

Anirudh Pulavarthy

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Education

DePaul University | M.S. in Computer Science, GPA: 3.62 / 4.00

Sep 2022 – Nov 2024

Indian Institute of Technology Jodhpur | B.Tech in Systems Science, GPA: 3.34 / 4.00

Jun 2013 – Jul 2017

Technical Skills

Programming Languages: Python, Java, C++, MS SQL, Visual Basic, R, Rust, C#, Scala

Frameworks & Libraries : .NET, WPF, MFC, GUDHI, React, Node.js, pandas, scikit-learn

Tools & Platforms : Unix/Linux, LaTeX, Visual Studio, Azure DevOps Server, Git, Tableau

Experience

Computer Science Grader/Teaching Assistant | DePaul University

Mar 2023 – Nov 2024

- Evaluated and graded 500+ coding assignments and exams over five terms for *SE450: Object-Oriented Software Development*.
- Assessed and provided detailed feedback on code implementations covering Design Patterns, Object-Oriented Design principles, and Visual Modeling, enhancing student understanding and coursework quality.
- Ensured consistent application of grading rubrics and accelerated feedback turnaround time by 20%.

Summer Research Intern | University of Oregon

Jul 2024 – Sep 2024

- Developed zigzag filtrations and computational models using GUDHI for persistent homology analysis, barcode generation, and topological data processing.
- Optimized flow analysis techniques to enhance topological feature extraction, improving geometric structure analysis by 30%.

Graduate Research Assistant | DePaul University

Mar 2023 – Jun 2024

- Developed topological visualizations in MeshLab, improving researchers' ability to interpret computational topology results.
- Developed Python scripts to analyze complex triangular meshes and efficiently process datasets with up to 500,000 faces.

Senior Software Developer, C++ & Systems Development | Hexagon AB

June 2020 – Aug 2022

- Led development of CVLaunchBar, a dockable WPF.NET application that streamlined Cabinet Vision configurations, improving workflow efficiency by 35% and increasing adoption among engineers.
- Mentored three new developers by conducting structured learning sessions, fostering a learning environment, and promoting a growth-oriented team culture.
- Designed COM components facilitating seamless user data transfer between MFC applications and VB scripts.
- Recognized as Star Employee of the Year and was a member of the Star Team of the Year for the year 2021.

Software Developer | Hexagon AB

Dec 2017 – Jun 2020

- Collaborated with a team of 5 in a critical code refactoring project, converting up to 47,000 instances of point-based geometrical shapes to line-based entities, improving performance of Cabinet Vision's legacy codebase.
- Developed an MFC-based dialog project to extract and transform user data from SQL databases into optimized package files, reducing data transfer time by 40% and enhancing interoperability across different versions of Cabinet Vision.

Academic Projects

File Indexing System | C++, Distributed Hash Tables (DHTs), Multi-threading

- Developed a scalable distributed file indexing system to support efficient search operations across networked nodes.
- Utilized Distributed Hash Tables (DHTs) for fault-tolerant indexing and optimized multi-threaded search to reduce lookup time.
- Built a metadata-based indexing structure to enable fast query retrieval over large datasets, ensuring scalability and consistency in distributed environments.

Gossip Protocol Implementation for Distributed Systems | Java, UDP Sockets, Java Object Serialization, Concurrency, Scalability

- Designed and implemented a decentralized gossip protocol for efficient information dissemination and aggregation across networked nodes. Developed a multi-threaded system where each node independently communicates with peers using UDP sockets and Java Object Serialization, ensuring real-time data propagation.

Car Evaluation Analysis | Python, Scikit-learn, TensorFlow, Random Forest, Gradient Boosting, Multi-layer Perceptron (MLP)

- Built Machine Learning models to classify car acceptability using Random Forest, Gradient Boosting, and MLP classifiers.
- Applied SMOTE to handle class imbalance and performed hyperparameter tuning to improve model accuracy and robustness.

Publications

Dey, T. K., Hou, T. & Pulavarthy, A. (2025). Computing Optimal Persistent Cycles for Levelset Zigzag on Manifold-like Complexes. *arXiv preprint, arXiv:2105.00518v2 [cs.CG]*.