11th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics, Virtual, September 21-24, 2020.

- *Chen, L.*, and He, J., Outlier Profiles of Atomic Structures Derived from X-ray Crystallography and from Cryo-Electron Microscopy. Molecules MDPI. 25(7):1540, 2020. *IF: 3.267*

- *Chen, L*, Baker, B., Santos, E., Sheep, M., Daftarian, D. A Visualization Tool for Cryo-EM Protein Validation with an Unsupervised Machine Learning Model in Chimera Platform. Medicines MDPI 6(3), 86, 2019.

- *Chen, L.*, He, J. A Histogram-based Outlier Profile for Atomic Structures Derived from Electron Cryo-microscopy. 10th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics, Niagara Fall, NY, September 7-10, 2019.

- Banerjee, H., Krauss C., Worthington M., Banerjee N., Walker, R., Hodges S., *Chen, L.*, Rawat K., Dasgupta S., Ghosh, S., Mandal, S. Differential expression of efferocytosis and phagocytosis associated genes in tumor associated macrophages exposed to African American patient derived prostate cancer microenvironment. Journal of Solid Tumors, Vol 9(2), 2019.

- Mitchell Sheep, Eduardo Santos, Brandon Baker, *Lin Chen*, A Visualization Tool for Protein Anomaly Detection in Chimera, Modelling, Simulation and Visualization Student Capstone Conference (MSVSCC) 2019, Suffolk, VA, April 18, 2019. the *best presentation award* of Medical Simulation session, invited to Engaging the Future of Modeling and Simulation Session of MODSIM World 2019, Norfolk, VA, April 22-24, 2019.

- *Chen, L.*, He, J., Using Combined Features to Analyze Atomic Structures derived from Cryo-EM Density Maps. The 9th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics, Washington D.C., August 29 – September 1, 2018. *Acceptance Rate: 29%*

- Banerjee, N., *Chen, L.*, Matching miRNA IDs to Gene Expressions with a Web Crawler. Modeling Simulation Visualization, the 12th Annual Student Capstone Conference (MSVSCC) 2018, Suffolk, Apr. 19, 2018.

- *Chen, L.*, He, J., Sazzed, S., and Walker, R. An Investigation of Atomic Structures Derived from X-ray and EM Methods using the Distal Block. Molecules MDPI. 23(3):610, 2018. *IF: 2.861*

- Walker, R., *Chen, L.*, He, J., Banerjee, H. Anomaly Detection of Protein Structures Solved from Cryo-EM Density Map. Annual Biomedical Research Conference for Minority Students 2017, Phoenix, AZ, Nov. 1, 2017.

- Elhefnawy, W., *Chen, L.*, Han, Y., and Li, Y. ICOSACON: A Distance-dependent, Orientation-specific Coarse-grain Contact Potential for Protein Structure Modeling. Journal of Molecular Biology. 427(15):2562-76, 2015. *IF: 4.33*

- *Chen, L.*, He, J. A Distance and Orientation Dependent Energy Function of Amino Acid Functional Blocks. Biopolymers. 101(6):681-92, 2014. *IF: 2.39*

- Al Nasr, K., Ranjan, D., Zubair, M., *Chen, L.*, He, J. Solving the secondary structure matching problem in de novo modeling using a constrained K-shortest path graph algorithm. IEEE Transaction on Computational Biology and Bioinformatics, 11(2):419-29, 2014. *IF: 1.44*

- Al Nasr, K., *Chen, L.*, Ranjan, D., Zubair, M., Si, D., He, J. A Constrained K-shortest Path Algorithm to Rank the Topologies of the Protein Secondary Structure Elements Detected in CryoEM Volume Maps. ACM Conference on Bioinformatics, Computational Biology and Biomedicine, Washington D.C., 2013. *Acceptance Rate: 28%*

- *Chen, L.*, Al Nasr, K., He, J. Using Constraints in Modeling the Protein Beta-Sheet Topology. Capstone

Conference, Suffolk, VA, April 9, 2013.

- Al Nasr, K., *Chen, L.*, Si, D., Ranjan, D., Zubair, M., He, J. Building the Initial Chain of the Protein through De Novo Modeling of the Cryo-Electron Microscopy Volume Data at the Medium Resolution. ACM Conference on Bioinformatics, Computational Biology and Biomedicine, Orlando, FL, Oct 7-10, 2012. *Acceptance Rate: 22%*

- *Chen, L.*, He, J. A distance and orientation dependent potential energy function with cluster energy. The Proceeding of the 2011 IEEE International Conference on Bioinformatics and Biomedicine Workshops, p405-9, Nov 12-15, Atlanta, GA, 2011. *Acceptance Rate: 19.9%*

- *Chen，L.,* Xu, C. Z., Xia, C. G., Feng, Y. H. Advances in Oxidation of Liquid Alcohols into the Corresponding Carbonyls under mild conditions (Chinese). Progress in Chem., Vol. 16, No. 5, 758, 2004. *IF: 0.69*

- Xu, C. Z., *Chen, L.,* Xia, C. G. A Mild and Efficient Oxidation of Alcohols in Water (Chinese). Chin. Chem. Lett., Vol. 15, No. 10, 1149, 2004. *IF: 1.59*

- Xu, C. Z., *Chen, L.*, & Xia，C. G. (2003). The Preparation Method of a Novel Catalyst for Preparing Aldehyde by Dehydrogenation of 3-Methyl-butenol. Chinese Invention Patent, Application Number: 02145653.4, Publication number CN1422691.

