

Prakash Chourasia

Department of Computer Science
Georgia State University
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RESEARCH INTERESTS

- Machine Learning, Artificial Intelligence, Data Mining, Federated Learning, Representation learning, Kernel methods, Algorithms, Bioinformatics, Drug Discovery, and Health data.

EDUCATION

- Georgia State University, Atlanta Fall 2022 - Present
Ph.D (Computer Science), **Advisor:** [[Dr. Murray Patterson](#)] GPA:3.82
- Georgia State University, Atlanta Fall 2014 - Spring 2016
Master of Science (Computer Science), **Advisor:** [[Dr. Ying Zhu](#)] GPA:3.54
- Indira Gandhi National Open University New Delhi June 2011 - May 2013
Post Graduate Diploma (Information Security) Percentage: 70.25
- Rajiv Gandhi Technical University Bhopal August 2007 - June 2011
Bachelor of Engineering (Information Technology), **Advisor:** [[Lucky Sharma](#)] Percentage: 70.66

PUBLICATIONS

- Conference Papers (22)*

- Sarwan Ali, Tamkanat Ali, **Prakash Chourasia**, and Murray Patterson. "A Universal Non-Parametric Approach For Improved Molecular Sequence Analysis" PAKDD 2024 (preprint), "[A rank conference](#)"
- Zahra Tayebi, Sarwan Ali, **Prakash Chourasia**, Taslim Murad, and Murray Patterson. "T Cell Receptor Protein Sequences and Sparse Coding: A Novel Approach to Cancer Classification." ICONIP (2023), [[PDF](#)] "[A rank conference](#)".
- Prakash Chourasia**, Taslim Murad, Zahra Tayebi, Sarwan Ali, and Murray Patterson. "Laws of Federated Learning for Bioinformatics" The International Conference on Information Management and Big Data (SIMBiG) 2023
- Sarwan Ali, **Prakash Chourasia**, and Murray Patterson. "Expanding Chemical Representation with k-mers and Fragment-based Fingerprints for Molecular Fingerprinting" The International Conference on Information Management and Big Data (SIMBiG) 2023
- Prakash Chourasia**, Taslim Murad, Sarwan Ali, and Murray Patterson. "Enhancing t-SNE Performance for Biological Sequencing Data through Kernel Selection." International Symposium on Bioinformatics Research and Applications, (ISBRA) 2023.
- Sarwan Ali, **Prakash Chourasia** and Murray Patterson. "PDB2Vec: Using 3D Structural Information For Improved Protein Analysis" International Symposium on Bioinformatics Research and Applications, (ISBRA) 2023.
- Sarwan Ali, Haris Mansoor, **Prakash Chourasia** and Murray Patterson. "Hist2Vec: Kernel-Based Embeddings for Biological Sequence Classification." International Symposium on Bioinformatics Research and Applications, (ISBRA) 2023.
- Prakash Chourasia**, Zahra Tayebi, Sarwan Ali, and Murray Patterson. "Empowering Pandemic Response with Federated Learning for Protein Sequence Data Analysis." In 2023 International Joint Conference on Neural Networks (IJCNN), pp. 01-08. IEEE, 2023, "[A rank conference](#)" [[PDF](#)][[Slides](#)].
- Sarwan Ali, **Prakash Chourasia**, and Murray Patterson. "When Biology has Chemistry: Solubility And Drug Subcategory Prediction using SMILES Strings." International Conference on Learning Representation (ICLR), 2023, "[A* rank conference](#)" [[PDF](#)].
- Ali, Sarwan, Babatunde Bello, **Prakash Chourasia**, Ria Thazhe Punathil, Pin-Yu Chen, Imdad Ullah Khan, and Murray Patterson. "Virus2Vec: Viral Sequence Classification Using Machine Learning." Conference on Health, Inference, and Learning (CHIL 2023), "[Selected for Oral presentation \(12% acceptance rate\)](#)" [[PDF](#)][[Slides](#)].
- Taslim Murad*, **Prakash Chourasia***, Sarwan Ali*, and Murray Patterson. "Hashing2vec: Fast embedding generation for sars-cov-2 spike sequence classification." In Asian Conference on Machine Learning, pp. 754-769, 2023. ([32% acceptance rate](#)) [[PDF](#)].
* **Equal Contribution**
- Prakash Chourasia**, Sarwan Ali, Murray Patterson. "Effect of Informative Initialization on the Quality of t-SNE For Biological Sequences" IEEE BigData 2022. ([18.6% acceptance rate](#)) [[PDF](#)] [[Slides](#)].
- Sarwan Ali, Taslim Murad, **Prakash Chourasia** and Murray Patterson. "Spike2Signal: Classifying Coronavirus Spike Sequences with Deep Learning". In the IEEE Eight International Conference on Big Data Computing Service and Applications (Big Data Service) 2022.