- *Chen, L.,* Yin, X. H., Tan, M. Y., Xia, C. G., Yu, K. B. 2, 2', 2" – Nitrilotris (ethlammonium) tris(pyridine-2, 6-dicarboxylato-κ^3O, N, O')terbate(III) Hexahydrate. ActaCryst., E58(11), 666-668, 2002. *IF: 0.35*

- Feng, Y. H, Yin, X. H., *Chen, L.,* Tan, M. Y., Yu, K. B. (Z)-4-(4-{4-[(Z)-1-Methyl-3-oxobut-1-enylamino]-phenoxy}phenylamino)pent-3-en-2-one. ActaCryst., E58(10), o1154-o1156, 2002. *IF: 0.35*

POSTERS

- Stefan C Atkinson and Kevin J Eppes, *Lin Chen**, Anurag Dasgupta*. Does the validation tool in Protein Data Bank works good on cryo-EM proteins? Valdosta State University Undergraduate Research Symposium, April 21-22, 2020, Valdosta, GA.

PRESENTATIONS

How Can We Find Out Errors in Protein Structures, Southwestern University, February 7, 2019.

Application of Data Science in Protein Structure Predication Research, Virginia State University, May 3, 2018.

An Investigation of Atomic Structures Derived using X-ray Crystallography and Cryo-Electron Microscopy using the Distal Block, Research Week at ECSU, April 10, 2018.

How Big Data Research Changes Our Life, 2nd ECSU Johnny L. Houston Lecture Series, October 17, 2017.

Optimized Machine Learning for Human Agent Teaming, Army Research Lab, August 3, 2017.

Validation of the Protein Structures Solved by Cryo-EM, STEM Research Week at ECSU, February 8, 2017

Web Crawling to Match miRNA ID to Expression, Research Week at ECSU, April 4, 2017

Anomaly Detection of Carbon Fiber Materials with Machine Learning Algorithms, Big Data Seminar at NASA Langley, March 17, 2016

Using Constraints in Modeling the Protein Beta-Sheet Topology. Capstone Conference, Suffolk, VA, April 9, 2013.

PROFESSIONAL ACTIVITIES

Reviewer, Nature Communications, 2020.

Program Committee, ACM SIGCSE Technical Symposium 20201, 2020.

Program Committee, Reviewer, Computational Structural Bioinformatics Workshop 2018 of ACM BCB, 2017-2018, 2020.

NSF Graduate Research Fellowship Program (GRFP) Panel Member, 2020.

Program Committee, IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2019-2020.

Program Committee, International Conference on Bioinformatics and Computational Biology (BICOB), 2018-2020.

Reviewer, IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB), 2018-2020.

Co-Chair, Computational Structural Bioinformatics Workshop of ACM BCB 2019.

National Defense Science and Engineering Graduate (NDSEG) Fellowship Program Panel Member, 2019.

Participator, NIH-Maximizing Access to Research Careers (NIH_MARC), Fall 2016 – Spring 2019.

Participator, North Carolina Louis Stokes Alliance for Minority Participation (NC-LSAMP), Fall 2016 – Spring 2019.

Reviewer, Journal of Computer Science and Technology, 2018.

Reviewer, 10th International Conference on Bioinformatics and Computational Biology (BICOB) special issue in Journal of Bioinformatics and Computational Biology (JBCB), 2018.

Reviewer, International Conference on Biological Information and Biomedical Engineering (BIBE), 2018.

Mentor, ECSU IBM BlueHack Team, 3rd/32 institutes, October 18-20, 2017.

Reviewer, 22nd International Command and Control Research and Technology Symposium, 2017.

Reviewer, The Journal of Cell Biology (JCB) Special Issue 2017.

Reviewer, International Journal of Data Mining and Bioinformatics, 2017

Program Committee, Reviewer, Computational Structural Bioinformatics Workshop 2016 of IEEE Bioinformatics & Biomedicine 2016

PROFESSIONAL TRAINING

Mindset in Macon, November 08, 2019

Essentials of Grant Proposal Development at CITI, received the certificate, August 30, 2019

QEM-Bowie State University NASA MUSIC Proposal Development Workshop, Bowie, June 17-18, 2019

Quality Matters Rubric Sixth Edition Update training, October 17, 2018

QEM/NSF Outreach Forum on Building Research and Education Capacity in Computer and Information Science and Engineering (CISE), Baltimore, July 27-28, 2018

Grant Writing Training, ECSU, September 29, 2016

Quality Matters (QM) Training, ECSU, received the certificates, August 11-12, 2016

Machine Learning on Coursera, Stanford University, received the certificate, June 12, 2016

XSEDE Hadoop-Spark Training, NASA LaRC IESB, August 4, 2015

Statistics and Machine Learning with MATLAB, NASA LaRC IESB, received the certificate, July 21-23, 2015

Overview of GPU Architecture and Programming Models, NASA LaRC IESB, February 10-12, 2015

XSEDE HPC Workshop: OpenACC, NASA LaRC IESB, received the badge, February 6, 2015

Data Analytics with MATLAB, Webinar, January 30, 2015

High Performance Computing with Python, NASA LaRC IESB, December 9, 2014

NVIDIA GPU Programming with OpenACC, NIA, September 23-24, 2014

Intel Training for NASA Langley, NIA, August 19-20, 2014

R Programming on, Coursera, Johns Hopkins University, received the certificate, June 30, 2014

The Data Scientist's Toolbox, Coursera, Johns Hopkins University, received the certificate, June 30, 2014

Tacking the Challenges of Big Data, MIT on-line, received the certificate, March 4 – April 1, 2014