- 9 **Prakash Chourasia**, Sarwan Ali, Simone Ciccolella, Gianluca Della Vedova, and Murray Patterson. "Clustering SARS-CoV-2 variants from raw high-throughput sequencing read data". In the 11th International Conference on Computational Advances in Bio and medical Sciences, ICCABS (2021).
 - 8 Sarwan Ali, Haris Mansoor, **Prakash Chourasia**, Yasir Ali, and Murray Patterson. "Gaussian Beltrami-Klein Model for Protein Sequence Classification: A Hyperbolic Approach" CHIL 2024 (Under Review)
 - 7 Sarwan Ali, **Prakash Chourasia**, Haris Mansoor, and Murray Patterson. "MIK: Modified Isolation Kernel for Biological Sequence Visualization, Classification, and Clustering" KDD 2024 (Under Review)
 - 6 Sarwan Ali, **Prakash Chourasia**, and Murray Patterson. "Approximate CCP-Based Protein Sequence Analysis" KDD 2024 (Under Review)
 - 5 Sarwan Ali, **Prakash Chourasia**, and Murray Patterson. "DeepPWM-BindingNet: Unleashing Binding Prediction with Combined Sequence and PWM Features" IJCNN 2024 (Under Review)
 - 4 **Prakash Chourasia**, Heramb Lonkar, Sarwan Ali, and Murray Patterson. "EPIC: Enhancing Privacy through Iterative Collaboration" IJCNN 2024 (Under Review)
 - 3 **Prakash Chourasia**, Tamkanat Ali, Sarwan Ali, and Murray Patterson. "DWFL: Enhancing Federated Learning through Dynamic Weights" IJCNN 2024 (Under Review)
 - 2 Taslim Murad, Sarwan Ali, **Prakash Chourasia**, and Murray Patterson. "Advancing Protein-DNA Binding Site Prediction" IJCNN 2024 (Under Review)
 - 1 Sarwan Ali, Haris Mansoor, **Prakash Chourasia**, Imdad Ullah Khan, and Murray Patterson. "Preserving Hidden Hierarchical Structures: Poincaré Distance for Enhanced Genomic Sequence Analysis" ISMB 2024 (Under Review)
- *Journals (5)*
 - 5 **Prakash Chourasia**, Sarwan Ali, Simone Ciccolella, Gianluca Della Vedova, and Murray Patterson. "Reads2vec: Efficient embedding of raw high-throughput sequencing reads data." Journal of Computational Biology 30, no. 4 (2023): 469-491
Impact Factor: 1.7 [PDF].
 - 4 Sarwan Ali, **Prakash Chourasia**, Zahra Tayebi, Babatunde Bello, and Murray Patterson. "ViralVectors: Compact and Scalable Alignment-free Virome Feature Generation" Medical & Biological Engineering & Computing 2023
Impact Factor: 3.2 [PDF].
 - 3 Sarwan Ali, Babatunde Bello, **Prakash Chourasia**, Ria Thazhe Punathil, Yijing Zhou, and Murray Patterson. "PWM2Vec: An Efficient Embedding Approach for Viral Host Specification from Coronavirus Spike Sequences." MDPI Biology (2022).
Impact Factor: 5.07 [PDF].
 - 2 Sarwan Ali, **Prakash Chourasia**, and Murray Patterson. "When Protein Structure Embedding Meets Large Language Models" MDPI Genes
Impact Factor: 3.5.
 - 1 Sarwan Ali, **Prakash Chourasia**, and Murray Patterson. "From PDB Files to Protein Features: A Comparative Analysis of PDB Bind and STCRDAB datasets" MDPI Algorithms for Natural Computing Models (under review)
Impact Factor: 2.3.

HONOURS AND AWARDS

- **Molecular Basis of Disease (MBD) Ph.D. Fellowship** (4 years funding for Ph.D.)
Georgia State University, Atlanta, GA, USA **2023**
- Student Travel Award [ICDM 2023], [IJCNN 2023], [ICLR 2023] **2023**
- **Graduate Research Assistantship:** Fully funded scholarship for Ph.D. studies
Georgia State University, Atlanta, GA, USA **2021**
- Home Depot HACKATHON Winning team - 3rd Prize **2016**
- President Award for Boy Scouts - Eagle Scout
(By - Dr. APJ Abdul Kalam, Former President of India) **2007**

TEACHING AND PROFESSIONAL EXPERIENCE

PROFESSIONAL/INDUSTRIAL EXPERIENCE

- Organizing committee of the XAI Section (WCCI 2024)
- Conference/Journal Reviewer (IJCNN 2024, ACML 2023, ISBRA 2023)
- Interactive Communication (InComm) Atlanta USA **Software Engineer-II** **Oct 2019 - Aug 2021**
- Amerisave Mortgage Corporation Atlanta USA **Software Developer** **June 2016 - Oct 2019**
- Tata Consultancy Services India **System Engineer** **Jan 2012 - June 2014**
- Pentacle Softwares Ltd Jabalpur India **Jr. Software Developer** **June 2011 - Jan 2012**

TEACHING EXPERIENCE

- Georgia State University, Atlanta, USA
 - **Teaching Fellow**
 - * CSC 1320 Principles of Computer Science II (Java Programming) Spring 2022
Worked as instructor for a class of 150 students
 - **Graduate Teaching Assistant**
 - * CSC 1301 Python Programming [Instructor: [Hossein Saghaeiannjad Esfahani](#)] Spring 2024
 - * CSC 4370 Web Programming [Instructor: [Louis Henry](#)] Spring, Summer, Fall 2023
 - * CSC 3320 System-Level Programming [Instructor: [Michael Weeks](#)] Fall 2022
 - * CSC 3210 Computer Org and Programming [Instructor: [Xucan Chen](#)] Fall 2021

COURSES

- Advance Machine Learning
- Advance Deep Learning
- Data Mining
- Computational Epidemiology
- Sensor Web Arch and Protocols
- Bio-Statistics

TECHNICAL SKILLS

- **DATA TOOLS:** D3.JS, Google Charts, MATLAB, R-Programming
- **PROGRAMMING SKILLS:** C#.NET, ASP.Net, Java, C, C++, Android, Python, Lucee, ColdFusion, Spring, Node.js
- **TOOLS AND IDE:** Microsoft visual studio, Eclipse, NetBeans, STS, Android Studio, Django, BIDS, STS
- **DATABASE:** BI, SSIS, SSRS, MS SQL Server 2012-14, Oracle PL/SQL
- **WEB TECHNOLOGY:** Bootstrap, HTML, CSS, Kendo UI, JavaScript, AJAX, JQuery. Reactive JS, React JS

References

- [\[Dr. Murray Patterson\]](#) mpatterson30@gsu.edu
- [\[Dr. Gianluca Della Vedova\]](#) gianluca.dellavedova@unimib.it